Secl. II-27—104,006 4-11-49.

EDUCATION (195°) Department.

Ms. 1C SERIES.

G.O.xNo. Letter/Ms.No.2853 Edn.dated 16-10-1950.

2853

16.10.50.

Datedxx

EDUCATION - National Institutions-Recognition of the degrees or Diplomas given by such institutions - Reply sent to Govt.of India.

[Despatch Abstract.]

Ministry of Education.
Government of India.

.....

No.F.37-4/50-D.3, New Delhi 3, the 17 August, 1950.

... .

24296
18 AUG 1950
EDUCATION DEPARTMENT

From

H.S.Verma Esquire,
Under Secretary to the Government of India.

To

All State Governments Parts A,B & C.

SUBJECT:-NATIONAL INSTITUTIONS - RECOGNITION OF DEGREES OR DIPLOMAS GIVEN BY SUCH INSTITUTIONS.

Sir,

I am directed to say that the Government of India have under consideration the question of recognition for purposes of employment under Government of the Degrees and Diplomas of the various National Institutions established in the country before the 15th August 1947 which imparted and have been imparting education in India. On the basis of information received through the State Governments or from the Institutions and the Public direct a list of such Institutions has been prepared and is attached herewith. The Government of India will be glad if this list is brought up-to-date by the State Government by adding the names of those Institutions whose names are not included therein or by deleting the names of those which are not worthy of consideration for the present purpose. The amended list may kindly be returned to this Ministry along with the following information:

1. Brief details about the courses of study and subjects taught.
2. Examination procedure and the Degrees and Diplomas awarded.
3. How far the degrees and Diplomas are recognised by the State Government for purposes of employment in Government Service, and by Indian Universities established by law for the time being in force for entry into their courses of s...
4. Nature of financial or other assistance rendered by the State Government to the Institution.

It is further requested that six copies each of the latest Prospectuses, including Courses of study and Syllabus, and all other relevant particulars may also be furnished to this Ministry along with the above information. In case the literature of any of the Institution is published in a language other than English or Hindi, a copy of its translation of the same in English may, if possible, be sent.

The Government of India would be glad if the information asked for is sent so as to reach this Ministry by the 1st October, 1950 at the latest.

Yours faithfully,

H.S.Verma

(H.S.Verma)
Under Secretary
to the Government of India.

P.T.O.

LIST OF NATIONAL INSTITUTIONS IN INDIA.

.....

ASSAM

Nil.

Bihar

Bihar Vidyapith, Patna.
Hindi Vidya Pith, Baidyanath, Deoghar, Bihar.

BOMBAY

Vedashastrottejak Sabha, Poona.
Bharatiya Vidya Bhawan, Bombay
Gujrat Vidyapith, Ahmedabad.
Tilak Maharashtra Vidyapith, Poona.

MADHYA PRADESH

Rashtra Bhasha Prachar Samiti.
*Shri Raman Vidyapith, Khairagarh, M.P.
*Mahila Ashram, Wardha.
*Hindi Prachar Samiti, Akola.

DELHI

*Jamia Millia Islamia, Delhi

PUNJAB

Gaumi Vidyapith (Former of Lahore)

MADRAS

Tamil Sanghan, Mathurai,.
Kalakshetra Centre for Arts and Crafts, Madras.
National University, Adyar, (now defunct)
*Brahmavidya Ashram, Adyar, Madras.

ORISSA

Nil.

RAJASTHAN

*Banasthali Vidyapith, Jaipur.

UTTAR PRADESH

Kashi Vidyapith, Banaras.
Gurukul Kangri, Haridwar, District Saharanpur.
Rishi Kula, Haridwar, District Saharanpur.
Gurukul Vishwavidyalaya, Brinda Van, Mathura.
Hindi Sahitya Sammelan, Allahabad.
*Prayag Mahila Vidya Pith, Allahabad.
*Prem Mahavidyalaya, Brindavan, Mathura.
*All India Vidyut Sammelan, Aligarh(Aligarh)

WEST BENGAL

*Visva Bharati, Santiniketan.
*Kalikata Vidyapith, Calcutta.
*National Council of Education, Calcutta.

*The names of Institutions star marked in the list have not been received through the state Governments.

A

Pt of (D) L.MS.255 F.Edn 3/2/50

3C (3) 3

Education (F)

Education - National Institutions - Recognition of degrees or diplomas given by such institutions

Sec L Pub (Sc) Dpt of Education 3.8.50

No. 24296/50. PP31-32, P41 + Pt 45 of (15)

From the DPI Roc 1971 E4/49, dt- 10.11.49, 1971-E4/49, dt- 6/12/49 & 1971 E4/49 dt- 18.1.50.

L.MS.255 F.Edn 3/2/50

From the G. of India, Ministry of Education, No. F. 37-4/50-D3, dt- 17/8/50

P1 of

Memo 24296 F/5 1 Edn 28/9/50

A copy of the letter from the G. of India, Ministry of Education cited above, together with its enclosure is forwarded to the DPI and he is requested to furnish

a PP 1 & 2 of

furnish the ~~[illegible]~~ information called for by the G-of India, at a very early date.

VPS 23/8/50
DM 23/8/50

Ms 26-8-50

2. Despatched with enclosure 28/8/50
The DPI (with enclosure copy of pp. 1-2 ante).

Note

Public (Ser) may see ~~before~~ after issue.

VPS 23/8/50
DM 23/8/50

Ms 26850

Public (Ser) Department.

May be perused and returned to Edn.

Ms 2.9.00

Edn

EDUCATION DEPARTMENT
SECRETARIAT
26699
5 SEP 1950

ASSISTANT SECRETARY TO GOVERNMENT
3861
29 AUG 1950
CHIEF SECRETARIAT
Pub (Ser-A)
U.O.No. 3861/50-1
2.9.50.

Public (Ser) ✓ ✓ Issued — PPI-2 ante

Edn (P)
D No 24296F/50-1
29/8/50

NR 1/9

Please see Public (Ser) under ref P2 ante. The DPI's reply to the memo on pp 1-2 ante may be awaited till 15/9/50.

VPS 5/9/50
DM 5/9/50

Ms 6/9/50.

3

Edn (F)

Education - National Institutions
Recognition of degrees or diplomas given by such institutions

Memo 24296-F/50-1 Edn dt- 19/9/50

The attention of the DPI is invited to Memo No. 24296-F/50-1 Edn, dt- 28/8/50 on the above subject and he is requested to send a reply thereto ~~before 25/8/50~~ by 25th Sept. as the report has to be sent by the Govt of India ~~before 1st Oct.~~ by 1st Oct. positively.

16/9/50.

DY 16/9/50

Sd/- 19/9/50

PP 3-4 of

To The DPI.

Sd/- 19/9/50

Education (F)

Education -National institutions - Recognition of degrees or diplomas given by such institutions.

C.No.24296/50.

Memo.No. 24296-F/50-4 Edn., dated 25/9/50.

The attention of the D.P.I. is invited to Govt.Memo. No.24296-F/50-1 Edn., dated 28.8.50 and the reminder thereon dated 19.9.50 and he is requested to send his reply thereto ~~by special messenger, so as to reach the Govt. by the evening of the 26th Septr.1950.~~ by a special messenger.

To The D.P.I.

10

No.F.37-4/50-S.3.
Government of India,
Ministry of Education,

New Delhi 2, the 21st September, 1950.

From

S. Verma Esquire,
Under Secretary to the Government of India.

To

All State Governments Parts A, B & C.

SUBJECT: NATIONAL INSTITUTIONS - RECOGNITION OF DEGREES OR DIPLOMAS GIVEN BY SUCH INSTITUTIONS.

Sir,

In continuation of this Ministry's letter No.F.37-4/50-S.3, dated the 17th August, 1950, I am directed to forward herewith a copy of the Press Note issued by this Ministry on the subject noted above for information.

2. It will be appreciated if you will be good enough to expedite the submission of the information asked for in this Ministry letter of 17th August, 1950 so as to reach this Ministry by the Ist October, 1950.

Yours faithfully,
K. Sankaran

ASSISTANT SECRETARY
23 SEP 1950
EDUCATION DEPARTMENT
29305

12

- 2 -

No.F.37-4/50-...3.

Copy with a copy of the Press Note forwarded to the Secretary, Inter University Board (10 Cavalry Lines, Delhi), for information.

Copy with a copy of the Press Note forwarded to the Ministry of Home Affairs for information and communication to the Union Public Service Commission.

Copy with, a copy of the Press Note, forwarded to all other Ministries of the Government of India (including Cabinet Secretariat and Department of Scentific Research) for information.

By Order,
K. Sankaran
for Under Secretary.

Gharbir. 20.9.50.

13

8c

(8)

COPY

(MINISTRY OF EDUCATION)

A number of private educational institutions have represented that, though they did not for various reasons, seek Government recognition in the (part) their standards are in fact equal to those of recognised institutions. In order, therefore, that students holding degrees or diplomas from these private institutions should not be debarred from Govt. service merely because the institutions are not recognised, the Government have set up a committee to examine the standards of degrees and diplomas awarded by these institutions and to recommend how far any of them can be equated with the degrees and diplomas awarded by Universities and Board established by law. Dr. Tara Chand, Secretary, Ministry of Education, will be the Chairman of the Committee, Mr.G.C.Chatterjee, Member, Union Public Service Commission and Mr.Samuel Mathai Secretary, Inter-University Board will be the other members, and Mr. H.S. Verma, Under Secretary, Ministry of Education, will act as Secretary.

The Committee will begin its work by the end of October, All State Governments have been asked to intimate to the Ministry of Education the names and full particulars of such private educational institutions functioning in their respective areas, whose degrees and diplomas may be considered as equal in standard to those of Universities and Board for purposes of recruitment to Central Government services.

********* **********

14

Immediate
Importance 9e

15 (9)

Education (F)

Education - National institutions - Recognition of degrees or diplomas given by such institutions.

C.No.24296/50.

From the Govt.of India, Ministry of Education No.F.37-4/50-D3 dated 21.9.50.

Memo.No.24296-F/50-5 Edn., dated 26/9/50

A copy of a Press Note issued by the Govt.of India, Ministry of Education, on the above subject, received with the letter from the Govt.of India read above is forwarded to the D.P.I. in continuation of Memo.No. 24296-F/50-1 Edn., dated 28.8.50. He is requested to send his reply to the Govt.memo.by a special messenger not later than 28/9/50

To
The D.P.I.
(with enclosure).

25.9.50.

P11 cf

P13 cf

P11 cf

PP3-4 cf

copy P13 cf

No.F.37-4/50-D.3.
Government of India,
Ministry of Education,

New Delhi 2, the 21 September, 1950.

ASSISTANT SECRETARY
27 SEP 1950
EDUCATION DEPARTMENT
29609

From

H.S. Verma Esquire,
Under Secretary to the Government of India.

To

All State Governments Parts A, B & C.

SUBJECT: NATIONAL INSTITUTIONS - RECOGNITION OF DEGREES OR DIPLOMAS GIVEN BY SUCH INSTITUTIONS.

Sir,

In continuation of this Ministry's letter No.F.37-4/50-D.3, dated the 17th August, 1950, I am directed to forward herewith a copy of the Press Note issued by this Ministry on the subject noted above for information.

2. It will be appreciated if you will be good enough to expedite the submission of the information asked for in this Ministry letter of 17th August, 1950 so as to reach this Ministry by the Ist October, 1950.

Yours faithfully,
K. Sankaran
for Under Secretary.

p.t.o.

18

No.F.37-4/50-..3.

Copy with a copy of the Press Note forwarded Secretary, Inter University Board (10 Cavalry Lines, D for information.

Copy with a copy of the Press Note forwarded Ministry of Home Affairs for information and communica the Union Public Service Commission.

Copy with, a copy of the Press Note, forwarde other Ministries of the Government of India (including Secretariat and Department of Scentific Research) for information.

By Order,

(K. Sank

for Under Secreta

Gharbir. 20.9.50.

19 (11)

11c

Annexes p 13 ante

COPY

(MINISTRY OF EDUCATION)

A number of private educational institutions have represented that, though they did not for various reasons, seek Government recognition in the part their standards are in fact equal to those of recognised institutions. In order, therefore, that students holding degrees or diplomas from these private institutions should not be debarred from Govt. service merely because the institutions are not recognised, the Government have set up a committee to examine the standards of degrees and diplomas awarded by these institutions and to recommend how far any of them can be equated with the degrees and diplomas awarded by Universities and Board established by law. Dr. Tara Chand, Secretary, Ministry of Education, will be the Chairman of the Committee, Mr.G.C.Chatterjee, Member, Union Public Service Commission and Mr.Samuel Mathai Secretary, Inter-University Board will be the other members, and Mr. H.S. Verma, Under Secretary, Ministry of Education, will act as Secretary.

The Committee will begin its work by the end of October, All State Governments have been asked to intimate to the Ministry of Education the names and full particulars of such private educational institutions functioning in their respective areas, whose degrees and diplomas may be considered as equal in standard to those of Universities and Board for purposes of recruitment to Central Government services.

********* **********

20

Education Department.

From

The Director of Public Instruction,
Madras.

To

The Secretary to Government,
Education Department, Madras.

ASSISTANT SECRETARY
27 SEP 1950
29615
EDUCATION DEPARTMENT

Rc.2079 E4/50 dated 25-9-1950.

Sir,

Education - National Institutions - Diplomas or degrees issued - Recognition by the State.

Ref: Govt. Memo No.24296 F/50-3 Edn., dated 19-9-1950.

The matter has been referred to the Subordinate Officers concerned and no reply has yet been received from any of them. An express reminder inviting their personal attention to the subject has been issued yesterday (21-9-50). Immediately on receipt of their replies, the report to Government will be submitted.

Yours faithfully,

for Director of Public Instruction.

KHR.25.9.

22

nothing

23

Education (F)

Lr.Ref.No. 24296/F.50-6 Edn.,dated 28/9/50

To

The Under Secretary to the Govt.of India,
Ministry of Education, New Delhi.

Sir,

Sub:- Education - National Institutions - Recognition of degrees or diplomas given by such institutio

Ref:- Your letter No.F.37-4/50-D.3 dated 17.8.50 and No.F.37-4/50-D.3 dated 21.9.50.

I am directed to state that matter is under correspondence with the subordinate officers and that report as soon as a reply is received from them, a reply will be sent to the Government of India, ~~by the 15th of October, 1950~~.

Yours faithfully,

PUBLIC RECORDS OFFICE
28 SEP 1950
29785
EDUCATION DEPARTMENT

From

Education Department.

The Director of Public Instruction,
Madras

To

The Secretary to the Government of Madras,
Education Department, Fort St.George, Madras

R.C.No. 2079-E4/50 dated 26th September, 1950.

Sir,

EDUCATION--National Institutions--Diplomas or Degrees Issued--Recognition by the State.

Reference:-Government Memo.No.24296-F/50-4 Edn.,dated 25.9.50.

As already reported in my letter R.C.No.2079-E4/50 dated 25.9.1950, no reply has yet been received from the subordinate officers concerned. An express reminder inviting their personal attention to this matter was issued on 21.9.1950. The Officers are again reminded to submit their replies urgently. The particulars required by Government will be submitted immediately on receipt of their reports.

Yours faithfully,

For Director of Public Instruction.

ks.26.9.

26)

Education Department.

27
77 (13)

From

The Director of Public Instruction,
Madras.

To

The Secretary to Government,
Education Department.

ASSTT SECRETARY
29 SEP 1950
30040
EDUCATION DEPARTMENT

Rc.No.2079 E4/50 dated 28-9-1950.

Sir,

Sub: Education - National Institutions - Recognition of degrees or diplomas given by such institutions.

Ref;- Government Memo. No.242968/50-5 Edn., dated 26-9-50.

I have the honour to state that no educational Institution of the type referred to in the Press Communique issued by the Government of India Ministry of Education is now functioning in this State.

Yours faithfully,

for Director of Public Instruction.

F. 29

Madras Institute of Technology

TELEGRAMS: "MIT"
TELEPHONE : 80793.
REF. 6848

ASSISTANT SECRETARY
8 OSEP 1950
30208
EDUCATION DEPARTMENT

CHROMEPET P. O., CHINGLEPUT DT.
MADRAS-(SOUTH INDIA)

28th September, 1950.

To

The Secretary,
Education Department,
Secretariat,
Fort St. George,
MADRAS.

Sir,

A Press Note of the Government of India, dated 16th September, 1950 says that the Government of India has appointed a Committee composed of Dr.Tarachand (Chairman), Mr.G.C.Chatterjee, Mr.P.M. Samuel Mathai and Mr.H.S.Varma, to examine the standards of degrees and diplomas awarded by private Institutions, that it begins its work on the 9th October 1950 and that the State Governments have been asked to intimate to the Ministry of Education, Government of India, the names and full particulars of private Institutions functioning in the State areas, whose degrees and diplomas may be considered for recognition as equal to the standard of the Universities.

We have furnished already (though not in connection with this Committee's work) all the particulars and details of the Courses in this Institute. However, we herewith enclose the particulars for being forwarded to the Committee at Delhi.

Yours faithfully,

SECRETARY.

ms.

Encl.

Madras Institute of Technology

TELEGRAMS: "M.I.T."
TELEPHONE : 80793.

CHROMEPET P. O., CHINGLEPUT DT.
MADRAS-(SOUTH INDIA)

REF.

28th September, 1950.

Particulars and details of the Courses of Study in this Institute.

1. Students of this Institute are selected after written and oral examinations by a Committee of Examiners. Selections are made from out of applicants, all of whom possess a University degree qualification in Mathematics, Physics and Chemistry, from recognised Universities all over India. Applicants were invited from all over India by advertisement in the Dailies of Delhi, Bombay, Calcutta and Madras.

2. The Courses are 4 in number, i.e. (1) Aeronautics, (2) Automobile (3) Electronics and (4) Instrument Technology. The Basic Year Course covers General Engineering, Civil, Mechanical and Electrical Engineering with applied Mathematics, Physics, Chemistry and Drawing. The specialised courses start in the Second Year. In the First Year Course for 1950-51 there are 94 students and in the Second Year Course there are 74 students, as stated below:-

In Aeronautics	...	24,
" Automobiles	...	24,
" Electronics	...	19 and
In Instrument Technology	...	7.

The present members of the staff with their qualifications are as set out in the enclosure.

3. The Courses of Study have been settled by a Board of Studies, after consultation with prominent members constituting the technical advisory panel for each course. A list of the members of the Boards of Study and of the Technical Advisory Board are also set out in the enclosure.

4. Detailed Courses of study formulated and acted upon are also furnished in the enclosure (Syllabus copies six enclosed).

5. The Council of Management is composed of 3 members nominated by the Madras State Government, viz. (1) Mr.R.Venkatachari, Chief Engineer, P.W.D., (2) Mr.G.Sundaram, Chief Engineer, Electricity

(Contd...

and (3) the Director of Public Instruction, and 9 other members.

A list of members of the Committee is also enclosed.

SECRETARY.

ms.

Madras Institute of Technology

TELEGRAMS: "MIT"
TELEPHONE:

CHROMEPET P. O., CHINGLEPUT DT.
MADRAS - (SOUTH INDIA)

REF.

28th September, 1950.

(Enclosure to letter of date).

MEMBERS OF THE TECHNICAL ADVISORY PANEL.

1. Sir K.S.Krishnan, F.R.S., Director, National Physical Laboratory, New Delhi.

2. Diwan Bahadur L.Venkatakrishna Iyer, B.A.,B.E.,I.S.E., Chief Engineer, P.W.D.,(Retd.) 40, Edward Elliot's Road, Mylapore, Madras.

3. Dr.K.Venkataraman, M.A., D.Sc., F.R.I.E., F.A.Sc., Director, Dept. of Chemical Technology, Bombay University, Matunga, Bombay.

4. Dr.S.R.U. Savur, D.Sc., Director of Public Instruction (Retd.) Madras.

5. Sri G. Sundaram, M.A.,M.I.E.E., Chief Engineer to the Govt. of Madras (Electricity), Madras.

6. Rao Bahadur Lt.Col.S. Paul, B.E., Principal, College of Engineering, Guindy.

7. Sri V.V.L. Rao, B.E., D.I.C. (Lond), S.M.I.R.E., (New York), General Manager, Radio & Electricals, Ltd., Mount Road, Madras.

8. Dr.A. Narasinga Rao, M.A., D.Sc.,F.A.Sc., Professor of Mathematics, Andhra University, Waltair.

9. Dr.M.A. Govinda Rao, M.A., D.Sc.,F.A.Sc. Director, Alagappa College of Technology, Guindy.

10. Dr.S.V. Ananthakrishnan, M.A., Ph.D., Professor of Chemistry, Madras Christian College, Tambaram.

11. Mr.T.J. Mirchandani, M.A., B.Sc.,(Ind), M.I.E.E., Bombay Electric Grid, Bombay.

12. Sri T.S. Krishna, Sundaram Motors Ltd., Madras.

13. Prof.B.R.N. Ayyangar, College of Engineering, Bangalore.

14. Wing Commander U.K. Nair, R.I.A.F., Tambaram.

15. Sri M. Karuven, B.A.,M.I.E.E., M.I.E., The Tata Hydro-Electric Power Supply Coy., Bombay.

16. L.B. Arguimbau, Esq., B.Sc., (Harward University), Dept. of Electrical Engineering, Massachusetts Institute of Technology, Cambridge 39, Mass. U.S.A.,

17. A.Luebke Esq., Oberingenieur, Damm-Chaussee 13(3a) Bad Dobe GERMANY.

18. Sri C.V. Joga Rao, B.Sc.,(Eng.) M.S.(Stan), Ae.E.(Cal. Mech. Asst. Professor of Aeronautical Engineering, Institute of Science, Bangalore.

19. Rao Bahadur M.K. Ranganathan, B.A.,B.E., M.I.Mech. E. Assoc. I.E.E., Princpal, Madras Institute of Technology, Chromepet, Madras.

MS.28.9.

MADRAS INSTITUTE OF TECHNOLOGY,CHROMEPET

Board of Studies for Electronics.

1. Mr.L.B. Arguimbau, Associate Professor, Department of Electrical Engineering, Massachusetts, Institute of Technology, Cambridge 39, Massachusetts, U.S.A.

2. Mr.K. Srinivasan, B.Sc., A.I.I.Sc., M.I.E.E., M.A.I.E.E., S.M. I.R.E. F.A., Professor of Telecommunications, Indian Institute of - Science, Bangalore.

3. Mr.S.P. Chakravarti, M.Sc., M.Sc.(Lond.), D.I.C., M.I.E.E., S.M.I.R.E., Principal, College of Engineering, Jubbulpore.

4. Mr.B.V. Baliga, B.A., A.M.I.R.E., Chief Engineer, All India - Radio, New Delhi.

5. Mr.S.V. Chandrasekhar Aiya, S.M.I.R.E., A.M.I.E.E., Professor of Telecommunications, College of Engineering, Poona.

6. Dr.M.B. Sarwate, B.Sc., Ph.D.(L'pool), M.I.R.E., Director of Communications, Civil Aviation Directorate, New Delhi.

7. Mr.S.R. Kantebet, F.I.R.E., M.I.E., (I), General Manager, Overseas Communications Service, Radio House, Apollo Bunder, Bombay.

8. Mr.S.S. Moorthy Rao, B.E., F.I.A.Sc., c/o Directorate General of Posts & Telegraphs, New Delhi.

9. Mr.V.V.L. Rao B.E., D.I.C.(Lond), S.M.I.R.E.,(N.Y), Dip.M.S.W.C (Chelmsford), General Manager, Radio & Electricals Ltd., Madras-2.

10. Mr.S.R. Ramakrishnan, B.A.,M.S.(M.I.T.), C/o Mr.V.Rama Krishna, I.C.S.(Retd.) 'Sunder Mahal', Peter's Road, Madras,6.

11. Mr.H. Joga Rao, B.Sc.(Hons.) M.I.R.E. Radio Engineer, Provincial Broadcasting, Kilpauk, P.O., Madras.

12. Lt.Col.M.K. Rao, I.E.M.E., M.A., B.Sc. (Lond), A.C.G.I., A.M.I. E.E., M.I.R.E., 93, Grand Parade Road, Agra Cantt.

13. Permanent Professor of Electronics, Madras Institute of Technology.

Board of Studies for Automobile Engineering.

1. Dr.H.A. Havemann, Professor of Internal Combustion Engines, Indian Institute of Science, Bangalore.

2. Rao Bahadur Lt.Col.S.Paul, B.E., Principal, College of Engineering, Guindy.

3. Mr.A. Viswanath, M.Sc.Eng.(Lond.), A.C.G.I., D.I.C., M.I.E., Principal, A.H. College of Engineering, Coimbatore.

4. Mr.B. Sengupta, B.Sc.,(Eng), A.M.I.Mech.E., Head of the Department of Mechanical Engineering, V.J.T. Institute, Matunga, Bombay-19.

5. The Chief Engineer, Ashok Motors, Ennore.

6. The Chief Engineer, Union Co.,(Motors) Ltd., Mount Road,Madras

7. The Chief Engineer, Hindustan Motors, Bombay.

8. The Technical Director, General Motors India, Ltd., Bombay-1.

9. Mr.Bhattacharya, B.Sc.,(Eng.), Deputy Director of Technical Training, Directorate General of Resettlement & Employment, New Delhi.

10. Mr.G.D. Naidu, M.I.S.E., Coimbatore.

11. Mr.K. Achuthan Nair, B.E., Instructor in Mechanical Engineering A.H. College of Technology, Coimbatore.

12. Mr.T.S. Krishna, Messrs. Sundaram Motors, Ltd., Mount Road, Madras.

13. Professor of Automobile Engineering, M.I.T.,

Board of Studies for Instrument Technology.

1. Dr.I. Ramakrishna Rao, M.A., Ph.D., D.Sc.(Lond.), F.I.P., Andra Scientific Co., Masulipatam.

2. Mr.A.V.V. Krishna Rao, B.Sc.,(Hons.), Standard Scientific Instruments Co., Brodies Road, Mylapore, Madras.

3. Mr.S. Nagabushanam, Principal, Instrument Mechanics Training Centre, Government of India, Bazlullah Road, Madras-17.

4. Mr.S.N. Roy, B.Sc. (Sheffield), Director of Training (Tech. & Vocational), Dept. of Labour, Govt. of India, Directorate General of Resettlement & Employment, New Delhi.

5. Mr.A.V. Srinivasan, The Central Scientific Supplies Co.,Ltd. Agaram Road, Tambaram.

6. Professor in charge of Instrument Technology, M.I.T.,

Board of Studies for Aeronautics.

1. Dr.O.G. Tietjens, Ph.D.(Gottingen), Head of Department of Aeronautics, Indian Institute of Science, Bangalore.

2. Dr.V.M. Ghatage, Ph.D. (Gottingen), Chief Designer, Hindustan Aircraft, Bangalore.

3. Dr.P. Neelakantan, D.Sc.(Madras), M.S.(Cal. Tech.), Deputy Director of Civil Aviation, New Delhi.

4. Mr.C.V. Joga Rao, B.Sc.(Eng.) M.S.(Stan), Ac.E. (Cal.Tech), Asst. Professor of Aero-Structures,Indian Institute of Science, Bangalore.

5. Mr.Bhore, B.Sc.(Eng.), c/o Air India International Ltd., Bombay

6. Professor of Aeronautics, M.I.T.,

---

ms.28.9.

Madras Institute of Technology

CHROMEPET P. O., CHINGLEPUT DT.
MADRAS - (South India)

TELEGRAMS: "MIT"
TELEPHONE:

REF.

28th September, 1950.

LIST OF STAFF.

PRINCIPAL.

Rao Bahadur Mr.M.K.Ranganatham, B.A.B.E.,M.I.Mech.E., Ass.I.E.E., Retd.Chief Engineer,P.W.D.,

VISITING PROFESSORS.

Mr.V.Subramaniam, B.E.,A.M.I.C.E.,A.M.I.Struc.E., Structural Engineer.

Mr.P.S.Subramaniam, B.E., - Theory of Structures.

Dr.P.S.Srinivasan, M.A., D.Sc., Asso.Prof. of Physics, Madras Christian College, Tambaram - For Physics.

Dr.S.V.Ananthakrishnan, M.A.Ph.D., Professor of Chemistry, Madras Christian College, Tambaram - For Chemistry.

ASSOCIATE PROFESSORS.

Mr.K.B.Krishna Rao, B.A.B.E., M.I.E.(Ind.), late of the Indian Institute of Science, Bangalore - For Mechanical Engineering.

Mr.Richard Filipowsky, D.S.,M.S.,(Straatsprufung), Lately Chief Engineer, Radio Marconi, Lisbon - For Electronics.

ASSISTANT PROFESSOR.

Mr.S.R.Venkateswara Iyer, Executive Engineer, P.W.D., (Retd.) - For Civil Engineering.

LECTURERS.

Mr.M.V.Rama Rao, B.E.,D.I.I.Sc., - For Aeronautics & Automobile Engg.

" S.Krishnan, B.Sc.,(Hons.), M.Ac.E.(New York), M.I.Ac.S (U.S.A.) - For Aeronautics.

" J.K.Murthi, M.A., A.M.I.R.E., Asst. Engineer, Provincial Broadcasting System - Electronics

" P.V.V.S. Sastry, B.Sc.,(Hons.), D.I.I.Sc., - Electronics

" K.G.Torgal, M.Sc., M.S (Tech) (Sheffield - For Instrument Technology.

" R.Tiruvikraman, M.A., - Mathematics.

" S.Raghavachari, M.A., M.Sc., - Physics.

" R.Venkataraman, M.A., M.Sc., - Chemistry and Deputy Warden.

" T.K.Srinivasa Iyer, Asst. Engineer, P.W.D., (Retd.) - For Civil Engineering.

" M.Krishnamurthy Rao - Civil Engineering.

" S.R.V. Iyer, B.Sc.(Eng.) A.M.I.E., M.I.S.E., M.M.E.A., - Mechanical Engineering.

" K.Madhavan Kutty - Electrical Engineering.

ENGINEER.

Mr.P.H.Tharanee, A.C.,(London), A.C.X.(India) - Aero-Auto Course.

WORKSHOP SUPERINTENDENT. - Mr.E.J. Denetto.

Madras Institute of Technology

TELEGRAMS: "MIT"
TELEPHONE: 80793

CHROMEPET P. O., CHINGLEPUT DT.
MADRAS - (SOUTH INDIA)

REF .....

28th September, 1950.

Dist of Members of the Council of Management.

PRESIDENT: His Excellency Dr.S.Radhakrishnan, Ambassador with Soviet Russia.

SECRETARY: Shri M. Subbaraya Iyer, Advocate, Madras.

TREASURER: Shri C.R. Ramaswamy, Director, The India Co.,Ltd., Madras.

MEMBERS:

Dr.C.P. Ramaswami Iyer,
Shri T.R. Venkatarama Sastriar, Advocate, Madras.
Shri C. Rajam, Donor-Founder, M.I.T., Madras
Shri K. Srinivasan, Editor The "HINDU", Madras.
Shri L. Venkatakrishna Iyer, Chief Engineer, P.W.D.,(Retd.)
Shri A.R. Venkatachari, Chief Engineer, P.W.D., Madras.
Shri G. Sundaram, Chief Engineer, Electricity, Madras.
Shri S.S. Vasan, Editor, "Ananda Vikatan", Madras.
Shri M.K. Ranganathan, Principal, The Madras Institute of Technology, Chromepet P.O.,

* * * *

ms.

42

Education (F)

43

Education - National institutions - Recognition of the degrees or diplomas given by such institutions.

C.No.24296/50.

From the D.P.I.Rc.No.2079-E4/50 dated 28.9.50.
From the Secretary, the Madras Institute of Technology, Ref.No.6848 dated 28/29-9-1950.

MEMO.NO. 24296F/50-7 EDN. DATED 3/10/50

The D.P.I. is requested to state whether the names of any of the institutions mentioned in the list furnished by the Govt.of India with their letter ~~Mxx8Xx~~ No.F-37-4/50-D3 dated 17.8.50 which was communicated with ~~wix~~ the Govt.Memo.No.24296-F/50-1 Edn., dated 28.8.1950 has to be deleted.

2. With reference to the Govt.of India's Press ~~Communique~~ Note on the subject, the Secretary of the Madras Institute of Technology has forwarded a copy of the particulars of the courses of study at the Institute, etc. and the relevant pamphlets in that regard and has requested the Govt. to forward ~~to~~ them to the Govt.of India, ~~for the purpose of recognising the degrees and diplomas of the Institute~~. The D.P.I. is requested to state whether the name of the Madras Institute of Technology/ ~~should~~ may not also be forwarded to the Govt.of India in this connection.

3. The D.P.I. is requested to treat this reference as special and send a reply by the 10th of October, 1950.

To
The D.P.I.

Urgent

C. F. 804.—9,193 bks.—28-11-47.

OFFICE OF THE F

Date 5th Oct 1950 194 .

Hours 11 Minutes 50

TELEPHONIC MESSAGE.

From The D.P.I

To The Secy to Govt Edn. Deptt

T M no: 2079 E 4/50 dt 4-10-50

Sub:- Edn National Institution Degrees of Diplomas issued Recognition by the state

Ref:- Govt Memo no: 24296 F/50-7 Edn dt 3-10-50.

No information is available here re Technical School(s) The detail contained in the pamphlet from

Please write on both sides.

2

The Secretary, Madras Institute of Technology and
sepressed to in the Govt Memo are not made
available for consideration. This being a school of
Technology the Director of Industries and Comm
would be in a positi
to make suitable
recomendation. A reply
to Govt of India Lr,
will be submitted shortly

fjB
5-10-50

Sec'n 15/10/50

Sfl

CNO. 24296/50 F
PP 45-46 cf

129 cf
+
M 31-41 cf
+ ⊗

47 (28) EDw (F)

Education - National Institutions. Degrees and diplomas given by such institutions - Recognition

From the DPI FM No. 2077 E 4/50
dt - 4/10/50
Memo 24296 F/50 - Sendl - 6/10/50

A copy of the letter from the Secretary, Madras Institute of Technology, Chromepet, No. 6848 dt 28/29.9.50 together with its enclosures, on the above subject is forwarded to the DPI for reference and return. The Public Institutions Director is requested to ~~consult the Director of Industries~~ Commerce

PC

sent his final report in
the matter, before the 10th
October 1950, to Govt in consultation
with the Director of Industries &
Commerce, if necessary.

5.10.50.

To
Secretariat with
enclosure—
Copy of pp. 29 f,
and pages
31—41 f in
orgl and seven
printed pamphlets
to be returned.

6/10

EDUCATION DEPARTMENT.

6 OCT 1950
30998

From

The Director of Public Instruction,
Madras.

To

The Secretary to Government,
Education Department, M A D R A S.

Sir,

RC.2079 E4/50 dated 4-10-1950.

Sub:-Education-National Institutions-Recognition of degrees and diplomas granted by such institutions.

Ref:-(1) Government Memo.No.24296 F/50-1 Education dated 28-8-50.
(2) Government Memo.No.24296(2)/50-5 Education dated 26-9-50.
(3) My letter Rc.2079 E4/50 dated 28-9-50.

In continuation of my letter quoted above, I submit below the details about the MATHURAI TAMIL SANGAM which is now functioning:-

1. The Sangam provides for a course of study of the Tamil language only, with a view to promote the standard of that language.

2. (a) Students appearing for the S.S.L.C. or Intermediate or the degree examination of a recognised University may also appear for an examination conducted by the Sangan without special coaching. The text-books ~~on~~ are the same as prescribed for the respective examinations by the authority concerned. Successful candidates are awarded certificates of merit of the respective grade. Other than students are not admitted to these examinations.

(b) The Sangam also holds special examinations which are of 3 grades. They are "Pravesa" "Bala Panditha" and "Panditha" examinations. Certificates of merit are awarded to successful candidates. All are eligible to appear for these examinations whether students or not.

The examination procedure and the conditions for the award of these certificates of merit are given in detail in the printed leaf-lets furnished by the Sangam and enclosed.

3. Persons who have passed the Pandits examination held by the Sangam are entertained as Pandits in recognised schools. For confirmation in service they should successfully undergo a course of training in the Sri.Meenakshi Oriental Training College, Chidambaram or in the Annamalai University.

4. The Institution (it is understood) is not in receipt of any financial help from the State..

5. Six copies in each of the prospectus etc and ~~our~~ one speci Copy of each of the Certificates of merit and a copy of the letter from the Hony. Secretary of the Sangam are enclosed.

Yours faithfully,

For Director of Public Instruction.

Pjn 4/00.

Copy of letter dated 1st September 1949 from the Honourary

(29)

...ugus
...er, Mat...

Your kind communication referred to above a... to the Manager, Tamil Sangam, Mathurai was received in the Sangam office last evening and I am furnishing the following particulars.

1. The Madura Tamil Sangam is a literary institution of an academic type. It has been registered under the "Literary and Scientific Societies Act". Its object is the advancement of the Tamil language and literature which is sought to be attained by a course of instruction in Tamil in the Kalasala of the Sangam. I am enclosing printed copy of the particulars of Sangam examinations in (1) Pravesa, (2) Balapanditha, and (3) Panditha courses from which will appear the curricula of studies and the get up of the students studying in the Kalasala.

2. Degrees and diplomas awarded:-The examinations are open to students of the Sangam Kalasala and outsiders. The Sangam issues certificate of merit to candidates who pass in each of the above-said three examinations. To those who pass with distinction medals and prizes are awarded for which please refer to the printed curricula, page 2 bottom.

To encourage better study of Tamil by students of the High Schools and colleges, three examinations are conducted mainly from the text-books prescribed for the S.S.L.C. Intermediate and B.A. examinations and certificates of merit are issued to candidates who pass the examinations.

3. How far the degrees and diplomas are recognised etc.— The certificates of merit issued to the students of High schools and colleges are understood to be recognised as vouching for the proficiency of the candidates in Tamil for Government service.

Under the Madras Educational Rules, those who pass the Sangam Pandit examination are qualified to be employed as pandits in educational institutions. Only an additional qualification was required, viz. they had to undergo training in a course therefor in the Annamalai University. Our pandits went through that training. It is understood that that course has been abolished. The Sangam pandits employed in schools and colleges have earned the good appreciation of their employer and the Inspecting staff as able pandits and efficient teachers.

4. Nature of financial or other assistance, etc.-So far the Sangam has had no financial or other assistance rendered by the Provincial Government. It has relied and continues to reply only on the patrons of Tamil language and literature.

5. The Sangam conducts a monthly journal (Sentamil) printed and published by its own press and devoted solely to literary and research work in Tamil language and literature and of which volume 45 is nearing completion.

6. The Sangam maintains a well-equipped library and free "Reading-Room" with a large number of dailies, weeklies and other periodicals. The Mathurai Municipality was giving some contributions to the library for some years which was since discontinued;.

P.T.O.

7.

282 53 (22)

7. The sangam has published several valuable works as separate publications and also in continued series through the journal "Sentamil". A printed list of those publications under both the heads is also enclosed for information. (F)

Sd. N.R. ØKrishnaswami.
Honorary Secretary.

/True Copy/

D. Pancamalie
5/10

For Director of Public Instruction.

Same as pp 45 46 ante

E

POST COPY OF TELEPHONIC MESSAGE.

2955

T.M.No.2079 E4/50.

Office of the
Director of Public Instruction,
Madras Dated 5-10-1950.

From

The Director of Public Instruction,
M a d r a s.

31366

To

The Secretary to Government,
Education Department, M a d r a s.

ASSISTANT SECRETARY
8 OCT 1950
EDUCATION DEPARTMENT

Sub:- Education-National Institutions-Degrees and diplomas issued-Recognision by the state.

P43 ante Ref:- Government Memorandum No.24296 F/50-7 Education dated 3-10-1950

No information is available here regarding Technical schools. The details contained in the pamphlets from the Secretary Madras Institute of Technology and referred to in the Government Memorandum are not made available for consideration. This being a school of Technology, theDirector of Industries and Commerce would be in a position to make suitable recommendations.

P1 ante A reply to Government of India's letter will be submitted shortly.

D. O. Para 2 Enclosure
7/10

For Director of Public Instruction.

G.M. 6-10.

Ans 6.10.50

Education Department.

From

The Director of Public Instruction,
Madras.

To

The Secretary to Government,
Education Department,
Madras.

ASSISTANT SECRETARY
1 OCT 1950
3163
EDUCATION DEPARTMENT

Rc.2079 E4/50 dated 6-10-1950.

Sir,

Education - National Institutions - Recognition of degrees and diplomas granted by such institutions

Ref: (1) Govt. Memo No.24296 F/50-1 Edn., dated 28-8-1950.

(2) Government Memo No.24298/50-5 Edn., dated 26-9-50.

(3) My letters Rc.2079 E4/50 dated 28-9-1950 and 4-10-50.

In continuation of my letters quoted above, I submit herewith a copy of letter L.Dis.No.564 C1/50 dated 3-10-1950 from the District Educational Officer, Madras, and offer the following remarks:--

(1) The names of the 3 institutions mentioned in the letter of the District Educational Officer, Madras referred to above may be deleted from the list of institutions furnished by the Government of India with their letter Ref.No.F.37-4/50-D-3(Ministry of Education) dated 17-8-1950 for the reasons assigned against each.

(a) Brahma Vidya Ashram, Adyar. -
Now defunct - had been working for spiritual welfare - never awarded any degree or diploma.

(b) National University, Adyar.-
Defunct since 1918 - revived at Madanapalle (Chittoor Dt.) and ceased to exist from 1925 - Holders of degrees and diplomas awarded by the institution are suitably employed and now too old to have any change.

(c) Kalakshetra Centre, Adyar.-
Recognised by the Madras State and also aided by the Central Government.

(2) From the above, it may be seen that out of the four institutions referred to by the Government of India the names of the three institutions mentioned above have to be deleted from the list and that the only institution remaining is the Mathurai Tamil Sangam, about which particulars have already been submitted with my letter Rc.2079 E4/50 dated 4-10-50.

(3) There is no other educational institution in this State to be added to the list [illegible] by the Government of India.

9.10.

Copy of letter from the District Educational Officer, Madr to the Director of Public Instruction, Madras No.L.Dis.564 C1/5 dated 3rd October 1950.

Sub: Education - National Institutions - Recognition of degrees and diplomas.

Ref: Rc.No.2079 E4/50 dated 12-9-1950 and 29-9-1950.

I submit hereunder brief information regarding the Kalakshetra (2) The National University, Adyar and (3) The Brahmavidya Ashram, Adyar, as could be ascertained now.

(1) Brahmavidya Ashram: This organisation never awarded any degree or diploma. It was a Society wherein members were trained in spiritual practice and philosophy and service to Society. It had trained in former days a number of self-less workers without any aid from Government etc. Though it does not exist now as in the past, yet some of its members who are scattered about the country continue to do service to Society to the best of their ability details of which can be had from Dr. Cousins, Theosophical Society, Adyar.

(2) The National University: This University is defunct since 1918 and the work was continued for some years upto 1925 by the National College, Madanapalle. It had awarded degrees in Arts and Sciences and also a degree in teaching (B.T.). It is more than quarter of a century since it closed down. It is stated that most of the graduates therefrom are suitably employed and have passed the age for changing employment. Details about the courses of studies etc. may be had from the Review of the Society for the Propagation of National Education available with the Theosophical Society Library, Adyar, Madras.

(3) The Kalakshetra, Adyar: This is an organisation devoted mainly for the recognition and propagation of arts, music and dance which are so vital to individual and national truth. A copy of the memorandum of the Association and its rules etc. on the courses of studies offered have been obtained and herewith submitted. Being perhaps of only one of its kind in the whole of India, the Govt.of India was pleased to recognise it by the payment of a grant of Rs.5,000/- during 1948 and another sum of Rs.2,500/- in 1949. The institution which has been spending nearly Rs.25,000/- every year for over 16 years now has asked the Government of India for a grant of at least Rs.20,000/-. The Government of Madras has given a grant of Rs.10,000/- to the Kalakshetra during 1950. There are at present 81 pupils receiving instruction in the Kalakshetra. Srimathi Rukmani Devi is the Head of the organisation. A liberal grant from the both the Central and State Governments will, it is said, help a great deal to the further growth of this well established and accredited institution. The institution is recognised by the State Government and is under the control of the Inspectress of Schools, Madras.

(True Co

ctor of Public Instruction.

59

Education (F) 31

DIATE. ✓
C. to issue.
WD/RK 10.10.50

31C

T.M. with xpxc

From

The Asst.Secy.to Govt.,Edn.Deptt.,Madras.

To

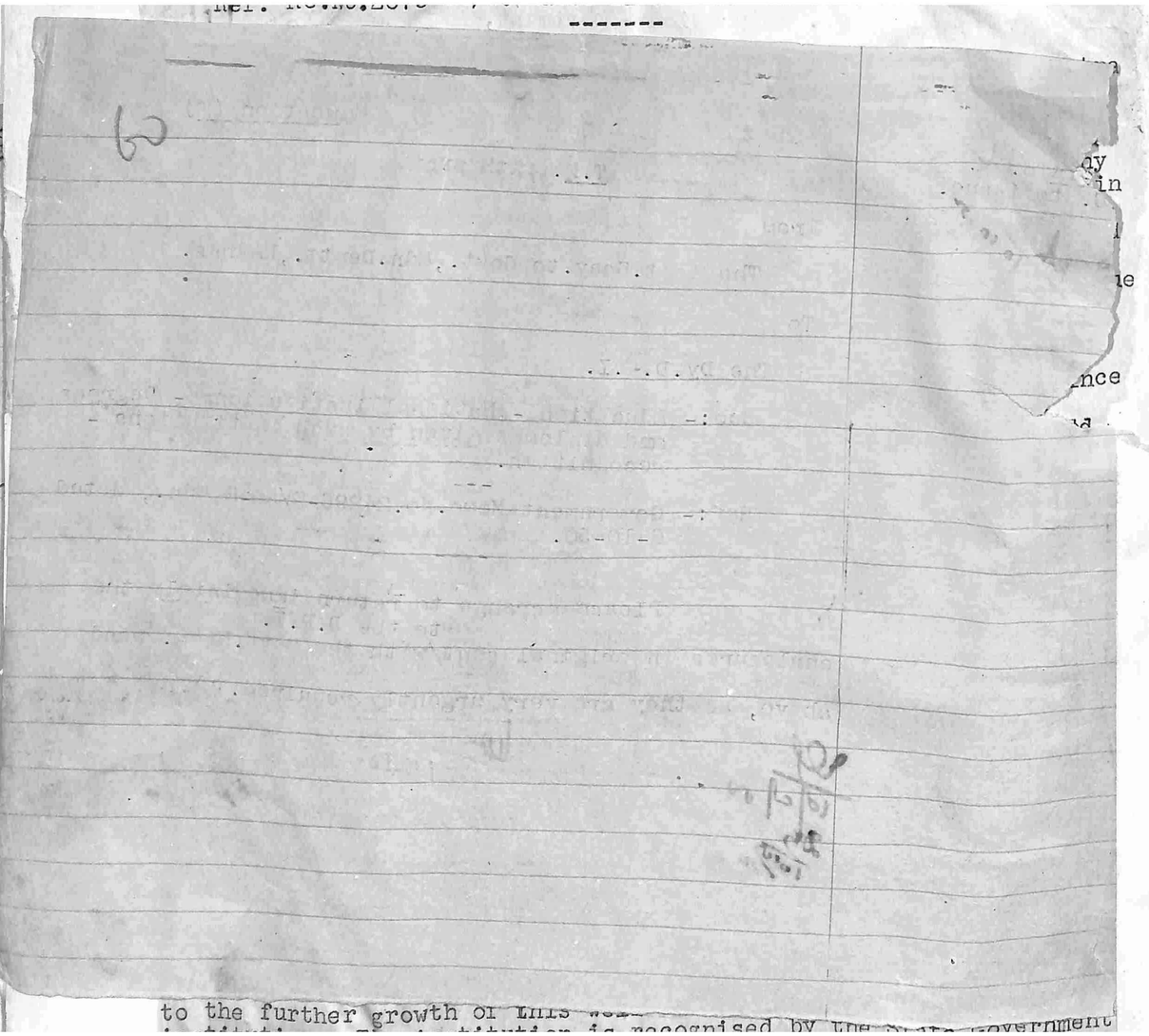
The Dy.D.P.I.

Sub:- Education - National institutions - Degrees amd diplomas given by such institutions - recoghition.

Ref:- Government Memo.No.24296-F/50-8 Edn., dated 6-10-50.

Please arrange to return immediately the to the D.P.I. enclosures in original sent/with the Govt.Memo. read above, as they are very urgently required.

16/10/50.



to the further growth of this ...

F. EDUCATION DEPARTMENT.

61

From

The Director of Public Instruction,
Madras.

To

The Secretary to Government,
Education Department, Madras.

Rc.No.2079 E4/50 dated 13-10-1950.

RESTRICTED CIRCULATION
11 OCT 1950
3190
EDUCATION DEPARTMENT

Sir,

Education - National Institutions - Recognition of degrees and diplomas granted by such institutions.

Ref: Government Memo No.24296 F/50-8 Edn., dated 6-10-1950.

In submitting herewith a copy of letter Rc.No.50 B/50 dated 12th October 1950 of the Principal, Engineering College, Guindy and No. 6910 dated 10-10-1950 from the Principal, Madras Institute of Technology, Chrompet, the following remarks are offered.

(1) The Institute was established on 17-7-1949 and therefore does not come under the purview of Government of India's letter Ref.No.F.37-4/50-D3 dated 17-8-1950.

(2) There is every possibility of the courses of study and the diploma or certificate (to be issued for the first time in 1952) being recognized by the University of Madras. When the University recognizes the Institute, it automatically gains recognition by Government as per rule 8 of the Madras Educational Rules.

(3) The Government seem to have already recognized the Institute in a way by the grant of five lakhs of rupees towards equipment.

(4) The question of recognition of diplomas or certificates that may be issued for the first time to the first batch of students

P.t.

62

who would complete the course and leave the institution in may be deferred for the present and taken up some time after diplomas are actually issued.

2. The enclosures received with the Government memo quo above are resubmitted herewith.

3. The printed pamphlets &c mentioned in para (e) of letter dated 10-10-1950 of the Principal, Madras Institute of Technology are also enclosed herewith.

Yours faithfully,

J. Pantamalai
13/10

for Director of Public Instruction.

KHR.13.10.

PP 63-64 unfr

at the end of file

Copy of letter Rc.50 B/50 dated 12-10-1950 from the Principal, College of Engineering, Guindy to the Director of Public Instruction, Madras.

Ref: Proceedings Rc.No.2079-E4/50 dated 9-10-1950.

(33)

With reference to the proceedings cited above I have to state that on receipt of the same I immediately contacted the Principal, Madras Institute of Technology, by telephone and asked him to furnish the particulars called for from A to E. A reply from the Principal was received on the same night and I am submitting the same in original.

PP 63-64 unfr

From time to time at the instance of the Director of Public Institution, I have visited the Madras Institute of Technology along with the Director of Public Instruction and later on with the Chief Engineer, Public Works Department (General), and have submitted reports about the syllabus, courses of study, building and equipment--please see my report dated 28-8-1949 on the Madras Institute of Technology, my letter Rc.No.27-B1/50, dated 31st January, 1950 and also my letter Rc.No.50-B/50 dated 10th March 1950, along with enclosures. Subsequent to the above reports the Government have sanctioned a sum of Rs.5/- lakhs towards the purchase of equipment for the Institute in G.O.No.951, dated 2nd March 1950. From the Principal's letter, now sent, paragraph D, it would be seen that the first batch of students would be completing their courses only in 1952. It is submitted that unless a special board is appointed to interview the candidates after they have completed their courses it would be impossible to assess the standard of the students turned out from this Institution. It is also doubtful whether it would be possible to assess the standard of the students even at this stage as the degree of attainment acquired by students undergoing a prescribed course in an institution can only be judged after they have completed their course and have been employed in Government departments or private agencies and the manner in which they acquit themselves in the discharge of their duties. In as much as the first batch of students will only complete their course in 1952 it looks very premature to examine this question now. I, therefore, suggest that the Board of Visitors of the College of Engineering, Guindy, may be requested to interview the candidates in 1952 after they pass out and give their opinion about the recognition of the certificates issued by the Institute.

PP 131 to 152/A

PP 181-182/A

P64 unfr

From a perusal of the letter from the Principal it would be seen in paragraph B that the management of the Institute had approached the Vice Chancellor and he had stated that the question of affiliation would be taken up after the Institute develops. Although the Principal has stated in paragraph C that the standard of attainment would be equivalent to that required for foreign university degrees specialising in these branches yet it is very desirable to actually see the standard attained by these students at the completion of their course.

Under the circumstances it is submitted that the question of recognition of the certificates issued by the Madras Institute of Technology may be deferred for the present.

The letter and its enclosures are re-submitted.

Copy of letter Ref.No.6910 dated 10th October 1950 from the Principal, Madras Institute of Technology, Madras to the Principal, College of Engineering, Guindy.

With reference to your telephonic message of date, the information required is given below:--

p.t.o.

64

: 2 :

(a) Date of Establishment of the Institute: The Institute started functioning from 17th July 1949, when it was inaugurated by the Chief Minister to the Government of Madras. This Institute has been registered under the Societies Registration Act on 17th May 1947, after which the steel hangars were purchased from the Government through the Government of Madras and possession was handed over by the Government of Madras in September 1948. Thereafter we adopted the existing buildings and hangars for the use of the Institute and it started functioning on the 17th July 1949, as stated above.

(b) Prior to our starting the Courses, the Secretary of our Institute had a talk with the Vice-Chancellor of the University of Madras in regard to affiliation. The Vice-Chancellor said that the University has not these courses, but as we develop he will see that these courses are introduced into the University and we can then come under the University.

(c) The standard of attainment is equivalent to that required for a foreign University Degree specialising in these particular courses.

(d) Our Courses have been designed for a period of three years, the training in our Institute being confined only to Graduates in Sciences and Mathematics. The question of granting degrees and diplomas arises at the close of the third year i.e. in 1952.

(e) Our Institute and its courses have had the scrutiny of the Departments of the Government of India. The detailed courses of study now acted upon in the teaching and in practical training were settled by a Board of Studies, after consultation with prominent members who constitute the Technical Advisory Panel for each course. A list of the members of the Boards of Study and of the Technical Advisory Panel is herewith enclosed. The syllabus and quality of instruction given were closely scrutinised recently by the Chief Engineers for Electricity and Public Works at the instance of the Government. A copy of the Syllabus is also enclosed herein for your information.

(True Copies)

S. Ramakrishna
13/10

for Director of Public Instruction.

65 Education (F) (34)

Special

Lr.Ref.No. 24296 F/50-10 Edn., dated 14.10.50

To 34C ✓

The Secretary,
The Madras Institute of Technology,
Chromepet P.O., Chingleput Dt.

Sir,

Sub:- Education - National Institutions - Recognition of the degrees and diplomas given by such institutions.

Ref:- Your letter No.6848 dated 28/29-9-50.

I am to request you to furnish very urgently for transmission to the Govt.of India six additional copies in each of the pamphlets relating to the Madras Institute of Technology, sent with your letter quoted above.

Yours faithfully,

14/10/50

14.10.50.

...to our starting the Courses, the Secretary of our Institut... of Madras in...

66

12

Madras Institute of Technology

F 67 35 3-e

IN THE SERVICE OF INDIA

TELEGRAMS: "MIT"
TELEPHONE: 80793

REF. 6986

ASSISTANT SECRETARY 16 OCT 1950 EDUCATION DEPARTMENT

CHROMEPET P. O., CHINGLEPUT DT.
MADRAS - (SOUTH INDIA)

16th October, 1950.

To

Special.

The Secretary to Government,
Education Department,
Fort St. George,
MADRAS.

Sir,

Ref:- Your No.24296-F/50-10, Edn. dated 14-10-1950.

I am sending herewith by special messenger six additional copies of prospectus, syllabuses etc., of the Madras Institute of Technology, as desired by you.

Thanking you,

Yours faithfully,

(M.K.Ranganathan),
PRINCIPAL.

ms.

Encls.

Education (F)

Lr.Ms .No. ~~2453/50-1~~ 2853 Edn.,dated 16/x/50.

To

The Secretary to the Govt.of India,
Ministry of Education,
New Delhi(with enclosure).

Sir,

Sub:-Education- National Institutions - Recognition of the degrees or diplomas given by such institutions.

Ref:-Govt.of India, Ministry of Education,letters Nos. F.37-4/50-D3 dated 17.8.50 and F.37-4/50-D3 dated 21.9.50.

I am to state that out of the four institutions mentioned in the list attached to the letter from the Govt.of India first read above, the names of the Brahma Vidya Ashram, Adyar Centre,Madras, National University,Adyar,Madras, and the Kalakshetra Centre for Arts and Crafts,Madras, may be deleted from the list for the following reasons:--

Brahma Vidya Ashram,Adyar - This institution is now defunct. It had been working for spiritual welfare and never awarded any degrees or diplomas.

National University - This institution is also now defunct. The holders of degrees and diplomas awarded by the institution are suitably employed and they are now too old to ~~change~~ desire any new employment.

Kalakshetra Centre for Arts and Crafts,Madras - This institution has been recognised by the State and the Union Governments and is in receipt of state aid.

I am to request that ~~the name of the Mathurai Tamil Sangham alone may be retained in the list referred to above and~~ the names of the three institutions referred to above be omitted and that the Mathurai Tamil Sangam may alone be retained. Particulars relating to the Mathurai Tamil Sangham are furnished. ~~An~~ English translations of the pamphlets ~~will be~~ obtained from separately relating to this institution ~~shortly~~. A pass in the Pandits' Course of the Sangham is an

an approved qualification for Tamil Pandits in the recognised schools in this State, though for confirmation in the posts the holders of the qualification should undergo a separate training.

2. In this connection, I am to state that the Madras Institute of Technology - an institution which was started at Chromepet, last year - has been offering courses in technological studies, the admission being restricted to graduates in Science of the Universities. ~~I am to state that this~~ The institution has been recognised by the State Government ~~and they are already~~ who have sanctioned a grant of Rs. 5 lakhs to it for the purchase of equipment required by it. Particulars relating to this institution are contained in the pamphlets sent herewith. The question of recognising the diplomas of this Institute has not so far arisen as the institution has been recently started and dimplomas are yet to be awarded.

Yours faithfully,

12.10.50.

Copy to the D.P.I.

Copy to the Secretary, Madras Institute Technology, Chromepet.

2 spare copies.

Education (F)

Education - National Institutions - Recognition of the degrees and diplomas given by such institutions.

From the D.P.I. R.C.No.2079-E4/50 dated 4-10-1950.

MEMO.NO. 24296F/50-EDN. DATED 24/10/50

C.No.24296/F/50.

The D.P.I. is requested very urgently to furnish Govt./with six copies of/the English translation of each of the printed pamphlets relating to the Prospectus and Certificates of Merit of the Mathurai Tamil Sangham, sent with his letter quoted above for transmission to the Govt. of India.

17.10.50

To The D.P.I.

15/10/50.

F. 73 (38)

EDUCATION DEPARTMENT

From

The Director of Public Instruction,

Madras

To

The Secretary to Government,

Education Department, Madras

ASSISTANT SECRETARY
35693
18 NOV 1950
EDUCATION DEPARTMENT

Rc. 2709.E.4/50 dated 11.11.1950

Sir,

Sub: Education - National Institutions - Recognition of degrees and diplomas granted by them.

Ref: Government Memo. No. 24296.F/50-10 Edn. dated 24.10.1950

I submit herewith six copies of the English translation of each of the printed pamphlets relating to the Mathurai Tamil Sangam Examinations.

Yours faithfully,

13/11

for Director of Public Instruction

GRD. 11.11.

74

Education (F)

Lr.Ref.No. 2429 F/50-II Edn., dated 16/11/50

To

The Secretary to the Govt.of India,
Ministry of Education,
New Delhi (with enclosure).- six copies of the translation of the pamphlets kept below.

Sir,

Sub:- Education - National Institutions - Recognition of the degrees or diplomas given by such institutions.

In continuation of this Government's letter Ms.No.2853 Edn., dated 16-10-50 on the above subject, I am directed to enclose herewith six copies of the translation of the pamphlets relating to the Mathurai Tamil Sangham.

Yours faithfully,

ASSISTANT SECRETARY
33186
20 OCT 1950
EDUCATION DEPARTMENT

No.F.37-4/50.D.3.
Government of India,
Ministry of Education.

New Delhi, the 25th October, 1950.

M.S.Verma, Esq.,
Under Secretary to the Government of India.

To

The Secretary,
Government of Madras,
Education Department, MADRAS.

SUBJECT: NATIONAL INSTITUTIONS - RECOGNITION OF DEGREES AND DIPLOMAS GIVEN BY SUCH INSTITUTIONS.

Sir

In continuation of this Ministry letter No. F.37-4/50.D.3. dated the 21st September, 1950 on the subject mentioned above I am directed to request that if the State Government have no objection the following information may be furnished to this Ministry in respect of private Educational Institutions whose degrees and diplomas could be equated with the degrees and diplomas of recognised Universities and Boards recognised by law for transmission to the Committee appointed by Government for the purpose:-

(i) Date of establishment of the Institution.

(ii) Date on which the State Government recognised the degrees and diplomas awarded by these institutions and particulars of such degrees and diplomas and the recognition given by the State Government (i.e. equivalence).

(iii) Full information in respect of the staff employed in the institutions, namely their academic career, &c. (5 copies)

(iv) Names of the examiners appointed by the Institutions for their examinations, their academic qualifications and addresses (5 copies).

(v) Total number of marks allotted to each paper and percentage of marks required to pass the examinations (indicating that required for each division or class).

(vi) question papers set by the institution for examining candidates for the last two years (5 copies).

(vii) Courses of Study and subjects of each examination (5 copies).

It is requested that the above information may be supplied in respect of Institutions recognised by the State Government and giving Arts and Science degrees and diplomas only. It is not necessary at this stage to furnish information in respect of institutions giving degrees and diplomas in Technical Subjects, Music or Medicine, or institutions which are now defunct or are situated beyond the territorial jurisdiction of India i.e. Bharat.

It will be greatly appreciated if the information asked for is furnished by the 15th November, 1950.

Yours faithfully,

M.S.Verma

(M.S.Verma)
Under Secretary.

41C 8 79 (4)

Education (F)

Education - National institutions - Recognition of the degrees and diplomas given by such institutions

Further particulars called for.

C.No.33186/50-F.

Read:- Letter Ms.No.2853 Edn., dated 16.10.50.
From the Govt.of India, Ministry of Education,
No.F.37-4/50.D3 dated 25-10-50.

MEMO.NO. 33186 F/50-1 EDN.DATED 27/10/50.

A copy of the Govt.of India's letter read above is forwarded to the D.P.I., and he is requested therein to furnish the information called for ~~by~~ on ~~in~~ by the 10th Nov.1950, for transmission to the Govt.of India.

27.10.50.

To

The D.P.I.(with encl copy of p.l c.f.)

SPECIAL.

Education (F)

Education - National Institutions - Recognition of the degrees and diplomas given by such institutions - Further particulars called for.

C.No.33186/50-F.

MEMO.NO. 33186F/50-2 EDN., dated 14/11/50

The attention of the D.P.I. is invited to Memo.No.33186-F/50-1 Edn., dated 27.10.50 on the above subject, and he is requested to send his reply thereo very urgently, so as to reach this office not later than the 20th instant.

To
The D.P.I.

Education (F)

Lr.Ref.No. 33188F/50-3 Edn., dated 14/11/50

To

The Secretary to the Govt.of India,
Ministry of Education, New Delhi.

Sir,

Sub:- Education - National Institutions - recognition of the degrees and diplomas awarded by such institutions - further particulars.

Ref:- Your letter No.F.37-f/50.D3 dated 25-10-50.

The information required by the Govt.of India is being obtained from the D.P.I, Madras and that as soon as a report is received from him, a reply will be sent to the Govt. of India, not later than 30-11-1950.

Yours faithfully,

14.11.50

From

Education Department.

The Director of Public Instruction,
Madras.

To

The Secretary to Government,
Education Department, Madras.

Rc.No. 2079 E4/50 dated: 13--11--1950.

Sub: Education--National Institutions--Recognition of degrees and diplomas granted by them.
Ref: Government Memo No. 33186 F/50-1 education dated 27-x-50.

.....

I submit herewith six copies of the letter dated 7--11--1950 of the Honorary Secretary, Mathurai Tamil sangam, Mathurai and also the enclosures received therewith.

Yours faithfully,

for Director of Public Instruction.

C.R.13/11.

By Registered Post.

#87 (45)

Education (F)

Letter/Ref.No. 33186-F/50-4 Edn., dated 27/11/50

To

The Secretary to the Government of India,
Ministry of Education,
New Delhi.(with enclosure)

Sir,

Sub:- Education -National institutions - recognition of the degrees and diplomas awarded by such institutions - Further information - furnished.

Ref:- Govt.of India,Ministry of Education,Letter No. F.37-4/50.D.3 dated 25-10-1950.

In continuation of my letter Ms.No.2853 Edn., dated 16.10.50,I am directed to enclose six copies of a letter from the Honorary Secretary, Mathurai Tamil Sangham,Mathurai, dated 7.11.1950 furnishing the information required by theGovt.of India in their letter read above, together with printed copies of the syllabuses and the examination question papers set for the students for their examinations, etc.

Yours faithfully,

Copy to the D.P.I.

Despatched
28/11/50.

F.

No.F.37-4/50-D.3
Government of India.
Ministry of Education.

New Delhi, the 22nd November 1950.

From

H.S.Verma Esq.,
Under Secretary to the Government of India.

To

The Secretary to the Government of Madras,
Education Department,
Madras.

Subject:- National Institutions - Recognition of Degrees and Diplomas of such Institutions.

Sir,

I am directed to invite your attention to this Ministry's letter No.F.37-4/50-D.3, dated the 25th Oct. 1950, on the subject mentioned above, and to request that the information asked for therein may kindly be furnished to this Ministry at a very early date.

Yours faithfully,

H.S.Verma
Under Secretary.

ASSISTANT SECRETARY
24 NOV 1950
32457
EDUCATION DEPARTMENT

91

No.F.37-4/50-D.3.
Government of India,
Ministry of Education,

New Delhi 2, the 23rd Dec.,1950.

From

H.S. Verma Esquire,
Under Secretary to the Government of India.

To

The Secretary to the Govt. of Madras,
Education Department,
MADRAS.

ASSISTANT SEC... EDUCATION DEPARTMENT
26 DEC 1950

SUBJECT: NATIONAL INSTITUTIONS- RECOGNITION OF THEIR DEGREES AND DIPLOMAS.

Sir,

I am directed to invite your attention to this Ministry's letter No.F.37-4/50-D.3, dated the 25th October, 1950, and subsequent reminders of even numbers dated the 22nd November,1950 and 7th December,1950, respectively and to state that the information asked for therein has not been received from the State Government.

2. The question of recognition of degrees of private educational Institutions has from time to time been raised in the Press and in the legislature. The Government of India are anxious that this question should be settled early. For this purpose they have appointed a Committee but this Committee cannot proceed to examine the merits of the various institions until full information in respect of those institions is made available to the Committee.

3. It is therefore requested that if the State Government have no objection the necessary information may kindly be supplied to this Ministry ad early as possible or by the 15th January,1951, at the latest.

Yours faithfully,

(H.S. VERMA)
UNDER SECRETARY.

Ghambir. 23.

92

93

Education (F)

Letter/Ref.No.41-19-F/50-1 Edn., dated 2/11/51

To

The Under Secretary to the Govt.of India,
Ministry of Education, New Delhi.

Sir,

Sub:- Education - National Institutions -
Recognition of their degrees and diplomas
Further information.

Ref:-/Your Letter ~~from the Under Secretary to the Govt.of India, Ministry of Education, New Delhi,~~ No.F.37-4/50-D.3 dated 23.12.50.

I am directed to state that ~~the~~ a reply to ~~Govt.of~~ the letter from the Govt.of India, Ministry of Education, No.F.37-4/50-D.3 dated 25-10-1950 ~~was~~ together with the information called for therein was sent ~~to the Under Secretary to the Govt.of India, Ministry of Education, New Delhi~~ in this Dept. Letter Ref.No.33186-F/50-4 Edn., dated 27.11.50.

Yours faithfully,

30/12/50.

Education (F)

Education - National institutions - recognition of degree ~~and~~ or diplomas given by such institutions.

C.No.24296/50. From the Govt.of India, Ministry of Education, New Delhi, No.F.37-4/50-D.3, dated 17.8.50.

(Issued as Memo. No.24296-F/50-1 Edn., dated 28.8.50.)

C.No.29305/50. From the Govt.of India, Ministry of Education, New Delhi, No.F.37-4/50-D.3 dated 21.9.50.

(Issued as memo.No.24296-F/50-5 Edn., dated 26-9-50.)

Please see the letters from the Govt.of India, on p.p.1&11-12 c.f., and the ~~se~~ enclosures on p.p.2 and 13 c.f The Govt.of India are considering the question of recognition for purposes of employment under Government of the degrees and diplomas of the various National institutions established in India before the 15th of August 1947, ~~xxxxxx~~ and have consitituted a Committee for the purpose of examining the standards of degrees and diplomas of these institutions and recommending to Govt.how far any of those degrees etc. can be equated ~~xkx~~ with the degrees and diplomas of the Universities and Boards established by law. ~~The~~ Dr. ~~Thara~~ Tara Chand, Secretary, Ministry of Education is the Chairman and Mr.G.C.Chatterjee, Member, Union Public Service Commission and Mr.Samuel Mathai, Secretary, Inter-University, are members, Board, and Mr.H.S.Varma, Under Secretary, Ministry of Education is the Secretary of the Committee. The Committee will begin its work by the end of October 1950.

2. ~~For this purpose,~~ The Govt.of India have now ~~called~~ furnished a list of such national institutions, on the basis of the information previously furnished by the State Government. The list regarding this State is at 'A' on p.2 c.f. The Govt.of India have now called for ~~an amended~~ a revised up-to-date list of such institutions, ~~furnishing~~ with ~~also~~ information on the following points:--

1. Brief details about the courses of study and subjects taught.

2. Examination procedure and the degree and diplomas awarded.

3. How far the degrees and diplomas are recognised by the

the State Govt.for purposes of employment in Govt.service, and by Indian Universities established by law for the time being in force for entry into their courses of study, and

4.Nature of financial or other assistance rendered by the State Govt.to the institution.

The Govt.of India also want six copies of each of the latest prospectuses, including courses of study and syllabus and all other relevant information on the subject. They ~~Govt.of India~~ have called for a reply by the 1st October, 1950.

3.The ~~remarksxxfxkkx~~ D.P.I.has been requested to furnish the particulars required by the Govt.of India, ~~xkxx~~ and he has been reminded thrice. He states that the matter is under correspondence with the subordinate officers and that as soon as their replies are ~~xxx~~ received, he will send a report to Govt.on the subject. In view of the D.P.I's reply above and in view of the fact that elaborate details may have to be furnished on the subject, it is for orders whether an interim reply may be sent to the Govt.of India ~~requesting time till 15.10.50 for sending this Government's reply~~. Subject to orders,the draft letter below is for approval.

28.9.50

[Issued as Lr. Rej No. 24296F/50-6 Edn, dt- 28/9/50]
CNo. 29785/50. From the DPI. RCNo. 2079-E4/50, dt- 26/9/50.
Please see the DPI's letter on p. 25 c.f.
His final report may be awaited
hee 10/10/50.

29.9.50

C.No.30040/50. From the D.P.I.Rc.No.2079-E4/50 dated 28.9.50.
C.No.30208/50. From the Secretary, Madras Institute of Technology, Chromepet,No.6848 dated 28/29-9-50.

Please see the letter from the D.P.I. on p.27 c.f. and the letter from the Secretary,Madras Institute of Technology on p.29 c.f. The D.P.I. in his present letter states that no educational institutions of the type referred to in the Govt.of India's Press Communique at p.13 c.f is now functioning in the State at present. Submitted that the Press Communique does not supersede the Govt.of India's letter on p.1 c.f. The proposal before the Govt.of India is the question of recognition for purposes of employment under the Govt. the degrees and diplomas of the national institutions established in the country before the 15th August 1947 which imparted and have been imparting education ~~learning~~ in India. The Press Communique ~~is~~ issued only explains ~~implementation of~~ the Govt.of India's proposal in the above letter. In his letter dated 26.9.50, the D.P.I. stated that he has called for the reports of the subordinate officers and that on their receipt he will furnish a reply to the Govt.memo.on p.p.3-4 in which the Govt.of India's letter on p.1 c.f was communicated. It is not known how ~~how~~ the position has changed ~~xxx~~ now and how the D.P.I. in his letter dated 28.9.50 states that there are no ~~xxxx~~ educational institutions of the type mentioned in the Press Communique existing at present,in the State. The D.P.I may be informed that the Govt.of India's Press Communique ~~xxxxxx~~ has not been issued in supersession of their letter on p.1 c.f., and ~~thakxxhxxxfxxx~~ that he ~~should may~~ therefore ~~be asked to~~ send his reply to the Govt.memo. on p.p.3-4 c.f. by the 10th ~~xxxxxx~~ of October,1950. Subject to orders, the draft memo.below is for approval.

2. The Secretary of the Madras Institute of Technology has forwarded a copy of the particulars of the ~~xxxxixxxfxxx~~ courses of Study at the Institute and the relevant printed pamphlets in that regard, and requests

requests that they may be forwarded to the Govt.of India with reference to the Press Communique referred to above. Submitted that the proposal of the Govt.of India is ~~in regard to the~~ regarding the recognition of degrees and diplomas of institutions that were in existence before 15.8.47. The Madras Institute of Technology was inaugurated only in July 1949. The ~~degrees and diplomas that may be awarded~~ Madras Institute of Technology does not therefore ~~come within the purview of the~~ present proposal of the Govt.of India, as described in their letter on p.1 c.f. A copy of the Govt.of India's letter may be forwarded to the Secretary of the Institute and he may be informed that the M.I.T. does not ~~come within the purview of the~~ present proposal, as the institution was not in existence prior to ~~August~~ 15th August 1947. Subject to orders, the draft letter below is for approval.

P29 c/f P13 c/f

Pertain marked R on p2 of (T)

See below

WB 31050-

RS 30/9/50. DY 2/10/50

Please see M on p 1 c/f The D.P.I has not stated whether any of the institutions mentioned at p 2 c/f need omission-

The G.of I's Press Note is general in terms and seems to have reference also to institutions which have been recently opened and are now functioning - In this

5 99

Here the D.P.I. may please be asked to state whether the Madras Institute of Technology, Chromepet may not be forwarded to India A draft memo should be put up above-

WB 3.10.50.

A draft memo. to the D.P.I. is submitted for approval.

WB 3/10/50

RS 3/10/50 DY 3/10/50

above WB 3/10/50 P43 c/f PP45-46 c/f

[Memo. No 24296 F50-2 Endt 3/10/50]

From the DPI. TM No 2079 E4/50, dt-4/10/50

A draft memo to the DPI is subt for approval.

RS 5/10/50 DY 5/10/50

WB 5.10.50

PP47-48 c/f C No. 30998/50.

[Issued as Memo 24296 F50/8 Edn dt-6-10-50] From the DPI Rc 2079 E4/50 dt-4/10/50

Please see the letter from the DPI on p49, and its enclosures on pp 49-53 c/f and at (F). The DPI's reply to the memo on p. 43 c/f may be awaited till 10/10/50. ~~Action to be taken at once on pages 45-46 c/f~~

RS 7/10/50 DY 7/10/50

WB 7.1050

WB 7.1050.

C.No.31463/50. P57 c/f

From the D.P.I.Rc.No.2079-E4/50 dated 6-10-50.

Please see the D.P.I.'s letter on p.57 c.f, and its enclosure

enclosure on p.58 c.f. A reply may be sent to the Govt. of India as in the D.P.I.'s letter on p.57 c.f, ~~xxxxxxxxxx~~ The D.P.I. has not furnished his remarks regarding the Madras Institute of Technology. It does not appear necessary to wait for his reply in this matter. The Madras Institute of Technology has been recognised by the Govt. and they have made a grant of Rs. 5 lakhs towards the cost of equipment required by the Institute. The Govt.of India may be informed that the Govt. have considered this institution worthy of a grant of Rs. 5 lakhs and the papers relating to that Institue may also be forwarded to the Govt.of India. Subject to orders, the draft letter below is for approval. May be circulated to H.M.(E.&L) for approval of the draft letter, ~~after~~ ~~perusal by Pub.(Sec)~~. A translation of the pamphlets (prospectus etc) relating to the Mathumai Tamil Sangam will be obtained & forwarded separately.

PP181-182 c/f GO No 95 I&L 2/3/50 (A)

called for from DPI & he rep- P57 c/f

VS 10/Oct/50. 12

Dy 12/10/50

12.10.50.

Hm (Ed.) 13/10

Hm (Ed.) 13/10

action taken separately

CRO 24296F/50

SECRETARY 13 OCT 1950 EDUCATION DEPARTMENT

[Issued as Lr. No. 2853 Edn. dt. 16/10/50]

PP 77-59 c/f

(52)

- Education (F)

Education - National Institutions - Recognition of the degrees and diplomas given by such institutions- Further particulars called for.

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52 c/f

C.No.33186/50-F P1 c/f

From the Govt. of India, Ministry of Education, No.F. 37-4/50.D3 dated 25-10-50.

Govt. of India called for certain particulars relating to the recognition of the degrees and diplomas ~~of~~ awarded by National Institutions in India and this Govt. have already furnished those particulars last. Now the Govt. of India have called for some more information in respect of those institutions, ~~The~~ in their letter c.f. The D.P.I. has been asked to furnish the information now required by the Govt.of India. The Director has not yet furnished the particulars called for. A draft reminder to him is submitted for approval. Presumably he has to gather the particulars from the subordinate officers. It is likely that he may take some time to furnish the information. The Govt. of India want a reply to their letter by the 15th November, 1950. In the circumstances, it is for orders whether an interim reply may be sent to the Govt. of India stating that the information is being ~~collected and~~ obtained from the Head of the ~~Department~~ Department and that as soon as a report is received from ~~the D.P.I.~~ Remi, a final reply reply will be sent to the Govt.of India on the subject. Subject to orders, the draft letter below is for approval.

separate file - submitted

P3 c/f

P1 c/f

RS 13/11/50. Dy 14/11/50

14.11.50 14/11

(Issued as Memo.No.33186-F/50-2 Edn., dated 14.11.50)

(Issued as Letter Ref.No.33186-F/50-3 Edn., dated 14.11.50

From the D.P.I.Rc.No.2079-E4/50 dated 13.11.50.

P5 c/f

17 c/f

.35961/F/50.

19 c/f

Please

Please see the D.P.I.'s letter on p.9 c.f. He has enclosed six copies of a letter from the Honorary Secretary of the Mathurai Tamil Sangam containing the particulars required by the Govt.of India in their letter on p.1 c.f., together with printed copies of syllabuses, courses of studies,question papers etc. The letter from the Honorary Secretary of the Sangam together with its enclosures may be forwarded to the Govt.of India with reference to their letter on p.1 c.f. Subject to orders, the draft letter below is for approval. ~~(Sd.) Illegible~~

25/11/50.

Issued Lr.3318 F/50-4 Edn.(-
27/11/50

2

103

53

MADRAS INSTITUTE OF TECHNOLOGY, CHROMEPET, MADRAS.

Madras Institute of Technology

CHROMEPET P. O., CHINGLEPUT DT.

PROSPECTUS

Aim: It is the aim of the Madras Institute of Technology to train a band of what one can term "Engineer Scientists". Advanced Science and Engineering will be taught together, each complimenting the other, in such a co-ordinated manner as to produce a type of highly qualified technical scientists and engineers who will be completely aware of all theoretical and practical aspects of their subjects and who will be competent to initiate, organise and develop connected industries and to make original and worthwhile contributions of their own thereto.

Location: The Institute is located opposite Chromepet Railway Station on the electrified suburban line between Madras and Tambaram. Chromepet is 14 miles from Madras on the Great Southern Trunk Road. Frequent suburban trains and buses are available to and from Madras.

Courses Offered by the Institute: To begin with, the following courses are offered in the Institute :-

1. Electronics.
2. Instrument Technology.
3. Automobile Engineering
4. Aeronautical Engineering.

Duration of the Courses: Each course offered by the Institute will be of three years' duration.

The first year will be common to all the courses offered by the Institute. The subjects taught during the first basic year will include Mathematics, Physics and Chemistry as applied to Engineering, Applied Machanics, Engineering and Industrial materials, Electrical, Mechanical and Building Technologies, Survey, Engineering drawing, and General Workshops practice.

The second and third years will be devoted to an intensive specialisation in the theory and practice of the different subjects pertaining to the different courses offered by the Institute.

Practical Work: In the Institute itself, the student will be given full facilities for intensive practical training in his subject. In addition, practical training in suitable factories and workshops outside will be arranged for the students during the summer vacation each year. When so arranged, attendance will be compulsory.

Admission: (1) An application for admission should be made in the prescribed form available with the Manager, Madras Institute of Technology and upplied on requisition followed by a fee of **Annas Eight.**

(2) Each application form should be accompanied by a registration fee of **One Rupee.**

(3) A preliminary selection will be made on the basis of merit judged from the information furnished in the Application Form. Selected candidates will be required to take an entrance examination and an aptitude test at the Institute premises. They will be permitted to sit for the examination on payment of rupees **Twenty** only which is to be paid to the Institute at least a week before the commencement of the examination.

(4) The final selection will be made on the results of the entrance tests and personal interview, to assess aptitude. A certificate of Medical fitness, in the form prescribed, will be required before final admission.

The above fees may be remitted to the Manager, Madras Institute of Technology, either by money order or by crossed postal order drawn in favour of the Manager and payable at the G. P. O., Madras.

Selection of candidate for admission to the Institute will thus depend purely on qualifications, aptitude and ability to profit by the highly specialised and advanced courses offered by the Institute.

General: The Institute welcomes students from all parts of India and from all communities.

The Institute reserves the right to cancel any course the registration for which is too small to warrant its being given.

Qualification: A candidate applying for a seat in the Institute should have

(1) taken a degree in Science of the Madras University or of any other University recognised by the Madras University as its equivalent with

(*a*) Physics Main and Mathematics and Chemistry as subsidiaries or

(*b*) Chemistry Main and Mathematics and Physics as subsidiaries

or

(2) taken a higher degree of any University in India by an examination where he should have attained in the three subjects Mathematics, Physics and Chemistry a minimum standard equivalent to at

least the subsidiary standard for the degree course in each of them.

N.B:—(1) A candidate who took the qualifying examination and is awaiting the publication of the result may also apply for the seat and may be permitted to take the entrance examination of the Institute and he is required to intimate the result of the examination within 3 days of its publication or at the latest before 20th June. If he fails to intimate the result before the said date his application will not be further considered.

(2) Under no circumstances will a fee once paid to the Institute be refunded.

Fees: (1) The tuition fee for each Institute year is Rupees 750/- inclusive of medical examination and medical consultation charges. It may be paid in a lumpsum at the beginning of each year

or

in three equal terminal instalments at the rate of Rs. 250/- each term payable within the first five working days of the term

or

in three equal and monthly instalments per term of Rs. 100/- each payable within the first ten working days of each month.

N.B:—The monthly instalment system of payment of fees will not be applicable for the first term of the first year.

(2) *a.* Students who have paid in two instalments of Rs. 250/- each for the first two terms will have to pay Rs. 250/- in one lumpsum or Rs. 300/- in three instalments in the 3rd term

b. Students who have paid Rs. 250/- for one term and Rs. 300/- in instalments for another term

will have to pay Rs. 250/- in one lumpsum or Rs. 300/- in three equal instalments in the 3rd term.

c. Students who have paid Rs. 600/- for the first two terms in monthly instalments will have to pay Rs. 200/- only in two instalments for the thrid term.

(3) The following additional fees are payable on admission and every year thereafter:—

* Admission fee	... Rs.	10	
Athletic entrance fees	... "	5	
Union Membership fee	... "	1	
College Caution money	... "	50	Refundable at the end of the course.
Hostel Caution money	... "	50	
Reading Room	... "	3	
Drawing paper, blank books etc.	... "	30	
Electric Light	... "	25	
Room Rent	... "	60	
Games Fee	... "	10	
Co-operative Society Membership share.	... "	1	
		Rs. 245	

* Payable only on admission in first year.

Late Payment of Fees: All fees are due on the first of each month in advance. Term fees are payable within the five days after the commencement of the term. Instalments are payable within the first 10 days. A fine of one anna per day will be collected for each day of delay beyond the prescribed limit. A student in arrears of fees on the first day of the next month is liable to be expelled thereafter.

The total expenses per year, for each student, including tuition, boarding and lodging, laundry, pocket expenses and other essential expenditure as estimated will be about Rs. 1,500. This figure compares very favourably with the annual total expenditure incurred in foreign post-graduate institutions, offering similar facilities.

Scholarships: No scholarships are available at present. As and when endowments are forthcoming, scholarships will be made available to students on terms and conditions prescribed by donors and accepted by the Council and on merit.

Hostel: It is obligatory on the part of each student to live in the Institute Hostel at Chromepet in so far as accommodation can be provided for, from time to time, as otherwise he cannot avail himself of all the facilities offered by the Institute. There is at present accommodation for 108 students but it will be added to from time to time as necessities arise. The spacious dining room can accomodate 150 students at a time. The food will be exclusively vegetarian and service will be common to all communities without distinction. Each room is designed to take three students and is furnished with a lock-up-desk, almirah, a built-in-bedstead and chair. Other furniture except a deck-chair per student will not be permitted.

Provision will be made for all the usual major games in the Institute grounds, and every student will be expected to avail of these facilities in a full measure so as to develop a healthy body to house a healthy mind.

The hostel will be under the control of the Warden. The Mess will be run by contract for a fixed fee to be settled from time to time

Institute Year:

	From	To	Duration
(1) *I Term*:	3-7-'50	23-9-'50	11 Instruction Weeks 1 Test week
I Mid-Term Holiday:	24-9-'50	8-10-'50	2 weeks.
II Term:	9-10-'50	11-1-'51	11 Instruction Weeks 1 Test week.
II Mid-Term Holiday:	12-1-'51	24-1-'51	2 weeks.
III Term:	25-1-'51	11-5-'51	12 Instruction Weeks 2 Test weeks.
Summer Vacation:	12-5-'51	1-7-'51	7 weeks.

(2) An instruction week will normally consist of five working days. Each working day will consist of 8 instruction hours. Any holiday during an instruction week will be compensated by working on the saturday of the week.

(3) Each normal Institute year will consist of 1,500 assured working hours.

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SYLLABUS

MATHEMATICS

BASIC YEAR COURSE

1. **Elements of Solid Geometry :** Properties of Solids.

2. **Co-ordinate Geometry of Two Dimensions :** Simple Properties of the Straight Line, Circle and Conics (in Cartesian and Polar Co-ordinates) and easy problems thereon.

3. **Co ordinate Geometry of Three Dimensions :** Straight Line, Plane, Sphere, Cone, Conicoids, their plane sections and generating lines, Space Curves and the Helix (to be dealt with briefly).

4. **Differential Calculus :** Differentiation : Simple applications of the derivative to Geometry and Mechanics. Approximations and small errors, Theorems of Mean Value, Maxima and Minima of Functions of one variable, Leibnitz Theorem, Taylor's and Maclaurin's Series. Applications to curvatures, envelopes, evolute and involute. Study of certain special curves like the Cycloid and Catenary. Partial differentiation.

5. **Integral Calculus :** Integration of Rational Functions, Integration by substitution, by partial fractions and by parts, successive reduction, Integration as a process of summation, Definite Integrals, Areas and Lengths of Plane Curves, Volumes and Surfaces of Solids of Revolution, Double and Triple Integrals, Application to Centre of Gravity, Centre of Pressure and Moments of Inertia.

6. **Differential Equations :** Ordinary involving two variables, linear and higher order equations, Ordinary

Differential Equations with more than two variables, Simultaneous Linear Differential Equations. Partial differential equations,

7. **Determinants and Matrices.**

8. **Infinite Series :** Test of Convergence of Series, Power Series, Use of Binomial, exponential and logarithmic Series for approximate evaluation. Newton's method for approximate solutions of Equations.

9. **Vector Analysis :** Addition, Subtraction, Multiplication of Vectors, Differential Operation, Vector Fields, Stoke's Theorem, Green's Theorem, and their applications.

10. Theory and Methods of construction of Nomographic Charts. Theory of Empirical Equations.

SECOND YEAR

1. **Heaviside Operational Calculus :** Introduction, The Fourier Mellin Theorem, The Fundamental Rules, Calculation of Direct Transforms, Calculation of Inverse Transforms, The Modified Integral, Impulsive Functions, Heaviside's Rules, The Transforms of Periodic Functions, Application of the Operational Calculus to the Solution of Partial Differential Equations, Evaluation of Integrals, etc.

2. Cauchy—Riemann Differential Equations, Cauchy's Integral Theorem, Residues, Laurent's series, Conformal Representation : Conjugate Functions, Conformal Representation, Basic Principles of Electrostatics, The Transformation $z = k \cosh w$, General Powers of z, The Transformation $w = \ln \left(\frac{z-a}{z+a} \right)$, Determination of the Required Transformation when the Boundary is expressed in Parametric Form, Schwarz's Transformation, Polygon with one Angle, Successive Transformations, The parallel plate condenser, Flow out of a channel, The effect of a wall on a uniform Field, Application to Hydrodynamics.

3. Fourier Series and Harmonic Analysis, Simple Harmonic Vibrations, Representation of More Complicated Periodic Phenomena Fourier Series, Modulated Vibrations and Beats, The Propagation of Periodic Disturbances in the form of Waves, The Fourier Integral.

4. Beta and Gama Functions, Bessel Functions, Ber, Bei, Ker, & Kei Functions,

5. Probability, Method of least squares, Method of moments and curve fitting.

Text-book Recommended for study : Applied Mathematics for Engineers and Physicists by Pipes—McGraw-Hill.

THIRD YEAR

Combined Mathematics classes for all the Courses in the following two subjects :

1. **Partial Differential Equations :**

Simple types of Partial Differential Equations occurring in Mathematical Physics, Application to Vibration and Heat Conduction Problems. Laplace's Equation in two and three variables, Harmonic Functions, The Fourier Integral and The Fourier Transforms.

2. **Vibration Analysis :**

Kinematics and Differential Equations of Simple Vibratory Motion, Undamped Vibrations, Natural Frequencies, Energy Method, Rayleigh Method, Undamped Forced Vibrations, Vibration Measuring Instruments, Critical Speeds of Shafts, Damped Vibrations of Systems of one and more than one degrees of freedom, Hamilton's principle, Lagrange's Equations, Application of Matrix iteration methods.

Note : In addition, special Lectures in Mathematics will be delivered for each Course suitable to the practical application of each, like Fundamentals of

(i) Theory of Elasticity for Aeronautical Engineering.

(ii) Laplace Transforms for Electronics etc.

Text-books Recommended for study :

1. Webster's Partial Differential Equations.
2. Vibration Problems in Engineering by Timoshenko.
3. Mathematical Methods in Engineering by Karman and Bolt.
4. Theory of Elasticity by Timoshenko—McGraw-Hill.

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PHYSICS

BASIC YEAR COURSE

I. PROPERTIES OF MATTER :

Elasticity and Plasticity—Young's modulus, Rigidity modulus and Bulk modulus—their inter-relationship—determination of elastic moduli—theory of spiral springs.

Kinetic theory of gases—Maxwell distribution function—Root mean square velocity, mean free path—derivation of the laws of perfect gases from Kinetic Theory—Boyle's, Charles', Avagadro's and Dalton's laws—Imperfect gases and Van der Waal's equation—Joule's law.

Elasticity of gases—isothermal and adiabatic.

Surface Tension—Idea of parachor.

Viscosity—Streamline and Turbulent flow—Poiseuelle's formula for flow through a capillary tube with correction for K. E. of the flowing liquid—Laws of solid anf fluid friction—Monomolecular layers—Theory of lubrication and lubricants.

Production and measurement of high and low pressures.

Centrifugal and centripetal forces—Conical Pendulum. Banking of tracks on curves.

Projectiles and their properties—Range on horizontal and inclined planes.

Elementary Hydraulics—Thrust and centre of pressure on an immersed plane area—Equilibrium of floating bodies—Metacentre.

Pressure and Velocity changes along a Streamline—Bernouli's Theorem—Flow through an orifice.

Gyroscopic motion and Gyroscope.

II. HEAT AND THERMODYNAMICS.

High and Low Temperatures—Production and measurement—optical and radiation pyrometers—Resistance and thermo-electric thermometers.

Specific and latent heats—variation of latent heat with temperature—C_p and C_v and their relationship.

Conduction, convection and radiation—determination of the conductivity of good and bad conductors.

Radiation—Laws of emission and absorption—Stefan's law and determination of Stefan's constant—Quantum theory of radiation.

The I law of Thermodynamics—Joule's equivalent—Isothermal, constant pressure, constant volume and adiabatic operations—cyclical processes,

The II law of Thermodynamics—Reversible processes—Carnot's cycle—Reversibility and efficiency—The Kelvin scale of thermometry and its relation to the absolute gas scale.

Applications of the second law to determine changes in melting and boiling points with pressure.

The Otto and Diesel cycles—Expression for work done and ideal efficiency—M.E.P. from P.V. diagrams—I.H.P. and B.H.P. calculations—Gas turbines—Gas jets.

Steam and the Steam Engine—Vapour and gas—Production of steam, saturated and superheated—Pressure and Temperature of saturated steam—specific volume, total heat and internal energy—Steam Tables and their uses—Entropy of steam—T.ϕ. chart and the Mollier chart—Mercury Vapour Engines.

The Rankine cycle.

Air compressors and Refrigerators.

III. LIGHT AND SOUND.

Focal length and magnifying powers of thick lenses and system of lenses—Spherical aberration and chromatic aberration and their correction—Achromatic lenses and prisms.

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Optical instruments—Sextant and Zenith circle—Microscopes and Telescopes—Binoculars, periscope and Range Finder—Projectors (Lantern Slide and moving film).

Study of spectra—colours and colour vision—Three colour printing—Spectrum analysis.

Interference and Diffraction of light—Biprism, Newton's Rings and zone plate.

Interferometry—Fabry-Perot and Michelson.

Grating spectroscopy—Plane and concave—Resolving power.

Polarisation and Double-Refraction—General principles and applications, Photo-elastic phenomena and their engineering applications.

Photometry and illumination—Lummer-Brodhum Flicker and Trotter photometers—Mean spherical candle power—Polar curves.

Vibration of strings, membranes, plates and rods.

Progressive and Stationary waves—Velocity of propagation in solids, liquids and gases.

Reflection and Refraction of sound—Sound ranging and echo sounding—elements of radar.

Reverberations—Absorption of sound—Acoustics of buildings—Sound insulation.

Characteristics of speech and hearing.

IV. ELECTRICITY AND MAGNETISM.

Electrostatics—Electrometers and electrostatic voltmeters.

Dielectrics and their properties—Maxwell's Treatment.

Magnetic properties of iron and steel—Magnetic intensity Flux, magneto-motive force and reluctance—Magnetic alloy and their special uses—M.M.F. in terms of ampere turns—

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Composite magnetic circuit and the calculation of the total ampereturns—Hysteresis and cycles of magnetisation.

Measuring Instruments—construction and action of principal types of ammeters, voltmeters, ohmmeters and wattmeters.

Electromagnetism—Lenz's law and e.m.f. induction—relative motion of field and current—Fleming's Left and Right hand rules—Forces between current and magnetic field and current and current.

Alternating currents—Sine Wave form—Instantaneous value, Mean value and virtual value - vector representation—Phase lag and lead—Power in an A. C. circuit—conception of wattless current—calculation in simple circuits involving resistance, inductance and capacitance—complex notation and its use.

Methods of converting A.C. into D.C,

Thermionics—Diode and its use in rectification—Triode and its characteristics—Vacuum tube voltmeter—Cathode ray oscillograph and some of its more common applications.

Electromagnetic waves—Their properties and propagation—Poynting vector.

V. MODERN PHYSICS.

Structure of Matter—Fundamental particles, their discovery, nature, mass and charge—The Dynamic Vector atom and atomic and molecular spectra.

The Structure of the Nucleus-Radio-activity; natural and induced—Atomic Fission.

Elementary theory of cosmic radiation—Methods of study and their results.

Fundamental concepts of the theory of relativity—Equivalence of mass and energy,

Elementary study of Wave-mechanics.

SECOND YEAR COURSE
FOR ELECTRONICS COURSE ONLY.

1. Electron Ballistics—Equations of motion in combined electric and magnetic fields of electrons and positive ions,

2. Detailed study of self and mutual inductances of coupled circuits at various frequencies and degrees of coupling, both tuned and untuned.

3. Laws of thermionic and photo-electric emission—Maxwell Boltzmann and Fermi-Dirac Statistics.

4. Theory and practice of the compton quadrant electrometer, cathode ray oscillograph and the thyratron.

5. Study of gas and dry rectifiers, vacuum and barrier-layer photo-cells, electrolytic condensers, piezo-electric and magneto-striction oscillators—Ultrasonic waves and their uses.

6. Potential distribution between electrodes in a gas: Theory and characteristics of glow, spark and arc discharges.

Application to rectifiers, grid controlled arc tubes, circuit breakers, lightning arresters etc.

7. Transients and their properties.

8. Propagation of e.m. waves—Ionosphere—Reflection, Refraction and Dispersion.

Aerial and its properties—Polar diagram—Radiation resistance.

9. Quantum theory of the solid state—Motion of electrons in a periodic potential field—Application to the elasticity, electrical conductivity, magnetic and optical properties of solids—The structure of alloys.

10. A more detailed study of Nuclear Physics with special reference to nuclear equilibrium and nuclear fission and the kinetics of the processes.

11. Acoustics of Buildings—Theory of sound insulation—Echoes and reverberations.

12. Spectroscopy of micro-waves.

13. Advanced geometrical optics.

SECOND YEAR COURSE

FOR INSTRUMENT TECHNOLOGY COURSE ONLY

1. Elasticity—Properties of flat and helical spiral springs as control units for instruments—Theory of clocksprings and the Potential energy of wound springs used as driving units for self recording instruments.

Damping devices for dead beat instruments—Temperature effects.

2. Vacuum Technique—Diffusion and Molecular Pumps—Low pressure gauges—Application to X-ray tubes and radio valves.

3. Study of gyroscopic motion with special reference to the gyro-compass.

4. Laws of radiation with special reference to radiation pyrometry. Theory of different types of thermo regulators for thermostats.

5. Physical and physiological Optics—Refraction at spherical surfaces—Thick lenses—Effect of stops on focussing—spherical and chromatic aberration—Resolving power of optical instruments—Interferometry—Testing of optical surfaces, photographic objectives and telephoto lenses.

6. Magnetic properties of different kinds of steel—Retentivity—Design of permanent magnets for instruments.

7. Design of shunt and series resistances for universal metres like the Avometer—Characteristics of rectifiers for instruments.

8. Thermo-electric phenomena and application to thermo-electric pyrometers.

9. Laws of photo-electric emission and design of photo-electric relays.

10. Laws of electrode potential and the design of normal electrodes.

CHEMISTRY

[First Year Course common to all sections. Second Year Course for Automobile Engineering and Aeronautical Engineering only.]

BASIC YEAR COURSE:

Theory

1. Water, sources, impurities and purification.
2. Hydrocarbons, Petroleum fractions, Cracking.
3. Chemistry of the common and rare metals used in Engineering materials.
4. Fatty acids, glycerides; Drying, non-drying and semidrying oils.
5. Phase rule and its applications; Alloys.
6. Ethylene derivatives—Rubber, natural and synthetic —Polymers.
7. Refractories, gypsum, lime, cement, and concrete.
8. Colloids, Surface Chemistry, Lubrication and Lubricants, Wetting and Detergency.
9. Metallic Corrosion.
10. Protective Coatings on metallic surfaces—Paints and Varnishes.
11. Adhesives and Resins.
12. Fibres. Natural and Synthetic.
13. Application of Spectroscopy to Industry.
14. Clay and Clay Products,
15. Protection against toxic gases and vapours—Toxicology.
16. Ferrous Metals—Alloy Steels.

Practical

1. Evaluation of Washing Soda, Caustic Soda and Borax
2. Evaluation of Sodium Chloride and of Barytes.
3. Evaluation of Bleaching Powder.
4. Estimation of Calcium in Limestone.
5. Analysis of bearing alloys, brasses and bronzes.
6. Analysis of Water Samples.
7. Elementary Gas Analysis.
8. Measurement of Hydrogen Ion Concentration.

SECOND YEAR

Theory.

1. Solid, Liquid and Gaseous Fuels.
2. Reaction Kinetics, Combustion, Flame and Explosions. 'Knock'.
3. Thermochemistry—Calorific Value of Fuels.
4. Coal Tar and its products. Ultimate Analysis of Coal.
5. Metallography and its applications.
6. Distillation of Liquid Mixtures.
7. Refrigerents and Refrigeration.
8. Special treatment of metals (annealing, case-hardening, etc.).

Practical.

1. Analysis of ferrous alloys and lightmetal alloys.
2. Calorific value of fuels.
3. Octane and Cetane rating of fuels.
4. Examination of Lubricants.

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INSTRUMENT TECHNOLOGY

(Special Course)

II YEAR

I Principles of Instrument design.

(a) **Standards:** Standards and their maintenance, National Standards Institutions, National Physical Laboratories, Bureau of Standards, Industrial Standards.

(b) **Design Criteria:**

Precision: Degrees of Freedom, Kinematic design. Nonkinematic design, Positive action.

Accuracy: Factors that control accuracy, calculation of the accuracy of an instrument from postulated inaccuracies of its component parts.

Sensitivity: Dangers of high sensitivity.

Delicateness: Disturbances due to extraneous sources.

Robustness: Isolation and protection of accuracy prooving elements.

(c) **Study of typical Instrument Elements:**

Bearings: Varieties, jewel bearings, mountings.

Screw Threads: General methods of production. Errors.

Micrometer movements: Methods of manufacture, maintaining precision in mounting.

Rack and Pinion mountings, slides and sliding ways Divided straight lines and verniers, Divided circles and verniers, Cross hairs and graticules, optical systems, levels and levelling, Suspensions and controlled systems, Damping devices, critical dampings.

Pointer instruments: Balancing, inertia, effect on period.

Recording systems: Maintenance of constant speed, Drawing Mechanisms.

II Materials and Production Methods.

(a) **Materials:** Availability of metals, alloys, magnetic materials, wood, glass, plastics in India and abroad.

Physical properties: Elastic, thermal, electrical and magnetic properties of above.

Chemical properties of above.

(b) Use of jigs, templates, Fixtures etc.

(c) Use of limit gauges, Interchangeable system of manufacture.

(d) Drawing room practice.

(e) Workshop management.

(f) Stock accounting.

III Theory of Instruments. I

(a) Measurement of length, angles, area and volume:

The dividing engines—linear and circular, scales, verniers micrometers, screw gauges, spherometers, micrometer eye-pieces, micrometer microscopes, cathetometers, reading telescopes, surveying instruments, levels, prismatic compass, sextants, planimeters, protractors, clinometers, theodolites, Meridian circle or the transit, glass measuring vessels and their calibration—etching on glass.

(b) **Weight:** Balances and scales of different varieties, their construction, testing and use-weighing machines,

(c) **Time:** The Sundial, Pendulum and the balance wheel, watches and clocks, chronometers, electrical time keepers, time markers and time recorders, time standards, quartz crystal clocks, time signals, atomic clocks.

(d) **General Physical Instruments:** Hydrometers, Viscometers, surface tension meters, gravity meters, Torsion balance, Instruments for elastic properties of meterials, Plasticity measuring devices, water and gas meters, pressure and vacuum gauges, speedometers, revolution counters, calculating machines and comptometers, Hollerith puncher, verifier, sorter and tabulator.

(e) **Thermometry:** Liquid in glass thermometers, thermo-mechanical thermometers, pyrometers, bolometers, recording Instruments.

(f) **Calorimetry:** Calorimeters of various types, the calorie and the B. T. U, fuels and fuel value finding devices, conductivity measuring devices, radiometers.

(g) **Electrical Instruments:** Galvanometers, ammeters, voltmeters, Resistance bridges, Potentiometers, Thermoammeters and voltmeters, A. C. and D. C. instruments. Wattmeters and Energy meters, power factor meters, frequency meters; Fractional h. p. A. C. & D. C. motors. Distant indicating devices and Selsyn motors.

IV Workshop Practice. II.

(a) Measuring tools, materials, heat treating furnaces, annealing, hardening, tempering.

(b) Lathes and lathe attachments, turret-lathes and tools, spinning metals, automatic screw machines.

(c) Drills, taps, dies, reamers and drilling machines.

(d) Shapers, planers and slotters,

(e) Grinders and grinding.

(f) Laps and lapping.

(g) Dies, punches and punching machines,

(h) Saws, circular and band for metals and wood, wood working tools.

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V Instrument Maintenance and Repair.
Laboratory work.

VI Instrument Calibration and Testing.
Laboratory work.

VII Instrument Drawing.

Practical.

Practical work is conducted keeping in view the following lines of training recommended :—

1. Design of Instruments and their actual making by the student in the workshop.
2. Instruments drawing required for the above.
3. Workshop practice—general.
4. " —special.
5. Instrument dismantling, overhaul and repair.
6. Testing and calibration of Instruments.

Practical work is divided as below :—

I. Drawing—2 hours per week.

Drawing office conventions, simple instrument drawing, Design of instruments for manufacture by the student. Starting with simple examples the course is spread through the two years leading upto more advanced instruments.

II. Workshop Practice—General.
4 Hours per week.

II Year : (1) Use of hand tools (elementary).
(2) Carpentry.
(3) Lathe and Turning Practice.
(4) Drilling Practice.
(5) Shaping and Planing machines.
(6) Foundry work. Heat treatment of metals.

II Year : (1) Manufacture of instruments designed and drawn by the student.
(2) Operation of Diving Engines.

(3) Operation of Engraving machines.
(4) Silvering and aluminising techniques etc.
(5) Manufacture of Jewel bearings.

II Year : (1) Overhaul of instruments.
(2) Repairs of a simple nature.
(3) Testing performance of instruments made by the student.

III YEAR.

I Theory of Instruments.

(a) **Optical Instruments:** Mirrors, prisms and lenses, their manufacture, optical grinding and Polishing, limits of accuracy of plane and curved surfaces, testing of optical surfaces—Interferometry and interferometers, optical benches;

Focometers, opthalmometers, Achromatic and apachromatic objectives; eyepieces; magnification and resolving power.

Telescopes: Reading terrestial and astronomical; their construction and use, principles of centering; the transit and the equitorial mounts; range finders; binoculars.

Microscopes: Simple magnifiers; eyepieces, microscope objectives; Oil immersion systems; magnification and resolving power; microscope accessories like substage condensers, mirrors, mechanical stages. Dark field microscopes.

Illuminators—polarising devices, polarising microscopes and ultramicroscopes.

Spectrometry: Spectrometers and spectrographs; direct vision spectroscopes; gratings and grating spectrographs.

Photometry and colorimetry: Principles of photometry; simple photometers; spectrophotometers; microphotometers; colorimeters of different types; mercury are lamps, discharge tubes and sodium discharge lamps.

Refractometers: Principles of construction and use; direct reading refractometers for industrial uses.

Cameras, enlargers and Projectors: Static and cine; Sound recorders and reproducers.

Maintenance of optical Instruments: Maintenance of delicate glass instruments like glass arc theodolites, levels etc.

(b) **Acoustical Instruments:** Tuning Forks, Sonometers, electrically maintained vibrators, decibel meters, megaphones, microphones, loudspeakers, gramaphones and automatic record changers.

(c) **Telephone:** Telephones, automatic telephones, Teleprinters.

Electronic Instruments: Relays — thermo-electric, photo-electric, mercury arc;

Valve voltmeters, Wavemeters, cathode ray oscillographs. Electronic relays, Ph meters and calorimeters and electronic photometers, cardiographs, electron microscope. Goniometers for X Rays and Crystallography; Gieger—Muller counters.

(d) **Meteorological Instruments:** Barometers and Barographs; Thermometers and Thermographs, Hygrometers and Hygrographs, Anemometers, Windvanes; anemographs; rain gauges and measuring glasses; self-recording rain gauges; evaporimeters, sunshine recorders, pilot balloon theodolites radiosondes—Seismographs.

(e) **Refrigerators:** Principles of operation—mechanism of refrigerators, industrial and household—The Electrolux.

(f) **Internal combustion Engines:** The petrol Engine and the motor Car; Diesel Engines.

(g) Modern Radioactive and Atomic research Instruments.

(h) **Aircraft Instruments:** Gyroscopes — magnetic compass—gyrocompass—gyrohorizon—Altimeters — Air speed Indicators—Engine speed Indicators—turn and bank indicators.

II Workshop Practice III

(a) **Paints:** Their properties and uses, hand painting, spray painting, enamelling, wrinkle finishing.

(b) **Varnishes:** Their properties and uses, methods of making, varnishing, lacquering.

(c) **Electroplating:** Uses of, principle, equipment and materials required; method of electroplating; chemical and silvering on glasses; coating by evaporation of metals.

(d) **Polishing:** Method, equipment and operation.

(e) Milling machines, arbors, collets, adaptors, milling machine cutters, dividing heads, indexing, helix and spiral calculations, gears and gear cutting, universal grinders and grinding of milling machine cutters, drills etc.

(f) **Foundry Equipment:** Including furnaces working on coke, gas and oil—patterns and pattern making—casting of iron, brass and aluminium — Injection moulding and die-casting.

(g) **Welding:** Oxy-acetylene, arc and spot welding, principle of operation and equipment.

(h) Engraving Machines.

(i) Properties of Soda glass, pyrex glass and Silica. Glass blowing and annealing—Glass to metal joints—Micro-soldering and welding—Evaporation of metals like silver, gold and alluminium on glass etc.

III Instrument Design Laboratory.

IV Instrument repair Laboratory.

V Instrument drawing II.

II. Workshop Practice—General.

4 Hours per Week.

III Year: (1) Use of hand tools (advanced).
(2) Milling Machine Practice.
(3) Welding, Soldering etc.
(4) Painting, Plating and finishing.
(5) Grinding Practice.
(6) Production machines and methods.

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Workshop Practice—Special.

6 Hours per Week.

III Year : (1) Manufacture of instruments designed and drawn by the student.

(2) Glass Blowing.

(3) Hand-snapping, lapping, grinding etc.

(4) Optical glass working.

Instruments Practice.

III Year : (1) Instruments Parts—study of.

(2) Calibration of Instruments.

(3) Metrological studies.

The above scheme of practical work to keep pace with the theoretical study of instruments.

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ELECTRONICS

(Special Course)

II YEAR

1. **Electrical Technology** :—Constitution of Matter—Atomic structure—Electron theory of electricity—Units—Resistance—Power—Magnetism and Magnetic fields—Electrostatics and electric fields—Primary Cells—Electrolysis—Secondary Cells.

Electro-dynamic force—Self and mutual induction—Inductance—Capacitance.

Alternating E. M. F. and current—RMS value—Vector diagrams and phase—Resistance, Inductance and Capacitance and combinations of these in series and parallel in A. C. Circuits—Power factor—Series tuned circuit—Parallel tuned circuits—J. notation.

Transformers—Construction—Vector diagrams for various loads—equivalent circuits—Losses in transformers.

Note—The study of D.C. & A.C. generators and motors and motor-generators, Polyphase alternating currents, Switch gear and protective devices etc., will be done under Electrical Engineering.

2. **Circuit Analysis** :—Linear circuit analysis with lumped constants—Transients and steady state—forced and free oscillations—Resonance, Selectivity and decrement—Coupled Circuits—Applications in Audio, Radio and Video Engineering.

Resistors, Inductors, Capacitors and transformers—their design and construction. Thermionic Valves—their characteristics, parameters and their behaviour in the loaded condition.

3. **Wireless Reception** :—Valve as a detector—Methods of detection—efficiency of detection—detector distortion—use of reaction—design of detectors—Valve as an amplifier—Audio Frequency couplings—Frequency response—design of Audio Amplifier stages—Valve as a Radio Frequency Amplifier—Radio frequency couplings—selectivity of tuned circuits—Design of T.R.F. stages.

The output stage—Power output, Power sensitivity and harmonic distortion with different valves—Optimum load and matching—design of the output stages.

Receiver power supplies—Valve as a rectifier—smoothing circuit design.

Types of loudspeakers and their characteristics—Speaker matching.

T.R.F. Receivers and their design.

Valve as an oscillator—Oscillatory circuits—Frequency changers and Mixers—Intermediate frequency amplifiers and their design—Beat frequency Oscillators—Second detectors—Automatic gain control—Automatic Frequency control—Visual Tuning Indicators—Design of Superheterodyne Receivers.

Alignment of T. R. F. Receivers and Superheterodyne receivers.

Sensitivity, Selectivity, Electrical fidelity, image ratio and automatic gain control characteristics of receivers.

Diversity Receivers.

4. **Measurements** :—Units and dimensions—Electrostatic, Electromagnetic and practical units—measurement of current voltage and resistance—Meggers—Watt Meters—Frequency Meters.

Measurement of Inducance and capacitance—A.C. & R.F. bridges—Wave meters.

Bridge circuits for the measurement of Valve parameters—Vacuum tube Volt meters.

Signal generators, beat frequency oscillators, and tone generators, attenuators, output meters, equivalizers.

Measurement of sensitivity, selectivity, fedelity, image ratio and A.G.C. charateristics of receivers.

Distortion factor meters, sound level meters, Q-meters—measurement of the frequency response of amplifiers, microphones and pick-ups.

The Cathode-ray Oscillograph as a measuring instrument—Masurement of current, voltage, frequency, depth of modulation etc. Measurements on feeders and aerials for reflection, matching, power radiated, radiation resistance etc. Field strength measurements at different frequencies—Polar curves of radiation.

5. **Wireless Transmission** :—Production of R.F. alternating currents—Valve as an Oscillator—Frequency stabilization methods—Piezo electric crystals and frequency control—Master oscillators.

Buffer amplifiers—Frequency multiplication.

The need for power amplication—Classes of amplifiers and their design—Neutralisation.

Modulation, amplitude, frequency and phase, circuits and their design—Single side-band transmission—Keying methods—Pulse height, Pulse width and position modulation.

Radio Frequency feeders and their termination—Aerials and radiation of Electro-magnetic waves—Polar diagrams—Transmitting and receiving aerial arrays.

Propagation of Electric-magnetic waves of different frequencies—Anti fading aerials.

Transmitter power supplies and protective devices—Components used for high power transmitters.

Studio acoustics—Outside Broadcasting—Sound recording methods.

Land line to Radio Links—Privacy telephony.

6. **Wire Communication :—Telegraphy :**—Materials used for short and long lines, conductors, insulators poles, cross arms, saddles, etc.—Instruments for manual working, keys, sounders, relays etc.—Single and double current working, quadruple circuits—Central battery system.

Repeators and loading coils for long distance work—High speed automatic working—Single and multiple channels—Wheatstone automatic, simplex and duplex—Baudot transmitting, repeating and receiving apparatus—Tele-printer.

Telephony :—Speech and hearing, requirements of commercial communication—Decibel and neper notations—Electro-acoustical instruments—Telephone lines and cables—Transmission theory, attenuation and propagation constants, characteristic impedance, conditions for distortionless transmission, Manual, magneto, CBS and CB systems—Subscribers and exchange apparatus—Automatic telephony—Single and Multiple office working—long distance working, loading, repeators and equilizers—Echo suppression—cross talk—Transposition arrangements—Elementary considerations of carrier telephony.

7. **Networks and Filters :**—Network theorems—Superposition, artificial lines, attenuators, equilizers and wave-filters constant K and M derived and crystal types—Four terminal networks, image and iterative parameters—Termination loss and reflection—Transmission line equivalents.

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III YEAR

1. **Television :**—Methods of visual representation—Electrical transmission of visual information—Photo electric cells—Necessity for scanning and picture repetition—effect of number of scanning lines and number of picture elements per line on definition—Progressive and interlaced scanning—Picture repetition rate

Illumination, brightness and light flux content of picture elements—Photo-electric effect, emission and collection—Mechanical scanning methods—Electronic scanning—Instantaneous

and storage tyes—The Image dissector tube and the iconoscope and the Orthiconiscope.

Formation, focussing and deflection of electron beams—comparision of electric and magnetic deflections—Scanning generators—Production and amplification of saw-tooth and magnetic deflection wave forms—Synchronisation of scanning generators—Amplitude and waveform separations.

The Video Signal—D. C. & A. C. components—Fourier analysis of the Video signal—Distortion of the Video signal.

Video signal amplification—Shunt and series peaked circuits for high frequency compensation—Cathode coupled circuits—Coaxial cables—Response characteristics.

Television carrier frequencies—Propagation Characteristics—Band width—Selective side-band transmission—Television Transmitters—generation of carrier—modulation—Transmitting and receiving antennas—RF circuits in television receivers—local oscillators—frequency changing—Picture and audio Intermediate—frequency amplifiers—demodulation of Video signals—Synchronization.

Mechanical and electronic methods of image reproduction—Cathode ray image reproducer—Phosphors and their preparation—Separation of line and frame synchronising pulses.

Television Broadcasting Practice and Television receiver Circuit design—Colour television and large screen television. Facsimile.

2. **Radar :**—Methods of Radar detection—Pulse system Radar—methods of scanning, circular, helical, conical and spiral—Methods of indication, A,B,C and P.P.I. and their modifications—considerations of frequency and power of transmitter and characteristics of receiver.

Transient response of circuits and the application of the Fourier Integral—Steady state computation of output waveforms—Transmission of pulses, band width and Signal-to-noise ratio.

Transmission lines and their characteristics—circle diagrams—wave-guides—group and phase velocities—modes in rectangular and circular waveguides—Termination of waveguides, reflection and impedance matching. Cavity resonators, energy storage, dissipation and excitation of.

Radiators and polar diagrams—The dipole, dipole Arrays and reflectors. Parabolic reflectors—Electro-magnetic lenses—Propagation of Radar Signals.

Pulse Generators—The multi-vibrator, blocking Oscillator and deformation of Sine-waves—Synchronised production of pulses—Pulse forming methods—Pulse rate multiplication and division—Amplification of pulses—Pulse transformers and Time delay circuits.

The magnetron and the cavity magnetron—The Rieke diagram—TR boxes—Lobe switching—Disc seal and Light house tubes—The Klystron and the reflex Klystron—R.F. amplifiers, local oscillators, Frequency convertors—Silicon crystals.

Timing equipment, master oscillator and crystal controlled timers.

Radar transmitters—modulation and radiation systems.

Radar receivers—Indicators—Loran.

3. **Industrial Electronics** :—Industrial tubes, Kenotrons, Phanotrons, three & multi-electrode pliotrons, Thyratrons and their characteristics. ... ... Rectification of AC, Single phase & three phase half wave, full wave and bridge rectifiers and voltage multipliers—filters—Mercury arc rectifiers, ignitrons and excitrons.

Induction heating and dielectric heating typical examples—calculation of equipment and limitations of Voltage & frequency.

Applications of Thyratrons for instantaneous and proportional control of DC and AC—Phase shift circuits—Peaking transformers—Thyratron invertors.

Electronic timing circuits, Photoelectric cells and Photo-Voltaic cells and their applications—Resistance welding controls—Electronic motor controls.

Static and Astatic regulators—Anti-hunting devices.

The Cathode-ray Oscillograph—The Electron microscope—Electronic lamps.

4. **Radio Aids to Aviation** :—Loop and frame aerials and their polar diagrams—direction finding—Errors and their elimination—The Bellini Tosi system—The Adcock system.

Radio beacons—Radio range beacons—Aural and visual—Blind landing systems—Radio altimeters—Pilotless planes and ground control.

Electronic instrumentation for nuclear studies.

Sri Ramakrishna Printing Works, Madras 2—C. 500.

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Madras Institute of Technology Chromepet.

CIVIL ENGINEERING.

BASIC YEAR COURSE.

BUILDING MATERIALS. (General knowledge).

Stones, Bricks and Tiles: Different varieties of stones—Their characteristics, Tests and Uses; methods of quarrying and blasting Rock and dressing Stone; choice and suitability of materials for manufacture of bricks and tiles and different methods of manufacturing same.

Limes, Cements, Sands Mortars and Concrete: Different varieties, Their Properties, Tests and Uses; choice and suitability of materials for manufacture of limes and cements, and methods of manufacturing same. Standard Mixtures for different purposes—Artificial stones, their preparation and uses.

Timbers: Varieties, Classification, Characteristics, Tests and Uses of Indian and other available timbers—Defects in Timbers and causes of decay—Seasoning and preservation—Fire Proofing—Market forms and standard sizes for different purposes.

Iron & Steel: Varieties, Classification, Composition, Characteristics, Tests and Uses—Important Iron ores and their Properties—Preparation and treatment of ores for smelting—The Blast furnace & its accessories—Manufacture of Iron & Steel by different processes—Modern steels and alloy steels, their properties and uses. Different purposes and general foundry practice—Rolling mills for mild Steel-Sections & types of British standard Section British standard specifications for structural Steel—Detection of defects and flaws in Iron & Steel.

(e) **Non Ferrous Metals :** Their properties and uses in construction.

(f) **Paints & Varnishes :** Different kinds of Paints and other protective coverings used in Varnishes and Building construction, Their preparation, properties & uses.

(g) **Miscellaneous Materials :** Other metals and non-metals commonly employed in Building construction, their properties and uses.

(h) **Glasses :** Special varieties.

(i) Patent materials in the market.

II. BUILDING CONSTRUCTION, (General knowledge.)

General : Preliminary investigations as to suitability of site for different types of Buildings ; trial pits and borings—Determination of bearing capacities of soils etc.

Foundations : Drainage of Building site ; Excavation and trenching ; methods of timbering excavations ; shoring and underpinning ; methods of improving bearing capacity ; ordinary foundations such as masonry footings, grillage and Pile Foundations and simple calculations pertaining thereto.

Plain masonry & Brick work :—Different kinds of Brick bonds and methods of laying Bricks Coursed and Uncoursed Rubble, Ashlar—Damp Proof construction—Anchorages in walls ; Fire resisting construction for flues, Chimneys and Fireplaces ; Dressings such as door jambs, door and window sills—Flat, segmental, pointed and relieving arches—Inverts ; centering for arches and striking of same—Vaults & Domes. Copings, Cornices and String courses.

Floors and Roofs : Floors of different materials—Terraced and Pitched roofs , Jack-arch Floors and Roofs ; Steel beam and girder Floors—Timber, mild Steel and composite Roof trusses—different types of roof coverings and ceilings and constructional details.

Carpentry and Joinery : Different kinds of joints in timber—Doors, Windows and Ventilators ; Partitions ! Scaffolding and falsework ; simple roof frames.

Stairs : Different types of Stairs—Straight and spiral in timber, plain masonry, iron & concrete.

Columns : Details and methods of construction in brick, stone, iron and concrete.

Finishing and Painting.

Scaffolding : Materials used and principles of erection and Maintenance.

Hoisting appliances : Construction and Maintenance.

Safety measures : Organisation and Supervision—Safety Regulations.

III. BUILDING DRAWING.

(a) Detailed Drawing of Building Details as dealt with in Para II above.

(b) Working Drawings of Buildings from sketches and Specifications, together with simple design calculations.

(c) Designing and detailing important types of Buildings, including Steel framed and Reinforced Concrete Buildings. (General principles).

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APPLIED MECHANICS.

STATICS :

Coplanar forces—Parallelogram, Triangle and Polygon of forces—Graphical methods.

STATICALLY DETERMINATE FORCES :

Calculation and graphical determination of forces in members of simple roof trusses, braced girders, cranes etc.

PRINCIPLE OF WORK:

Simple machines.

PROPERTIES OF SECTIONS :

Calculation and graphical determination of areas, positions of centroid, neutral axis, moments of Inertia, modulus of section and radii of gyration with special reference to structural shapes.

SIMPLE STRESSES AND STRAINS :

Compressive, Tensile, shearing and bearing stresses—Hooke's law, stress-strain and load extension curves ; dead

live and shock loads—Factors of Safety and working stresses; work and resilence—Elastic Moduli—Poisson's Ratio and relation between Elastic constants—Temperature stresses—composite bars.

RIVETED JOINTS :

Resistance of a rivet or bolt in single or double shear and in bearing and the working strength of a rivet or bolt—strength of lap and butt joints—efficiency of joints—welded joints.

BEAMS :

Cantilever, simply supported and over-hanging beams subject to symmetrical and unsymmetrical Static loading and fixed beams subject to only symmetrical static loading—calculation and graphical determination of bending moments and shear forces—Relation between load distribution, shearing force and bending moments—Theory of simple bending—Proofs of Formulae and their applications—Strength of beam—distribution of shear stress in a beam section.

DEFLECTION :

Relation between curvatures, slope and deflection—Proofs of standard formulae and their applications—Stiffness of beams, evaluation of deflection from bending moment diagrams.

FIXED BEAMS :

Bending moment and shearing force under symmetrical loading—calculation and graphical deterimination of slope and deflection under such loading.

THIN CYLINDERS AND SPHERES :

Hoop and Radial Stresses—Built up shells—Cylindrical shells with hemispherical ends—under internal and external pressures.

COLUMNS AND STRUTS :

Long and short columns ; axial and eccentric loading. Effect of end conditions—equivalent lengths and slenderness ratio ; eccentricity factor ; column formulae, their derivation and practical applications ; laterally loaded columns and struts.

STRENGTH OF MATERIALS AND THEORY OF STRUCTURES.

BASIC YEAR.

(1) COMPOUND STRESSES AND STRAINS :

Stresses under combined strains, Principal stresses and principal planes ; Ellipse of Stress—application to different cases—Failure under combined stresses.

(2) BEHAVIOUR OF MATERIALS UNDER TEST :

Methods of testing and appliances used in determining the Elastic constants and testing materials to destruction under Tension, compression, Shear, Torsion and Bending—Impact and Hardness Tests—Tests under repeated and alternating stresses—Fatigue of metals—Factors of safety and working stresses—latest advancements in the Science of testing materials—composition & Mechanical properties of principal engineering materials. Creep at high temperatures; effects of heat treatment & cold work.

(3) CIRCULAR SHAFT :

Theory of pure Torsion, Shear Stress, angle of twist, strength and resilence ; Horse power transmission ; combined torsion and bending with or without End Thrust—Determination of principal Stresses and Maximum Shear Stresses—Equivalent Bending and Twisting Moments.

(4) HELICAL SPRINGS :

Extension under axial Pull and Maximum shear Stress : angle of twist and torsion and Maximum Direct Stress—Strength and resilence.

(5) THICK SHELLS AND CYLINDERS :

Stresses and strains under internal and external pressures.

(6) DEFLECTION OF FRAMES :

Castigliano's Theorem I. Rasilence due to bending moment, shear and Torsion.

(7) CONTINUOUS BEAMS AND PROPPED CANTILEVERS ;

Theorem of three moments—calculation and graphical determination of reactions, bending moments, shear forces, deflection and slope—Moment distribution methods.

(8) MASONRY WORKS :

General conditions of stability—Middle Third Rule—Lines of Resistance—Distribution of Pressure Intensities.

SECOND YEAR.

(1) MOVING LOADS AND INFLUENCE LINES :

Curve of Maximum Bending Moments and Maximum shear forces—the enveloping Parabola and determination of equivalent uniformly distributed load ; influence lines for reaction, shear force, bending moment and deflection—Influence lines for forces in members of braced girders and spandrel braced arches—Reversal of stress under live load.

(2) STRUCTURAL FRAMES :

Calculation and graphical determination of forces in members of Roof trusses with knee braces, in braced girders of variable depth with or without secondary members and in Trestles ; displacement diagrams for braced girders —Analyses of simple types of indeterminate frames—Portal and sway frames.

STRUCTURAL ENGINEERING.

BASIC YEAR.

EARTH PRESSURE THEORIES:

Graphical constructions.

Rankine's Theory applied to Foundations.

Retaining walls-gravity, cantilever and counterfort types—Practical profiles ; data, formulae and empirical Rules for design—Methods of relieving side pressure and improving stability—Provision for drainage—Expansion Joints—Other important details of construction—Detailed design of Retaining walls.

REINFORCED CONCRETE :

General Principles—Theory and design of Rectangular beams, tee beams, slabs and columns,

BUILDINGS :

General principles of design; methods and details of construction.

STRUCTURAL STEEL WORK :

Beams and Girders—Properties of British standard Sections. Detailed design of beams, compound girders

built-up plate girders, and Lattice girders—limiting spans and economical depths ; design of flanges and webs—curtailment of flange plates—Determination of size, Pitch and arrangement of Rivets—types of stiffeners and Rules for their spacing—Design of joints and connections—Methods of fabrication and erection of structural frames.

COLUMNS & STRUTS :

Plain and Built up Sections ; —detailed design of stanchions for buildings and of compression members of roof trusses and lattice girders.

ROOF TRUSSES :

Types—Limiting spans. Rise and camber—economical spacing—Data for Design—Detail design of members—including Purlins. Joints and connections—Wind bracing on roof trusses—Detailed design of steel framed Sheds.

TIMBER :

General principles of design in timber, with special reference to structures such as Roof Trusses, Beams and columns, bridges, trestles and form-work—for R. C. Structures.

SURVEYING.

(General Working knowledge.)

BASIC YEAR.

CHAIN SURVEY :

Equipment—Ranging and chaining lines—Errors in chaining—Pacing, Methods of avoiding obstacles—problems in ascertaining distances—setting out a right angle Offsets—Tie-lines.

Optical squares—cross staves.

Scales and Plotting—computing areas—Simpson's Rule

COMPASS SURVEY :

Prismatic Compass—description, use and adjustments.

Bearings—local attraction.

Magnetic and True Meridians—Variation—Declination.

Plotting—Graphical adjustment of closing error.

PLANE-TABLE SURVEY :

Equipment—Setting up and use of Plane-Table.
Alidades—Simple, Prismatic and Telescopic.
Resection—3 and 2 Point Problems.

LEVELLING :

Level Types—Cushings—Cooke's Reversible, Dumpy—Engineers' Improved level (Govt. of India Pattern)—Zeise and gradientor.
Setting up, use, adjustments.
Staves—Spot Levels—Fly Levels—Bench marks—Profile Levelling—Cross sections.
Contouring—Clinometers—Earthwork and capacity of Reservoir—areas—volumes.
Field books—Types—Arithmetical checks.
Plotting of Longitudinal sections.

THEODOLITE :

(General ideas of the use of) Transit, Micrometer Double reading and Photo.
Sextants—Nautical & Box.
Solar attachments—Burt and Saegmuller.
Mining Dial—Direct reading, Tacheometer—Curv Ranger - Equatorial Mounting.

HYDROGRAPHIC SURVEYING : (General ideas).
Soundings—Charting.

GEOMETRICAL DRAWING.

BASIC YEAR.

PRACTICAL PLANE GEOMETRY :

Construction and use of scales, Areas of plane figures—Methods of drawing Ellipse, Parabola, Hyperbola, Cycloidal and Involute curves and the Helix.

PRACTICAL SOLID GEOMETRY :—

Projections of points, lines and planes. Projections of simple solids, prisms, pyramids, cylinders and cones. General principles of Development of plane and curved surfaces, interpenetration of solids, cylinders, cylinders and cones, prisms and pyramids—Isometric projection an elements of Perspective.

ELECTRICAL ENGINEERING

BASIC YEAR COURSE

GENERAL PRINCIPLES. Fundamental principles of Electric and Magnetic circuits.

CONTINUOUS CURRENT GENERATORS AND MOTORS. Shunt, series and compound types—Construction, working and simple theory—Types of windings, lap and wave—EMF equation—Armature reaction—Commutation—Characteristics of generators and Motors—Starters and regulators—Tests by direct and indirect methods—Parallel operation—The third brush and Rosenberg generators—Storage Batteries.

ALTERNATING CURRENTS. A.C. circuits—power and power factor—Vector diagram Symbolic Notation—Single and —polyphase systems—Rotating magnetic fields.

TRANSFORMERS. Theory and construction—Single phase and polyphase—Tests of Efficiency and regulation.

A.C. GENERATORS. Single and polyphase—Construction, working and simple theory—Tests of efficiency and regulation.

A.C. MOTORS. Synchronous motor—construction, working and simple theory—Current locus at constant voltage excitation—Variation of current and power factor with changing excitation—Hunting and prevention.

POLYPHASE INDUCTION MOTORS. Squirrel cage, and slip-ring types—Simple theory, working and construction—Direct and indirect tests on performances—Methods of starting Simple theory and operating features of the single phase induction motors.

MEASUREMENTS. Working principles and the use of moving iron and moving coil ammeters and voltmeters—D.C. energy meters—Megger—The principles of construction, use

and calibration of A. C. instruments ordinarily employed—Elementary principles of frequency meter and P.F. meter.

ILLUMINATION. Units and standards—Polar curves—Uses of shades—Photometry.

TRANSMISSION AND DISTRIBUTION. Calculation of size of conductor—General methods of erecting, laying and insulating.

SPECIAL COURSE FOR ELECTRONICS STUDENTS ONLY IN SECOND YEAR.

1. A. C. CIRCUITS. Unbalanced loads in Polyphase systems—Symmetrical phase components—A. C. Bridges and applications.

2. A.C. GENERATORS. Various methods of determining regulation—Parallel operation—Voltage regulators.

3. A.C. MOTORS. Advanced theory—Circle diagrams.

4. SWITCHGEAR and circuit Protection.

5. SYNCHRONOUS CONVERTORS AND RECTIFIERS. Principles of operations and connection; starting Rectifiers, action: charateristics and connecting of mercury a and other types—comparison of different methods.

MECHANICAL ENGINEERING

BASIC YEAR COURSE

Kinematics of Machinery or Theory of Machines

Force and Motion.

Speed, Velocity and acceleration: Linear, Angular. Plane and intermittent motion: helical and spherical motion.

Vectors: Addition, subtraction, resolution; Vector diagrams for velocity and acceleration.

Speed time, Velocity-time, acceleration-time graphs.

Pairs, higher & Lower; Elements; Inversion.

Link motion: Valve gears.

Straight line mechanisms. Hooke's joint. Cams.

Friction, Screw threads, bearings: Journal, Footsteps, Thrust, Ball and Roller Bearings; Mitchel Bearings.

Lubrication: Properties of lubricants, testing; lubrication systems, Monomolecular layers and their effect on Lubrication—Fluid Friction—Journal, Ball & Roller Bearings, Mitchel bearings—Pivots & Pivot friction, Schieles Pivot, Jewels, Their setting and operation—Pin bearings & their application.

Transmission of Power by Rope, Belt and chain drives.

Fluid Drives, their principles and operation; Magnetic Driving—Magnetic Drives and their application for Power Transmission.

Toothed gearing—spur, Bevel, Spiral or Helical, Helical Bevel and Screw and worm gearing. Epicyclic trains—Bevels and spiral bevels and off set Bevels—Hypoids.

Governors: Theory.

Reciprocating Engine: Velocity and acceleration of Piston and connecting rod—Inertia Effects, Turning Moment diagrams, Fly wheels.

Balancing of Rotating masses—Balancing of Engines, primary and secondary Effects—Vibration and their Elimination—Static and Dynamic balancing.

Whirling of Shafts—Torsional oscillations—Critical speeds & Velocities—Gyrostatic Action.

Stresses in thick cylinders.

The purpose of the above course is to give the student an insight into the laws governing the motion of the different parts constituting a machine and application of these laws to achieve desired motions of the different parts constituting any machine or apparatus.

MACHINE TOOLS AND WORKSHOP PRACTICE

1. Hand Tools and Methods of using them.
Measuring Instruments & Gauges and how to use them.

2. CARPENTRY AND PATTERN WORK.

Planing. Marking different kinds of joints, such as, lap joint, Mortice and tenon, clovertail or box joint and special joints.

Wood—turning.

Use of woodworking machines.

Special precautions about Pattern-making.

3. FOUNDRY PRACTICE AND METAL CASTING:

Moulding Sands, Green dry sand moulding, clay moulding, Multiple Castings, Die casting.

Hand and Machine Moulding. Sand and Metal moulds.

Castings: Ferrous and non-Ferrous. Foundry mixtures.

Cores and core-making.

Cupola—Dimensions, lining, method of charging and drawing; metal, Defects in casting, how caused and how eliminated—Alloys for different purposes such as Chrome; Steel, Meehanite, Magnet etc.

Furnaces—Non-ferrous—Design and operation—Coke and oil Fired—oxidation.

Electric Furnaces: and their special features and application.—Advantages over other forms—Special purpose furnaces, Arc, Induction, High Frequency furnaces, Melting, Heat treating, dipping and Muffle.

4. FITTING WORKS:

Marking out work. Chipping, Filing and Scraping.

Methods of preparing Plane and Finished Surfaces.

Limits, tolerances and allowances, fits, types and use—Gauges—Go & No Go Etc.

5. SMITHY WORK:

Hot and cold forming of metals—Swaging, fullering and upsetting. Light and heavy forging—Drop forging.

Soldering, hard and soft.

Brazing and Silver soldering—Fluxes, Mixtures, Applications.

Welding: Electric & Gas and swage- pot—Seam—Lap and butt—Cutting—Protective coatings- raying, crinkling Rust proofing process—Blueing.
Metal spraying.

Heat treatment: surface hardening and tempering and annealing.

6. MACHINE SHOP WORK:

(a) LATHES AND LATHE WORK:

Lathe Tools: carbon, high carbon, high speed: tipped tools.

Surfacing, sliding and Screw cutting.

Turret, Capstan, Automatic and special purpose lathes.

b) DRILLING AND BORING MACHINES.

Fixed Spindle, radial and Universal drills—Gang drills—Drills and jigs.

Horizontal and Vertical boring. Drilling & Tapping work.

(c) SHAPERS AND PLANERS.

Special fields of use.

(d) MILLING MACHINES:

Horizontal, Vertical and Universal Milling machines.
Gear Hobbing machines.

(e) GRINDERS:

Emery Wheels, Tool grinding, Drill grinding, Grinding milling cutters on Universal Grinders—Surface Grinding.

Students of Instrument Technology will have to undergo a further training for about 4 hours per week for 36 weeks more in Precision Work and Toolroom Practice. (Syllabus for this training is drawn up separately).

N.B.: Students will be given instruction by lectures for about an hour or so, as required, about the different machines they have to handle before actually working on the machines.

HYDRAULICS & HYDRAULIC MACHINES

HYDROSTATICS OR FLUIDS AT REST:

Physical properties of fluids.

Pressure and centre of Pressure; measurement of pressure.

Buoyancy and stability or Floating bodies.

HYDRO-KINETICS OR FLUIDS IN MOTION:

Streamline and Turbulent flow. Steady and unsteady motion.

Bernoulli's theorem and its application. Venturimeter,
Critical Velocity. Reynold's criterion,
Vortex motion: Free & Forced Vortices.

Orifices and Notches. Co-efficients of Velocity, contraction and discharge, Suppressed contraction. Weirs: Triangular, Rectangular and Trapezoidal, drowned and flat crested.

Anicuts, Sluices and Bridge openings. General curve fluid friction for flow. Pipe-line flow, Hydraulic grad Design of pipe-line for stated conditions of flow. Fl channels. Measurement or gauging the flow. Current M

HYDRO-DYNAMICS:

Impact of jets.

The Pelton wheel and other Impulse Turbines.

Reaction Turbines: Francis, Propeller and Kaplan types.

Speed Regulation or Governing. Specific speed of Turbines.

Hydraulic Pumps: Reciprocating and Centrifugal.

Air lift pumps. Pulsometer Pumps. Humphrey gas Pump.

Water Hammer in Pipe lines. Surge Tanks.

Transmission of Power by Hydraulic Pressure: Jacks, Rivetters, Accumulators, Intensifiers, Cranes and lifts, Hydraulic Engines—Hydraulic Rams.

For students taking up Aeronautical and Automobile Engineering, the following additional course of lectures are provided:

Application of Bernoulli's Equation for compressible fluids, with friction and without friction.

Dimensional Analysis; Units and dimensions and their application.

Measuring devices for compressible fluids.

Special characteristics of Pumps for pumping of High Viscosity liquids and of liquids with sp. gr. different from unity.

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ENGINEERING METALLURGY

Metallurgy of Iron, Steel and the non-ferrous metals.

Survey of Metallurgy.

Preparation and physical and Mechanical properties of Engineering Alloys.

Principles of Heat treatment, and of Machining and Forming operations.

Physical testing, Microscopic Examination, X-ray Examination of Ferrous and non-Ferrous alloys.

Principles of Metallography.

Metallography of Ferrous and non-Ferrous alloys.
Testing methods and specification.
Mechanical Testing (done under strength of materials.)

MACHINE DRAWING AND DESIGN

1. Hints upon the selection and use of drawing instruments. How to commence a working drawing.

2. Bolts, nuts, screws and washers: Forms, proportions and types of screw threads;

Drawing Exercises: Whitworth, B. A., Sellers, Acme, Square and Buttress threads. Construction of Helices. Various kinds of fixtures with nuts.

3. Rivets and Riveted joints—their strength and efficiency. Riveted and welded joints.

Drawing Exercises: Lap Joint, Butt Joint. Junction of three plates.

Riveted joints in Boilers. Joints in structural Steelwork.

4. Shafts, couplings and clutches.

Drawing Exercises: Flanged coupling; Muff coupling; Flexible coupling; Universal coupling; Claw coupling; Friction clutch; Oldham's coupling.

5. Keys, cotters and cottered joints.

Drawing Exercises: Different kinds of keys. Bar and cotter joint. Knuckle joint.

6. Pipes and pipe connections for steam, water, petrol etc.

Drawing Exercises: Flanged joints: Expansion joints; special joints for Hydraulic Pressure Pipes—Unions.

7. Bearings, Pedestals and Hangers:—Journal, Ball & Roller—Mitchel—Pivot, Schieles Pivot—Jewels & Pin.

Drawing Exercises: Journal Bearing—Footstep Bearing; Collar and Thrust Bearing. Mitchell Thrust Bearing. Plummer Block, Self-adjusting Pedestal.

Ball Bearings; Roller Bearings.

8. Toothed gearing; spur, Bevel and Helical Gearing. Drawing Exercises: Tooth profile for Involute and cycloidal teeth: Bevel wheels. Pulleys for Belt, Rope and chain gearing.

9. Machine details of Steam and I.C. Engines:—

Drawing Exercises:—Pistons, cylinders, crossheads.

Eccentrics, Stuffing Box and gland; crankshaft; valves. Reversing gears or Link Motions, Governors; cams.

10. Workshop Machines & their movements:—

Drawing Exercises: A lathe; a milling machine and a shaping machine or a planing machine.

THEORY OF HEAT ENGINES

First Law of Thermo-Dynamics. Carnot's Principle.

Properties of liquid vapours, specially steam, liquid vapours, Gases, Gas mixtures and mixtures of air and water vapour.

Entropy. Steam Tables and charts and their uses. Saturated, superheated and supersaturated steam. Rankine cycle. The Steam Engine. Compound Expansion—Second Law of Thermo-Dynamics & the temperature scale. Elementary Steam Turbine Theory and Practice.

Fuels and combustion. Boilers and their accessories, Latest improvements.

High Pressure Boilers. Economisers, Air pre—heaters, Modern Fuel Burning Furnaces, Automatic combustion controls. Generation of Steam for Electric Power purposes and industrial purposes.

Principles of operation of Internal combustion Engines, Air compressors and Refrigerators.

Principles of Heat Transmission—Humidity Problems.

N. B. The above course of lectures is to be supplemented by Laboratory work.

LABORATORY WORK:

Testing of Indicators, Pressure Gauges and other apparatus used in Engine Trials. Experiments involving the use of Indicator Diagrams—Simple Engine trials—Calorimetry & Testing of Fuels—Balancing—Dynamometer tests—Use of Precision tools and appliances—Modern Engine testing by Electronic and stroboscopic devises.

INTERNAL COMBUSTION ENGINES:

Fundamental cycles, including spark ignition and compression ignition. Discussion of combustion, friction, cooling, carburetion and other factors affecting Power, efficiency and general performance. Selection of the most suitable type of Engine per various specific applications. Super charging, Testing and servicing of Engines.

Complete Efficiency tests of Steam Engines, I. C. Engines, Boilers, Air compressor, Refrigerators.

GAS TURBINES:

Fundamentals of Design of Turbines & compressors. Operating characteristics of Gas Turbine Power plants & special problems encountered in aircraft applications.

STEAM JETS AND NOZZLES:

Heat drop & Velocity calculations—Impulse & Reaction Turbines. Condensers, Cooling Towers and circulating water system.

Gas jets—Production and operation—Application.

MECHANICAL REFRIGERATION

Vapour compression & Absorption Machines:

Heat Pumps. Compressed Air Machinery,

Sri Ramakrishna Printing Works, Madras 2—C. 500.

Madras Institute of Technology
Chromepet.

AUTOMOBILE ENGINEERING
(Special Course)
II YEAR

I Automobile Engine Theory and Details.

(1) Thermodynamic Principles:

Heat and work—Expansion and Compression of gases—Ideal Heat cycles—Real gases and Real heat engine cycles—Reciprocating heat engines—Rotary heat engines—Other special types—Cycle calculations—Dissociation and variable specific heats—Elementary theory of Gas Turbines.

(2) Fuel and Combustion:

Fuels—World resources—Production and properties of various types of fuels—Synthetic fuels—Alternative fuels—Power Alcohol—Gas producers—Technique of combustion—Chemical and physical processes involved—Combustion calculations—Flame propagation—Knocking and Octane and Cetane ratings—Straight and Mixed fuels—Dopes and leaded fuels.

(3) Carburetion and Injection:

Carburettor—Induction system—Fuel air mixture—Compression ratio—Effect of fuel characteristics on cylinder head design and carburetion—Requirements of the engine under varying conditions—Charge Preheating—Fuel injection for spark ignition—Fuel injection for Compression Ignition Engines—Changes of State—Air filters, fuel lines, pumps, tools and testers.

(4) Ignition and Ignition devices:

Spark and Compression ignitions—comparison—Magneto ignition and Battery type of ignition—Requirements of the engine under varying conditions of operation and with different fuels—Principles of magneto and coil ignition systems. Ignition timing and firing order and their effects on the engine operation and balance.

(5) Cooling and Lubrication :

Thermo and Aero-dynamics of heat transfer—Systems of cooling—liquid and air cooling—comparative study—Radiators—Cooling fins—Properties required in Coolants—Anti-freeze—Lubrication—Theory of lubrication—Lubricants—Physical and Chemical properties—Technique of lubrication—Cooling and lubrication—Bearings and their design.

(6) Factors affecting the Power output :

Supercharging and boost—Theory and design of Superchargers—Application in racing cars—Effects of engine speed on power output.

(7) Engine Dynamics :—

Firing order and balancing — Vibrations, gyroscopic action—Critical speeds—Mount design and special features.

(8) Engine Testing and Maintenance :

Testing of fuels and lubricants according to specifications—Types of engine tests—routine, development and experimental—acceptance tests—Test bed layout and equipment—Instruments and Controls—Test house lay out—Preparation of test reports—Routine maintenance of Engines and test beds, Tools and Gauges.

II. Strength of Materials & Theory of Structures.

Elastic Stress and Strain — Mechanical properties of metals—Testing of materials — Equipment and methods—Special tests.

Theory of Bending: Shearing force and Bending moments—Diagrams—Contraflexure—Funicular polygon — Stresses in beams—Graphical methods — Shear distribution — Principal stresses. Deflection of beams—Types of beams — Carriage springs — Built-in and continuous beam — Effect of fixtures—Symmetrical and non-symmetrical loading—Varying cross section—Bending of curved bars—Theorems of Castigliano and Clerk Maxwell—Statically indeterminate beams.

Stress Analysis: Statically determinate trusses—Method of joints—Method of moments—Method of shears—Space Frame-Works—Torsion on trusses.

Direct and Bending Stresses: Direct and bending stress—Eccentric load—Pillars, colums and struts—Euler's Theory—Rankin's and other formulae—Failure in column—Plastic and local elastic failures—Instability failures—End conditions—

Struts and tie rods with lateral loads—Design of colums and ties.

Torsion : Stress and strain in pure torsion—Torsional stresses in circular bars—Torsional stresses in Non-circular section members—Torsion in open sections—Hollow shafts—key ways—thin tubes—combined bending and torsion—effect of end thrust—Torsional strain energy—Helical springs.

Pipes, Cylinders and Discs : Thin cylindrical shell—oval sections — beams—thin spherical shells — thick cylinders — failure of tubes—thick spherical shell—pre-stressing of tubes—Rotating ring or wheel rims—Rotating discs—Rotating cylinders—Rotating discs of varying thickness.

Flat Plates : Stress and strain in circular plates—Free and fixed plates—various loadings—method of solution for non-circular plates—oval, square and rectangular plates—perforated plates.

Connections: Fused joints—Brazing—Soldering—Glueing—Rivets, Bolts and Pins—Couples in rivetted joints—Other types of mechanical joints—Clamping, lashing splicing etc.

Vibration and Critical Speeds: Elastic vibrations—Free and forced vibrations—Critical frequency—Dangerous speeds—longitudinal and transverse vibrations—whirling speeds—stress and deflection—vibration of rotating shafts—End thrust and firing orders—Engine mounting.

III. Automobile Chassis.

1. General features of automobile design :

The Automobile — Chassis components — Automobile Frame—The Body—Seating and Ventilating—Stream lining—Air conditioning—Heating and defrosting—Vision and view.

2. The Power Plant :

Constituents of the power plant—Mounting of the engine—Generator and Starting Motor—Clutch, transmission and drives—Fan—Engine accessories—Unit power plants—New types of propulsion, including Gas Turbine and Jet.

3. Transmission Clutches and Drives :

Need for gear box — Types of gear transmission—Principles of construction and design—Selective type sliding gear—Synchromesh—Epicyclic types of gears—Types of gears—Free-wheeling and over drives—Semi-automatic gear shift.—Need for clutch—Principles of design, construction and operation

—Types of clutches—Fluid transmission—Advantages and disadvantages--Universal Joints—Propeller shafts—Bearings—Torque Tube—Hotchkiss drive—Lubrication.

4. **Rear axle, Front axle and Brakes:**

Rear axle—Housing—Axle drive shafts — Types and constructional details—Differential—Need for differential—Principles of differential action—Constructional details—Types of gears used—Hypoid Bevel gear—Rear engine, rear drive automobiles—Banjo Housing—Front axle—Axle parts—Camber—Toe-in, Caster—Geometry of front axle—Front axle design—Types of front axles—Front drive automobiles—Brakes—Braking systems—Brake parts—Hydraulic brakes—Air brakes—Vacuum brakes—Mechanical brakes—Brake construction, design and action—Front axle brakes—Bendix Duo—Servo system.

5. **Steering Gears:**

Steering gear functions—Worm and Gear Type—Gemmer Worm and Roller type—Cam and Lever type—Fore and aft steering—Cross Steering—Centre Steering—Tie rod connections—Front wheel wobble—Shock eliminator—Steering gear Geometry—Steering gear design—Steering gear construction, design and adjustment.

6. **Suspension:**

Types of suspensions—Independent suspension—Knee action suspension—Springs—Construction and design of springs and shackles and their care—Shock absorbers—Types of shock absorbers—Construction, design and maintenance of shock absorbers—Stabilizars.

7. **Wheels, Rims and Tyres:**

Types of wheels — Characteristics — Construction — Principles of design—Balancing of wheels—Alignment—Tyres—Types—Tread Construction—Selection and care of tyres—Tyre rotation for even wear—Maintenance.

8. **Testing:**

Testing Procedure—Types of tests on chassis components—Equipment—Testing of automobile as a complete unit—Road Testing and preparation of Test reports.

IV. Automobile Electrical System.

Wiring diagrams and electrical equipment — Lighting system—Principles of road illumination — Requirements of lighting system—Generator and starter—Duties—Principles of

construction—various types—Third brush Generator—Voltage regulator—Cut outs—types of starting systems—Starterator, Startrix, coincidental and solenoid type—Bendix drive—Constructional and design feature—Storage battery—Principles of construction and maintenance—Dash board—remote reading instruments—Lay out of Dash board—Principles of the various instruments—Construction, repair and maintenance—Indicators—horn—Wind shield wiper—Defrosting and Heating—Automobile radio.

V. Body building and Design of Interior.

Types of bodies — Duties of the body—Seating and Ventilating—Functional design of the body—Interior design for beauty and utility—Stream lining—Methods of body construction—Sheet metal working—Methods of fabrication—Finishes—Paints and finishes—Primary coats—Methods of applying the paints—Cellulose paints—Upholstering—Special types of bodies for Station Waggons, Ambulances, Buses etc.

VI. Design and Drafting.

Design and drafting of selected machine parts and fittings—Design of connections—Detail designs—Requirements for fittings—Stress concentration and distribution by special fittings—Wear and fatigue—Standard connections.

Drafting room Practice: Numbering of drawings—Drawing sizes — Codified drawings—Part drawings — Assembly drawings—Installation drawings — Change notices and stop orders, Lay out drawing and elementary lofting, Stress diagrams, Standard parts and their numbering, Material specifications and their stock sizes, Zones in drawings.

VII. Fuels & Lubricants Laboratory.

Testing of various fuels and determining their properties Testing of lubricants—Standardisation and specification.

VIII. Structural Laboratory.

Simple testing of materials in tension, compression, hardness, plotting of stress strain curves—Qualitative and quantitative study of the various structural materials—Analysis of failures.

IX. Engines Laboratory.

Dismantling and assembling of engines and components—Testing of engines and components illustrating theory—Engine tuning—Trouble shooting and minor repairs.

X. Chassis Practice.

Dismantling, assembling and testing of chassis components, Illustrating theory.

XI. Automobile Seminars.

Student lectures on selected general engineering subjects and sometimes with special reference to Automotive Engineering theory and practice, followed by general discussion.

SYLLABUS FOR THE III YEAR

I. Automobile Engine Practice and Design.

Detailed study of the various practices in Automobile industry—Constructional details of the various systems in vogue—Electrical system, Ignition system, cooling system, Induction system and Lubricating system—Practical details of design—Controls—Motor cycle engines.

Design: Application of theory for the design of an engine—Complete design project from ab. initio. Design of various engine components.

Materials of construction: Ferrous and non ferrous materials used in the automobile engine—Properties and testing—Heat treatment, casting and forging and special processes involved—Strength data.

II. Automobile Chassis Practice and Design.

Detailed study of the constructional and design features of the various chassis components of different manufacture—amplifying and illustrating the Theory.

Design: Design of the various components of the Chassis Structural and functional design of the various components like the Frame, Axles etc.—Detailed design project of complete units like Steering Gear, Clutches, Gear Boxes, Braking systems, Wheel suspensions, Engine mounts—Differentials—Shock absorbers etc.—Design of special types for racing etc.—Motor cycles.

III. Materials and Processes in Automobile Manufacture.

British and American standards for Automotive indusry—Nomenclature—Materials of construction—Alloy steel stand

special steels as applied to automobiles—Ferrous and non-ferrous materials—Wood, Glass, Frabric and Plastics in the automotive industry—Casting and forging—Aluminium and Magnesium alloys—Heat treatment—Carburising and nitriding of steels—Bonderizing for prevention of rust—Other special anti corrossive treatments—Electroplating, Chromium and Cadmium plating—Limits and tolerance Practice—Special machinery and tools and equipment for production—Jig and Fixture design—Labour saving devices.

IV. Motor Transport.

Transportation and maintenance principles in connection with fleets of trucks and cars—Layout of service Depots—Store Keeping for spares—Maintenance schedules—Overhauling and rebuilding of worn-out engines—Garage equipment and tools—Lubricant Testing, filters and recovery.

V. Miscellaneous types of vehicles and equipment.

Tractors—Electric Trolley buses and cars—Steam driven vehicles—Jet propelled vehicles—Any other special types.

VI. Engineering Administration

Details of how business is transacted in Motor trade—Cost accounting and time study—Law as it affects Motor trade—Motor Vehicles Act and Rules—Factories Act.

VII. Road sense and Driving.

Principles of driving in Theory and Practice—Road and traffic conventions—Courtesy—Night driving—Cat's Eyes—Safety Factors—Periodic checks on the functiong of the automobile—Essentials of good driving.

VIII. Seminars

Student lectures on special topics relating to automotive theory and Practice, followed by general discussions—A more detailed and critical study of the selected topic will be expected as compared with the 2nd year seminar.

IX. Design and Drafting Practice.

Design projects, including Engine design and chassis components—Detailed design and drafting of selected components.—The Project to be carried out by students in groups, to encourage team work and develop the proper appreciation of the practical difficulties in a Factory Design office.

X. Engine Laboratory.

A thorough investigation of the engine on test bench—Study of the effect of various variable factors like fuel, compression ratio, Temperatures, Supercharging etc. Minor modifications of engines and a study of their effects.

XI. Structural Laboratory.

Construction and testing of small scale models of automobile components like Engine mounts suspension etc—Use of strain gauges for stress analysis of complicated structures—Study of vibrations—Photo-elastic methods of stress analysis—Creep and fatigue testing—Crack detection by magnetic methods.

XII. Automobile Chassis Practice.

Further practical study of Chassis components—Fabrication and testing of various components—Alignment of the chassis—Minor repairs and modification for particular purposes.

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Madras Institute of Technology Chromepet.

AERONAUTICAL ENGINEERING
(Special Course)

II YEAR

Aero Mechanics 1 (AE. 101)

Text Book: Elements of Airfoil and Air-Screw Theory by Glauert and Theoretical Aerodynamics by Milne Thomson.

Reference: Aerodynamic Theory, Editor: Durand; Aerodynamics, Piercy: Fundamentals of Hydro and Aeromechanics by Prandtl and Tietjens and Applied Hydro and Aeromechanics by Prandtl and Tietjens.

Fundamental Equations: Characteristics of a Fluid—stream line and steady motion—Bernoulli's equation—Continuity—accelerated flow—Virtual Mass.

Plane irrotational flow: Rotational and irrotational motion—Fields of Flow—rectillenear flow parallel to X & Y axes—Sources and sinks—Functions of ϕ and ψ for sources and sinks—Doublets—Combined flow—Application for boundaries.

Circulation and Vorticity: Circulation—Circular cylinder without circulation—Circular cylinder with circulation—Vorticity Vortex filament—Strength of a Vortex—irrotational motion—Point Vortices—Surface of discontinuity—Induced velocity.

Velocity Potential: Definition—equipotential lines—Potential function—Energy of field in terms of Velocity potential.

Combination fields of flow: Two rectilenear fields parallel to X & Y axes respectively. Rectillenear flow with source—with sink. Two sources of equal strength—Two sinks of equal strength—source and sink of equal strength—Combination of source and sink of unequal strength—Kutta Joukowski theorem—images—wind tunnel interference—corrections for circular and rectangular tunnels—Vortex above plane—Vortex between walls—Vortex ring—Horse-shoe Vortex—Ground effect on air plane—transfer of lift to ground—Vortex streets.

Conformal transformation applied to Fields of flow: Conformal representation—singular points—Transformation of

flow patterns—Straight line and Circle—air foil and circle—Joukowski Transformation — Circular arcs—Symmetrical air foils—Joukowski air foil—Velocity and pressure distribution—Stagnation points—Moment Coefficient—Analysis at trailing edge—Maximum surface Velocity—Minimum pressure—Profile drag, stalling and Compressible flow—Origin of circulation.

Viscosity: Kinetic Theory—Skin friction—Stoke's Theorem—Reynold's Laws—Poiseuilles Law—Laminar and turbulent flows — Boundary layer — Flow in circular pipes—Decay of Vortices.

Boundary Layer :Boundary layer theory—Equations of flow in boundary layer—thickness—Flat Plate—Separation of flow from wall—development of boundary layer—Theorem of momentum—Prevention of separation—Facts about turbulent flow—Theories of turbulence—Mixing length and Velocity distribution—surface friction and effects of roughness—turbulent flow in pipes—Nature of Laminar and turbulent boundary layer flow around circular cylinder, air foils and sphere. Profile drag and heat transfer—Boundary layer control.

Compressibility : Propagation of small plane disturbances speed of sound—Flow through channels of varying cross sections—design of high-speed wind-tunnels—Large disturbances and shock waves—discontinuities—conditions within a shock wave—Mach number—subsonic and supersonic flow in ducts—Flow with heat transfer—Flow with boundary friction—Ram flow—normal shock wave—inclined or oblique shock wave—shock formation on wedges and cones—shockless supersonic flow around corners and over curved surfaces.

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Theory of Structures I (AE. 102)

Text Books: Theory of structures by Morley ; Airplane structures by Niles & Newell and Airplane structural Analysis and Design by Sechler and Dunne.

References: The various publications of Timoshenko, Den Hertog and others as occasions arise.

Stresses in loaded beams—Pure bending—different shapes of beam cross-sections—shearing stresses in bending—Principal stresses in bending—stresses in built-up beams.

Deflection of loaded beams: Differential equation of the deflection curve—bending of a uniformly loaded beam—deflection by bending moment diagram—method of super-position—deflection by area moment method—deflection of beams with overhangs—loads not parallel to any principal planes of bending—effects of shearing force on deflection.

Statically indeterminate problems in Bending: Redundant constraints—beam built-in at one end supported at the other—beams with ends built in Frames—Beams on three supports—continuous beams.

Composite beams : Variable cross-section: Beams of variable cross-section—beams of two different materials—Reinforced concrete beams—shearing stresses in R. C. beams.

Combined Bending and Torsion: Torsion of circular shafts—Torsion of hollow shafts—Torsion of rectangular cross section—Helical springs—combined bending and twist in circular shafts.

Strain Energy : Strain energy in tension—energy in impact—strain energy in shear and twist—energy in bending—bending produced by impact—General expression of strain energy—Castigliano's theorem—application to statically indeterminate structures—the reciprocal theorem.

Special Problems in bending of beams: Beams on elastic foundation—Beams of finite length—direct compression and axial load—Continuous struts—Tie rod with lateral loading—Centre of twist—Effective width of thin flange.

Curved Beams ; Bending stresses in curved bars—deflection of curved bars—arch hinged at the ends—deflection curve of circular rings—Bending of curved tube.

Thin Plates and Shells: Bending of a plate to a cylindrical surface—Combination of pure bending in two perpendicular directions—Thermal stresses in plates—bending of circular plates loaded symmetrically with respect to the Centre—thin walled vessel submitted to internal pressures—Thermal stresses in cylindrical shells.

Buckling of bars, Plates and shells: Lateral buckling of bar in compression within elastic limit—Energy method for critical compression—buckling of bars of variable cross section Effect of shearing force on critical load—buckling of circular rings and tubes under external pressures—buckling of rectangular plates—buckling of beams without lateral supports.

Torsion: Torsion of non-circular cross section—membran analogy—Torsion of rolled sections—Torsion of thin, tubular

members—Thin-walled members with partial restraint, Thin-walled members with compression.

Columns: Ideal, long and short columns.

Special beams: Wagner beams—incomplete tension field beams—shear resistant beams.

Aircraft Propulsion I (AE. 103)

Text Books: Aircraft Engines Vol. I & II By Judge.

Reference: Internal combustion engines by D. R. Pye. Aircraft Gas Turbine & Jet Propulsion—Godsey & Young; I. C. E. Analysis & Practice by Jennings & Obert.

Systems of Propulsion: Piston engines of Reciprocating and Rotary types—Gas Turbines—Turbo props—Turbo Jets—Ram jets or athodyds—Rockets.

Review of Thermodynamics of I. C. engines: Theory of Heat—Cycles of Operation—Effects of combustion—Variable specific heats and Dissociation—Gas dynamics and Gas Turbine cycles—Heat transfer and thermodynamics of cooling.

Fuels and Combustion: Aviation fuels—Specifications and Classification—Rating of fuels—Octane numbers—Aviatiton Gasoline and Kerosene—Gas Turbine fuels—Flame propagation—Combustion technique—Combustion chambers for Piston Engines and Gas Turbines.

Reciprocating Engine Practice: Induction, fuel, ignition and exhaust systems—Cooling and lubrication—Valves and ports—Engine mounts—power and speed control—Altitude Control—Starting—Fire Hazard and prevention and control—Transmission of power—Reduction Gear—Supercharging.

Testing and Maintenance: Testing equipment—Test house construction—Arrangement of controls—Instrumentation—Various types of Bench Tests—Flight Test—Endurance, type and Development Testing—Maintenance Regulations—Periodic Overhauls.

Aircraft Instruments (AE 104)

Text Books: None.

Theory and construction of Aircraft, Engine and Flight Instruments—Errors—Maintenance—Testing—Calibration.

II YEAR

Design and Drafting of Aircraft components (A.E. 105)

Text Books: } To be prescribed as and when found
References: } necessary.

Design: Design of small machine parts—Design of connections—Detail design of Fittings and connections—Requirements for fittings—Stress concentration and distribution by special fittings—Wear and fatigue—Standard connections.

Materials of aircraft construction and Processes:

Ferrous and non-ferrous materials used in aircraft construction—Wood, Glass, Fabric—Plastics—Heat Treatment—Casting and Forging—Special anti-corrosive treatment—Special heat resistant alloys and process—Finishings—properties of wood of various types—Strength data for Aluminium and Steel alloys—Welding and rivetting—Prestressing and Prestressed construction.

Drafting room practice: Numbering of drawings Drawing sizes, codified drawings, Part drawings, assembly drawings' Installation drawings, change notices and stop orders, lay-out drawing and lofting, Stress diagrams, Standard parts and their numbering, Material specifications and their stock sizes. Zones on drawings.

Aeronautical Seminar I (AE. 106)

Student lectures followed by discussions on general engineering subjects and sometimes with special reference to: Aeronautical Engineering theory and practice. Meant to encourage reading habit and fearless expression of sincere opinions. To promote the critical faculties of students and develop self-confidence.

Aeronautical Laboratory I (AE. 121)

Qualitative and quantitative study of the properties of air. Qualitative study of air flow round various bodies by means of smoke tunnels. Effects of interference. Effects of high-lift devices. Demonstration of principles. Measurements of air-speeds.

Structural Laboratory I (AE. 122)

Simple testing of materials in tension and compression, Hardness, Torsion, Bending, plotting of stress strain curves. Qualitative and Quantitative study of the various structural materials. Analysis of failures.

Engine Laboratory I (AE. 123)

Testing of fuels and lubricants. Study of their properties. Analysis of exhaust gases. Testing of engine accessories and presentation of results.

Instruments Laboratory (AE. 124)

Study of the various aircraft, engine and flight instruments and their calibration. Use of altitude chambers for calibration and testing. Precision measurements. Maintenance, minor repairs and adjustments.

III YEAR

Aero Mechanics II (AE. 201)

Text Book: Elements of Airfoil and Airscrew Theory by Glauert.

Theoretical Aerodynamics by Milne-Thomson.

Reference: Aerodynamic Theory, Editor Durand, Applied Wing Theory—Reid.

Wing Theory: Flow around an airfoil—Circulation around an airfoil—Vortex system connected with a circulatory motion around airfoil—Bound and trailing vortices—Induced drag, Infinite airfoil—General lift and moment formulae for an airfoil—Thin airfoils—Finite airfoil—Circulation and vorticity—Induced velocity—lift and induced drag—Elliptic loading—effect of aspect ratio—rectangular airfoil—effect of aspect ratio—Tapered and twisted airfoils—sweep back.

Downwash: Distance of trailing vortices—Uniform and elliptic loading—downwash and incidence—Calculation of downwash.

Airscrew Theory: Axial momentum theory—Rankine—Froude theory—Ideal efficiency—General momentum theory—

Propeller efficiency—Blade Element theory—Blade interference—Vortex system of propeller—Cascade of airfoils and their characteristics—Vortex theory of propellers—appl[illegible]tions—effect of solidity and pitch—Approximate method of [illegible]tion—Propeller of maximum efficiency—Body and Wing inter[illegible]nce—Experimental methods—Wind tunnel interference—Scale-effect—Compressibility—Helicopter rotors—Ideal Helicopter—Effect of profile drag—Blade Element Theory—Horizontal motion—Rigid rotor—periodic variation of blade angles—Windmills and fans—Propellers in tandem.

THEORY OF STRUCTURES II (AE.202)

Reference: "Theory of Elasticity", Timoshenko
"Plasticity", Nadai
Others as needs arise.

Stress concentration: Stress concentration in tension or compression—Stresses in plates with circular holes—Other cases in tension members—Shafts of variable diameter—Experiments with models—Stresses at the points of load application.

Deformation beyond Elastic limits: Pure bending in Plastic material—bending by transverse load beyond elastic limit—Residual stresses—torsion in plastic range.

Theory of Elasticity: Simple problems and some relevant portions of mathematical theory.

Photo Elasticity: Fundamentals required for the student to handle photo elastic stress analysing apparatus—Applications for specific problems.

Fatigue and creep: Fundamentals—Effect on design.

Aircraft Propulsion II (AE. 203)

Text Books: "Aircraft Gas Turbine" Godsey & Young
"Modern Gas Turbine", A. W. Judge.
"Popeller Design" Weick

References: As need airses.

Propeller Design: Review of fundamentals—Design practice—Types of propellers—Fixed, adjustable and variable

pitch propellers—Constant speed propellers—Full Feathering, braking and contrarotating propellers—Reduction Gear design —Vibration problems.

Gas Turbines: Review of thermo & aero—dynamics—Intake and compression—Axial, centrifugal and diagonal compressors—Combustion chambers of the can and annular types—Design of compressors and combustion chambers—Turbine theory—Disc and blade cooling—Lubrication—power Transmission and reduction gears—Engine mounting—power and speed controls—Automatic controls—Starter Design and constructional details of various components—Maintenance Testing.

Jet Propulsion: Thermo and aerodynamics of Jet nozzles—Effect of Altitude on Jet Thrust and Efficiency—Turbo—jets Ramjets or Athodyds and Rockets—A comparative study—Limits of operational utility—Economics of Air Screw and Jet Propulsion.

Engine Performance and Operation: Altitude—Power characteristic curves for normally aspirated and supercharged engines and Gas Turbines—Pilot's controls and fuel consumption.

Reduction of Fire Hazards: General measures—Fire proof bulk-heads—Spraying systems of the Gravinar type—Safety fuels—Limitation of Exhaust Temperature.

Dynamics of Engine Mounts: Whirling of Engines on the Mount—Vibrations and their effect on Airplanes—Gyroscopic effects—Engine Balancing—Mount Design.

Engine Installation: Installation of Engine in air frame—Cowlings and their effect on the drag of engine—Location of auxilliaries—Design of control systems and their connetions to pilot controls—Fire Hazards—Various types of installation—Design for ease of maintenance—Location of fuel and oil lines.

Applied Aerodynamics (AE. 204)

Text Book: "Technical Aerodynamics" K. D. Wood.

Reference: " Aerodynamic Theory", Editor Durand.

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mosphere: Standard air—Properties and composition.

foil characteristics: (Continuation of Aero Mechanics —Forces on airfoils—measurement—Wind tunnels—Cons- of various types—elements of design—corrections of —presentation of results. Practical corrections for urbulence and surface roughness, Prediction of charact- from dimensions. High lift devices—Biplane characteri-

rasite Drag: Drag estimation—Parasite drag data— n of parasite drag with incidence—power required for ight—Interference drag.

gine Propeller characteristics: Airplane engine—Prop- menclature and characteristics—Propeller selection— of Propellers—Factors affecting propeller efficiency— eficiency curves and non-dimensional representation— Horse power curves at full throttle—Horse power avail- art throttle conditions—Propeller body interference.

rplane performance: Standard atmosphere—Engine (a) basic computation—power required and power le.

Power required: Data necessary—Induced drag and ent Monoplane Aspect Ratio—Profile drag—Structural er parasite drag—Total drag—Power required at Sea and Altitude.

Power available: Power curves of engine, choice of er diameter—design V/ND and maximum efficiency— rottle engine speed and power at Sea Level—Propeller cy—Power available at Sea Level and Altitude.

Performance from power graphs: High speed—rate of ceilings—Angle of climb—Time of climb—power re- —Power available—Performance—Bairstow's method ey Reid method—Oswald & Rockefeller method—Range Endurance—Stalling speed—Landing speed—take off e—Landing distance—Useful load—Factors affecting nonce—altitude, wing loading, power loading—super- g and throttling—Cooling drag—exhaust thrust—Predi- nd analysis of performance—Flight testing—Turbo-prop o jet aircraft performance—Performance practice— nance reduction.

ability and control: Horizontal straight flight, with or t sideslip—climbs—glides—downwash—Tail setting and

trimming—action of controls—Types of main planes and control surfaces—Slots and flaps.—Loops—Turn, with or without sideslip—Rolls Elementary theory of spirals and spins, rolling, pitching and yawing moments—Load factors.

Moving axes—Normal forces—Longitudinal forces and lateral forces—Forces and moments due to small increments of linear and angular velocities—Effect of gusts. Resistance derivatives—Stability solutions—graphical methods—Phugoid and small oscillations—spiral instability—Aerodynamic centre—relation between control and stability—Interconnection between longitudinal and lateral stability—auto-rotation—bomb and parachute stability—flutter—mass balancing—buffeting.

Hull and float characteristics: Action of float in taking off—characteristics—estimation of time of take off—Effect of wind on take off—effects of flaps—transverse stability on water.

Aircraft Structural Analysis and Design (AE.205)

Text books: For Structural Analysis, same as Theory of Structures I.
For Design: "Airplane Design" by K. D. Wood.
"Airplane Design" by Teichman.

Reference: The various C. A. A. & M. C. A. publications.
"Airplane Design" by E. P. Warner.

Structural parts of the Airplane: Wing—Fuselage—Tail Plane—Landing Gear—Engine mounts—Control systems and their structural peculiarities—methods of construction.

Loads and Load Factors: Airworthiness requirements—Standard conditions of loading—Classification of Aircraft—Critical conditions of loading for various parts—Margin of safety and special factors.

Types of construction: Metal, wooden, stressed skin, Trusses, Monocoque, Geodetic, Sandwich etc.—Effects of climate on the selection of type of construction.

Design Procedure: Preliminary design layout, weight estimation and weight control, weight breakdown—Balance and

C. G. Location—Weight breakdown of parts—Change in design for weight control—relative weights of different types of construction.

Design: Design of wings, Tail planes, fuselage, Landing gear, Control systems, Engine Mount etc.

Vibration problems: Wing binary vibration—Systems of three degrees of freedom—Flutter of wing and tail planes—Control system rigidity and non-reversible controls—Static and Dynamic balance of moving parts—Damping and its effect on vibration—Flutter prevention—Methods of determination of natural frequencies and critical flutter speed—Flexible mounting—Sound proofing.

Airworthiness Reqirements (AE. 206)

British, American & Indian airworthiness requirements Airplanes, propellers, engines, instruments etc. CAR O4, B.C, A. R. and other CAA & MCA puplications.

Air Navigation Regulations (AE.207)

Scope of Civil Aviation authority—Indian Aircraft Manual etc.

Aeronautical Seminars II (AE. 208)

Student lectures followed by discussions on subjects ating to aeronautics. It is proposed to cover the general s of air transport, air navigation. meterology and other s of secondary importance in a general way, by this means.

Aeronautical Laboratory II (AE. 221)

Plotting of airfoil characteristics from measurements made in wind tunnels. Testing of various airfoils—Measurement of the effects of interference and high-lift devices—Testing of complete models—Reduction and representation of results—Study of propellers and fans.

Structural Laboratory (AE. 222)

Construction and testing of small, scale models of airplane components like ribs, spars etc. Use of strain gauge for stress analysis of complicated structures. Study of vibrations and flutter. Photo elastic methods of stress analysis—Creep and Fatigue testing—Crack detection by magnetic methods.

Power-plant Laboratory II (AE.223)

Testing of engine accessories like fuel and oil pumps, magnetoes, spark plugs, carburetors etc. Testing of superchargers—Brake testing of engines—Plotting of dp/dn curves for engine. Study of engine performance under varying conditions—Testing of Propellers—Effect of varying pitch—Calibration of propeller governors—Performance reduction and presentation of test reports.

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