

ANNEXURE TO ITEM 27.3

18th MEETING OF SENATE

Agenda



**NATIONAL INSTITUTE OF TECHNOLOGY
KURUKSHETRA**

TO BE HELD ON: 1st November, 2011

**NATIONAL INSTITUTE OF TECHNOLOGY
KURUKSHETRA-136119**

Agenda	:	18th Meeting of the Senate
Venue	:	Senate Hall, NIT, Kurukshetra
Date & Time	:	1st November, 2011 at 04:35 p.m.

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Item 18.1 To note the Action Taken Report on the minutes of the 16th meeting of the Senate held on 24.01.2011

The Action Taken Report on the minutes of the 16th meeting of the Senate held on 24.01.2011 is as under:-

Item No.	Agenda Item	Minutes of the Item	Action taken
16.1	To confirm the minutes of the 15 th meeting of the Senate held on 03.07.2010	The Senate confirmed the minutes of the 15 th meeting of the Senate held on 03.07.2010 as circulated to the members of the Senate and as per details furnished in the agenda item.	No action is required.
16.2	To note the Action Taken on the minutes of the 15 th meeting of the Senate held on 03.07.2010	The Senate noted the actions taken on the minutes of the 15 th meeting of the Senate held on 03.07.2010 as per details furnished in the agenda item. While noting the action taken under 15.2, the Senate observed that in future, the matter regarding the nomination to BOG to be brought by the Secretary to the Senate well in advance prior to the expiry of the term of existing nominated members to the Senate.	No action is required.
16.3	To consider and approve decisions taken in 30 th to 33 rd meetings of Standing Committee on Senate Affairs (SCSA)	The Senate considered the decisions taken in 30 th to 33 rd meetings of the Standing Committee on Senate Affairs. While considering the decision taken under Item 1 of the 31 st SCSA meeting regarding the request of B.Tech 2006 batch students who have re-appear internal assessment in practicals, seminars and projects in Eighth Semester, it was decided that the students who have completed their B.Tech. 8 th Semester of studies are required to register at the beginning of the semester. Also they will have to pay the registration fee @ of Rs. 5000/- per practical/viva- voce per subject (including design, minor/major project) and @ of Rs. 1000/- per theory paper (including seminar). This will be effective from session 2011-12. Apart from above change, the Senate approved the decisions taken in 30 th to 33 rd meetings of Standing Committee on Senate Affairs.	Action taken.
16.4	To consider remuneration to	The Senate considered the remuneration to foreign external	The decision approved by BOG and implemented. 1

	Foreign External Examiner for evaluation of Ph. D Thesis	examiner for evaluating Ph. D. thesis and decided that the rates of remuneration for foreign external examiner for evaluation of Ph. D. thesis will be US \$ 300 + postal charges. The decision to increase remuneration will be implemented after getting approval from the Finance Committee and the Board of Governors.	
16.5	To note the admission status of various UG/PG Courses for the academic session 2010-11 at National Institute of Technology, Kurukshetra	The Senate noted the admission status of various UG/PG courses for the academic session 2010-2011 at National Institute of Technology, Kurukshetra as per details furnished in the agenda item.	No action is required.
16.6	To consider approving name of the students to be awarded degree in the 8 th Convocation and to note the result status of B.Tech. 2006 batch students	<p>The Senate considered and approved the award of degrees to the graduates of B.Tech., M.Tech., MBA, MCA and Ph. D. of NIT, Kurukshetra in the 8th Convocation as detailed in the agenda item 16.6. Further, the Senate authorized the Director to accord approval for the award of degrees in 8th Convocation, if some more students become eligible for the award of degrees later on but before 8th Convocation and also decided that the date of present meeting as the cut-off date be replaced by the list as on this date.</p> <p>Further, the Senate also noted the result status of B.Tech. 2006 entry batch. The Senate observed that the result should be shown in an analytical way mentioning pass percentage in first attempt, students having CGPA in descending order so that analysis could be made on the quality of the graduates produced in comparison to their quality at the time of admission in this institute.</p>	No action required.
16.7	To consider approving the names of the students to be awarded medals and certificates in the 8 th Convocation	The Senate considered and approved the award of medals and certificates as detailed in the agenda item. Further, the Senate authorized the Director to accord approval for the award of medals and certificates for additional students who become eligible for award later on but before 8 th Convocation.	No action required.

16.8	To consider the request of Head, Physics Department for increasing number of fellowships for the eligible Ph.D. candidates	The Senate considered the request of Head, Physics Department for increasing number of fellowships for the eligible candidates. The Senate authorized the Director to temporarily transfer one vacant seat from any other department to the needy department. Further, the Senate decided that the Secretary of the Senate will seek clarification from MHRD that the allotted scholarships are for a block of three years or on annual basis.	Clarification sought. Response awaited.
16.9	To consider the request of some B.Tech. students who had been selected as volunteers in the XIX Commonwealth Games, Delhi by the Organizing Committee of Commonwealth Games for relaxation in attendance/sessionals during the training time/event time at Delhi	The Senate considered the request of some B.Tech. students who had been selected as volunteers in the XIX Commonwealth Games, Delhi by the Organizing Committee of Commonwealth Games for relaxation in attendance/sessionals during the training time/event time at Delhi and did not agree to their request.	No action required.
16.10	To consider the recommendations of the committee constituted for revising the Cumulative Professional Development Allowance (CPDA) rules.	The Senate considered the recommendations of the committee constituted for revising the Cumulative Professional Development Allowance (CPDA) rules and decided that the same committee will re-consider the matters as per issues raised / discussions by the Senate members and will submit the revised recommendation within two days. The Senate further authorized the Director to take appropriate decision on the recommendations of the committee.	Action taken.
16.11	To re-consider the request of Mr. Raghendra Tiwari, Roll No. 803/03 an ex-M.Tech. (EC&CE) student for granting extension for submitting M.Tech. dissertation	The Senate re-considered the request of Mr. Raghendra Tiwari, Roll No. 803/03 an ex- M.Tech. (EC&CE) student for granting extension for submitting M.Tech. dissertation and authorized the Director to take decision in the matter.	Senate decision conveyed to Head, ECE Department.

16.12	To consider the issue of including areas relating to surveying/GIS/Remote Sensing in the list of projects to be allotted to B.Tech Final year students as per decision taken by BOS of Civil Engg. Deptt. on the request of Dr. Mahesh Pal.	The Senate considered the recommendations of the Board of Studies of Civil Engg. Deptt. for including areas relating to Surveying/GIS/Remote Sensing in the list of projects to be allotted to B.Tech. Final year students and approved the same.	Senate decision conveyed to BOS, Civil Engg. Department
16.13	To consider amendment in Ph.D Rules	The Senate considered the amendment in Ph. D. Rules and decided that a committee comprising Dr. S P Jain , Dean (Planning & Development) as Chairman, Dr. V K Sehgal, Dean (Faculty Welfare), Dr. A Swarup, Dean (Research & Consultancy) as members and Dr. K K Singh, Professor IC (Academic Affairs & Senate) as Special Invitee be constituted. This committee will comprehensively review the existing Ph.D rules and will submit its report within a month.	The report submitted by the committee placed before SCSA in its 36 th meeting.
16.14	To consider payment of remuneration for examination work to faculty members	The Senate considered the issue of payment of remuneration for examination work to faculty members and decided that a Committee comprising Dr. V K Arora, Dean (Students Welfare) as Chairman, Dr. Rajender Kumar, Controller of Exams and Dr. H.K Sharma, Professor in Civil Engg. Department as members be constituted to consider/frame the rules and regulations for examinations as well as payment of remuneration for examination work to faculty members.	The recommendations of the committee are awaited.
16.15	To consider the format of Provisional Degree Certificate to be awarded to the Research Scholars after declaration of Ph. D. result	The Senate considered the format of Provisional Degree Certificate to be awarded to the Research Scholars after declaration of Ph. D. result After incorporating the changes discussed, the format was approved. (Format enclosed on Appendix – II)	Action taken.

16.16	To consider the request of faculty appointed on adhoc/contract basis for admission to Ph.D part-time programme of the Institute	The Senate considered the request of faculty appointed on adhoc / contract basis for admission to Ph.D part-time programme of the Institute and decided that the committee already constituted for reviewing Ph.D Rules and Regulations will look into the request of faculty appointed on adhoc/contract basis.	Action in process under item 16.13.
		Under any other item, the issue of recognized universities for admission to PG programs of the Institute was raised and it was decided the committee already constituted for reviewing the Ph.D Rules & Regulations will also look into this matter.	

Item 18.2 To note the Action Taken Report on the minutes of the 17th Special meeting of the Senate held on 17.06.2011

The Action Taken Report on the minutes of the 16th meeting of the Senate held on 24.01.2011 is as under:-

Item No.	Agenda Item	Minutes of the Item	Action taken
17.1	To confirm the minutes of the 16 th meeting of the Senate held on 24.01.2011	The minutes of 16 th meeting of the Senate were confirmed	No action required.
17.2	To consider the proposal for minimum attendance requirement for eligibility to appear in the end semester examination in all courses of UG & PG programmes	<p>The Senate considered and approved following attendance requirement rule to be effective from the Academic Session 2011-2012.</p> <p>Attendance Requirement Rule:</p> <p>In order to be eligible to appear in the end semester examinations in a subject in a semester, the student must have:</p> <ul style="list-style-type: none"> (i) Registration in the semester (ii) His/her attendance must be 75% or more out of total no. of classes held in each subject (i.e. lectures + tutorials in the theory courses and practical hours in practical courses). If a student falls short of this minimum required attendance, he/she will automatically be awarded "Fail Grade" i.e. F Grade and shall be required to repeat the studies of that particular course. <p>Provided that:</p> <ul style="list-style-type: none"> (a) If the Cumulative Attendance (CA) of the student in all the theory and practical courses 	Action taken.

		<p>for which he/she registers himself/herself in a semester is 75% or more, the student shall be eligible to appear in end semester examination of all the theory and practical courses, if in no subject his/her attendance is less than 70% else the student shall be required to repeat the course(s) in which his/her attendance is less than 70%.</p>	
		<p>(b) Further, if the CA of the student in the semester is also less than 75% then the student shall be eligible in the end semester examination only in those courses in which his/her attendance is 75% or more.</p> <p>(c) Under exceptional circumstances, the Director may relax minimum CA requirement to 65% on genuine medical grounds or other compelling reasons on the recommendations of the HOD and concerned Dean.</p> <p>(d) In extreme cases such as accident, the Director may relax the minimum CA requirement to 50% on the recommendation of the concerned HOD and Dean (Academic)/Professor Incharge (Academic Affairs & Senate).</p> <p>(e) The CA computation shall be done by the respective HODs for all UG & PG programs except for B.Tech 1st year. For B.Tech 1st year, the CA shall be compiled by Professor Incharge (Academic Affairs & Senate). For B.Tech 1st semester courses, the attendance computation shall be done w.e.f. the date of admission of the respective student. All the compiled CA information shall be forwarded to the Dean (Academic) within 3</p>	<p style="text-align: right;">7</p>

		days after the last teaching day of the semester for onward transmission to the Controller of Examinations for necessary action.	
17.3	To consider the proposal for academic progress monitoring in each subject of the UG/PG programmes	<p>The Senate considered and approved the following procedure for monitoring the academic progress:</p> <p>(a) There shall be a minimum of ten weeks of actual teaching in all the courses of different credits in both UG/PG programmes. If the teacher is on leave due to some other assignments, he/she will engage extra classes to complete the minimum required number of weeks of actual teaching.</p> <p>(b) The Cumulative Monthly Attendance (CMA) of the student in respect of all the subjects, for which he/she registers, shall be compiled by the concerned HOD and shall be forwarded to the Dean (Academic). The compilation of the CMA shall be done after 5 weeks and 10 weeks from the start of the semester. The compiled CMA shall be forwarded to the Dean (Academic) within 6 weeks and 11 weeks respectively from the start of the semester. In respect of B.Tech 1st Year courses, the academic progress shall be monitored and compiled by the Professor Incharge (Academic Affairs & Senate) and forwarded to the Dean (Academic).</p> <p>(c) Parents/Guardian of the students who are falling short of minimum attendance requirement</p>	Action taken.

		<p>shall be intormed by the concerned HOD on the basis of CMA twice in a semester under intimation to the Dean (Academic).</p> <p>(d) An Undertaking from all the UG and PG students shall be taken at the time of admission/registration w.e.f. Academic Session 2011-2012 to the effect that they are aware of and fully understand the minimum attendance requirement rule and undertake to fulfil the same."</p> <p>Finally, the Senate also confirmed the above minutes in this meeting and recommended that the above resolutions be implemented with effect from the academic session 2011-12.</p>	
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Item 18.3: To note the action taken by the Hon'ble Chairman of the Senate on the recommendations made by the SCSA in its 34th to 38th meetings

(a) Action taken on the minutes of the 34th SCSA meeting held on 21.03.2011

S.No.	Item	Action taken
1.	To consider and approve the degree format of MCA	Approved degree format used in 7 th Convocation.
2.	To consider and decide the weight of medals	Approved medals weight used in 7 th convocation
3.	To consider and approve Manohar Award of Excellence to the topper of B.Tech 1 st year student (i.e. Ms Komal Gupta, Roll No. 109122)	Action taken
4.	Any other item, the following issues were discussed:- i) The classes will remain suspended on 31 st March, 2011 on account of 8th Convocation-2011 ii) The 2 nd mid Semester tests which were earlier scheduled to be held on 28 th , 29 th and 30 th March, 2011 will now be held on 4 th , 5 th and 6 th April, 2011. iii) The SCSA was informed regarding approval of additional eligible awardees of degrees, medals and certificates by the Director as authorized by the Senate in its 16 th meeting held on 24.01.2011 under item 16.6 and 16.7.	Decisions implemented

(b) Action taken on the minutes of the 35th SCSA meeting held on 25.04.2011

1.	To consider and approve the minutes of the meeting of all Deans and Heads of Departments offering M.Tech & MBA programmes held on 20.4.2011 for admission in M.Tech & MBA programmes under DASA scheme	Approval of the SCSA for admission in M.Tech and MBA programs under DASA scheme sent to the Chairman, DASA-2011, MHRD, Govt. of India, NIT, Surathkal.
2.	To consider the status of B.Tech results of previous semester	Action taken by Controller of Exams.
3.	Under any other item it was decided by the SCSA that all Course Coordinators will send a separate list of the students whose score is less than 40% in internal	Copy of SCSA minutes sent to all HODs.

	assessment (sessionals) of the subjects to the Controller of Exams, with a copy of the same to the Dean (Academic) through COE.	
(c) Action taken on the minutes of the 36th SCSA meeting held on 16.05.2011		
1.	To consider and approve the proposed Academic Calendar	Academic Calendar was approved after modifications and displayed on Institute Website.
2.	To consider and approve the recommendations of the committee for granting extension in registration period to Mr. Sathans, Ph.D Research Scholar in Electrical Engg. Department	Mr. Sathans was granted extension in Ph.D period upto 31 st December, 2011 as recommended by SCSA.
3.	To consider the recommendations of the committee constituted for reviewing the existing Ph.D Rules and Regulations	The matter to be taken up in the next senate meeting.
4.	To consider the request of Mr. Abhinav Sukhija, Roll No. 107398, B.Tech Civil Engg. student for reservation for physically handicapped candidates in M.Tech programme	As recommended by SCSA, the item is taken up as agenda under Item No. 18.13
5.	<p>Any other item:-</p> <p>Under any other item, the issues of clash of examination dates and minimum attendance requirement were discussed and it was decided that proper guidelines be decided in the Senate in its next meeting.</p> <p>Regarding the issue of payment of remuneration for examination work to faculty members, the committee already constituted by the Senate in its 16th meeting was requested to submit its recommendations for placing the same in the next meeting of the Senate.</p> <p>The Controller of Exams, raised the problem of plagiarism in Ph.D. work. The SCSA authorized the Director to constitute a committee to examine the issue of plagiarism.</p>	<p>(i) The present attendance requirement rule passed in 17th Special meeting of the Senate takes care of the issue. The issue of clash of examination dates is taken care of by Controller of Exams.</p> <p>(ii) The committee comprising of Dr. V.K Arora, Professor in CED, Dr. H.K Sharma, Professor in CED, and Controller of Examinations has not yet submitted its recommendations.</p> <p>(iii) The committee has been constituted. Report awaited.</p>
(d) Action taken on the minutes of the 37th SCSA meeting held on 30.8.2011		
1.	To consider increase in seats in M.Tech and Ph.D programmes (under TEQIP-II) in engineering disciplines	The admission to the increased seats in M.Tech has been done. For admission in Ph.D programme, the decision of the SCSA has been conveyed to all the departments, vide letter No. NITK/D(Acad.)/2011

		dated 5.10.2011.
(e) Action taken on the minutes of the 38th SCSA meeting held on 28.09.2011		
1.	To consider the request of B.Tech final year students for attendance benefit in lieu of participation in the campus placement	The SCSA decided that the attendance benefit upto a maximum of 15 teaching days be given to the students participating in placement process/extra/co-curricular activities, if duly recommended by the concerned Professor-in-Charge.
2.	To consider and approve the award of scholarship to M.Tech students under Project TEQIP-II	Award of scholarship to M.Tech as well as Ph.D students stands approved vide SCSA decision taken in its 37 th meeting
3.	<p>(i) Under any other item, regarding to award internal marks to the students, in the context, it was decided that a committee is constituted consisting of Prof. V.K Sehgal, Dean (Faculty Welfare)-Convener, Prof. A.K Gupta, Dean (Academic), Prof. K.K. Singh, Prof.-in-Charge (Academic & Senate Affairs) & Dr. S.M. Gupta, Controller of Examinations. The committee will submit its report within two days.</p> <p>(ii) Under any other item No. (ii), the SCSA discussed and decided that the minimum ten examiners may be selected (five foreign examiners from academic institutions preferably from developed countries and five examiners across the country from reputed Indian Universities, IITs, NITs and National Research Organizations for evaluation of Ph.D thesis.</p>	<p>Action taken</p> <p>Action taken</p>

Item 18.4: To consider and decide the amendments to the role of BOS, DRC and DAC:

(a) Constitution and functions of Departmental Affairs Committee:

It is proposed that the composition of DAC may be as under:-

- (i) Head of the Department Convener
- (ii) All Professor of the Department
- (iii) Two Associate Professors and two Assistant Professors in order of seniority by rotation for 2 years

The Head of the Department shall constitute the DAC and get it approved by the Director.

(b) Functions of DAC:

The DAC shall discharge the following functions:

1. To appoint examiners for B.Tech and M.Tech courses.
2. Advising the Head of the Department regarding policies and procedures for Academic Programs and other departmental affairs for smooth functioning of the department.
3. Periodical reviewing of the UG / PG courses and recommending updation / modification of syllabi from time to time.

(c) Functions of DRC:

Recommending the Board of Examiners for evaluation of Ph.D. thesis to the Director through Controller of Examinations and thus dispensing with the role of BOS as in Rule 11.3 of the Ph.D. Ordinance.

Rest of the functions of the DRC shall remain the same as approved by the Senate vide Item No. 1.4.

(d) Function of BOS:

Except for function mentioned under Sr. No.4 (ii) (pertaining to appointment of examiners) approved by Senate vide Item No. 1.3 in 1st Senate meeting, all other functions of BOS remain same.

Senate may consider for approval.

Item No. 18.5: Fee refund rules for all programs (UG, PG & Ph.D.) to be included in the Prospectus.

- (i) The proposed fee refund rules for regular UG, PG & Ph.D. Programs and self-financed MBA, MCA programs are given in Annexure 18.5.

These refund rules are proposed to be applicable w.e.f. Academic Session 2012-13.

- (ii) In case of Ph.D. students, there shall be no refund of fee if the registration is cancelled. However the security amount, if any, shall be refundable.

It is proposed that, above fee refund rules may be included in the prospectus.

The Senate may consider for approval.

Refund of fee to the candidates withdrawing from B.Tech./M.Tech. Courses

No of days from admission to withdrawal of Admission	Amount to be deducted from students
B.Tech.	
3 days	No deduction
04 to 12 days	Rs. 3,000/-
13 to 30 days	Rs. 7,500/-
30 days on more	only security to be refunded
M.Tech.	
3 days	Rs. 1000/-
04 to 12 days	Rs. 3,000/-
13 to 30 days	Rs. 7,500/-
30 days on more	only security to be refunded

Refund of fee to the candidates withdrawing from MBA/MCA Courses

Date of vacating the seat	Amount to be deducted from students
MBA/MCA	
Before the commencement of classes	Rs.1000/-
Upto 31 st July	Rs. 10,000/-
Upto 15 th August	Rs.16,000/-
Upto 31 st August	Rs.20,000/-
Upto 15 th September (i.e. last day of the admission.	Rs.25,000/-
After 15 th September	only security to be refunded

Item No. 18.6: Introduction of regular programs of MBA & MCA in the Institute.

The Institute introduced 2 year MBA and 3 year MCA programs in the years 2006 and 2007 respectively in the self-financed mode and four batches of MBA and two batches of MCA have passed out. Presently the academic activities of these Departments are being conducted by appointing contract faculty. This has resulted into non-availability of senior faculty for academic growth and development of these programs and also adversely affecting the quality of teaching / learning due to fact that experienced and highly qualified teachers are not available on contract basis. These factors are worsening the placement quality and prospects of the passing out students. Further, many employers visiting the Institute for recruitments of final year MBA and MCA students have been advising to improve the quality of teaching-learning on priority basis by recruiting highly qualified permanent faculty for these Departments.

It is pertinent to mention that MHRD, Govt. of India sanctioned the 11 regular faculty posts each for MBA and MCA programs (included with other departments) vide letter no.F-10-38/2008-T.S.III dated 10.02.2009 which is enclosed at Annexure 18.6 for ready reference. In addition, considering the relevance of MBA and MCA programs, manpower requirement, employability scenario, and the fact that the MHRD has already approved conduct of these programs in the Institute, separate Departmental buildings for these programs with an investment of approximately Rs.562 lacs have been constructed by the Institute. However, till date no permanent faculty could be appointed due to self-financed mode of these courses.

In view of the above it is proposed that regular MBA and MCA programs be introduced in the Institute and the total intake for regular vis-à-vis self-finance mode may be discussed.

The Senate may consider and decide.

N.I.T. KURUKSHETRA
 Dy. No. 1153 Date: 18/2/09

Sl. No.	Name of the posts	Scale of pay	No. of posts
(i)	Professor	Rs.16400-22400/-	11 (eleven)
(ii)	Assistant Prof.	Rs.12000-18300/-	24 (twenty four)
(iii)	Lecturer	Rs.8000-13500/-	48 (forty eight)
	Total		83 (eighty three)

Most Important:-18.6
 BY Fax

No.F-10-38/2008-T.S.III
 Government of India
 Ministry of Human Resource Development
 Department of Higher Education
 New Delhi, the 10th February, 2009.

The Director
 National Institute of Technology,
 Kurukshetra -136119

Subject: Creation of Faculty Posts in the National Institute of Technology, Kurukshetra - regarding.

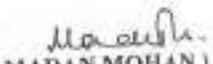
Sir,
 The proposal of the Institute regarding creation of additional faculty posts for it in view of increase in intake of students on account of OBC reservation ~~(54%)~~ in 2008-09, has been examined in this Ministry. Based on the information furnished by the Institute, sanction of the competent authority is hereby conveyed for the creation of **additional faculty posts** as mentioned below:-

Sl. No.	Name of the posts	Scale of pay	No. of posts
(i)	Professor	Rs.16400-22400/-	11 (eleven)
(ii)	Assistant Prof.	Rs.12000-18300/-	24 (twenty four)
(iii)	Lecturer	Rs.8000-13500/-	48 (forty eight)
	Total		83 (eighty three)

2. It is clarified that the total faculty posts should not exceed the total entitlement of the Institute i.e. Professor-33, Asstt. Professor-67 and Lecturer-133 (Total -233), as a result of the above creation of faculty posts. It is also advised that while actually filling up the additional faculty posts being sanctioned, the temporary arrangement made in respect of visiting faculty etc. should be discontinued.

3. The expenditure on operation of the posts being created on account of OBC reservation would be met from OSC (Plan) allocation of the National Institute of Technology, Kurukshetra.

4. This issues with the approval of the competent authority.

Yours faithfully,

 (MADAN MOHAN)
 DIRECTOR (NIT)
 Telefax : 23387465

Handwritten signature and date: 17/2/09

Copy to :

1. Chairman, Board of Governors, National Institute of Technology, Kurukshetra.
2. IFD, Ministry of Human Resource Development
3. PS to JS (DLT)

spec. rvc
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NATIONAL INSTITUTE OF TECHNOLOGY
KURUKSHETRA-136119

No. Gen.-I/Staff/ ~~12238~~ 11238

Dated: 23/12/08

The Director (NITs)
Government of India,
Ministry of Human Resource Development,
Department Of Higher Education,
New Delhi-110001

Subject: - Furnishing of information regarding sanction of Faculty and Non-Faculty Staff of NITs

Sir,
Please refer to letter No. F-23-17/2008-TS.III, dated 30th September, 2008, F.8-15/2008-T.S.III, dated 17th November, 2008 and F.8-15/2008-T.S.III, dated 19th November, 2008 on the subject cited above.

In this connection, the requisite information is as under: -

1. The information as required vide letter No. F-23-17/2008-TS.III, dated 30th September is enclosed on the prescribed format as **Appendix-I to III**.
2. The information as required vide letter Nos. , F.8-15/2008-T.S.III, dated 17th November, 2008 and F.8-15/2008-T.S.III, dated 19th November, 2008 is enclosed on the prescribed format as **Appendix -IV & V**.

Further, it is pertinent to mention here that the first semester of the students, admitted during the year 2008-09, has already been completed, which was managed by appointed faculty as well as non-faculty on contract basis. Further the study of the second semester of these students will also be managed by appointing persons on contract basis. Hence, the proposal for the sanction of faculty as well as non-faculty is being submitted from the year 2009-10 onwards.

On the basis of information furnished on the enclosed appendix - I to V, the following proposal for the year 2009-10 is submitted for your kind consideration and approval: -

A) Creation of Post

Sr. No.	Name of the Post & Scale of Pay	No. of Posts as per entitlement for the year 2009-10			No. of posts already sanctioned (for Egg.)	Additional posts to be created for the year 2009-10		
		Egg.	MBA & MCA (SP)	Total		Egg.	MBA & MCA (SP)	Total
1.	Professor Rs. 16400-22400	36	03	39	22	14	03	17
2.	Asst. Prof. Rs. 12000-18300	73	08	81	43	30	08	38
3.	Lecturer Rs. 8000-13500	143	18	161	85	58	18	76
	Total	252	29	281	150	102	29	131*

* As per appendix -III

However, it is worth mentioning here that for the year 2010-11 to 2014-15, the following additional posts will be required to be created:-

Sr. No.	Name of the Post & Scale of Pay	2010-11			2011-12			2012-13			2013-14			2014-15		
		Reg	ABU f/ACI	Total	Reg	ABU f/ACI	Total	Reg	ABU f/ACI	Total	Reg	ABU f/ACI	Total	Reg	ABU f/ACI	Total
1.	Professor Rs. 16400- 22400	05	01	06	02	01	03	07	-	07	02	-	02	-	-	-
2.	Asst. Prof. Rs. 12000- 18300	07	02	09	10	01	11	05	01	06	02	-	02	-	-	-
3.	Lecturer Rs. 8000-13500	22	02	24	16	02	18	07	-	07	05	-	05	-	-	-
	Total	34	05	39	28	04	32	19	01	20	09	-	09	-	-	-

* As per appendix -III

Non-Faculty Posts

Sr. No.	Name of the Post & Scale of Pay	No. of Post as per entitlement for the year 2009-10	No. of Posts already sanctioned	No. of person in Position as on 01.01.09	Vacancy as on 01.01.09	Additional Posts to be created for the year 2009-10
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
1.	Non-Faculty Posts (Appendix-IV)	309 (As per Appendix-III)	446 As per Appendix-IV	256 As per Appendix-IV	190 As per Appendix-IV	309- 256=53*

* The Posts which are to be created/recruited are mentioned in Appendix-V. These posts are within the prescribed faculty & non-faculty ratio i.e. 1:1.1.

Further, for the year 2010-11 to 2014-15, the following additional posts will be required to be created:-

Sr. No.	Name of the Post & Scale of Pay	2010-11	2011-12	2012-13	2013-14	2014-15
1.	-	43	35	22	10	-

These posts are also within the prescribed faculty & non-faculty ratio i.e. 1:1.1.

B) Requirement for processing cases relating to creation of post

For processing the cases relating to creation of posts, some instructions/checklist of information/details to be furnished, were issued vide letter No. 23-3/08-IPD, dated 08.05.2008 by the Integrated Finance Division of the Ministry. The above proposal is being submitted as per the instructions issued by the Ministry vide letter referred above. All the relevant information has been furnished in the enclosed Appendixes as well as Annexures of this proposal. However, it is worth mentioning here that in the absence of the posts which are to be created, the functions of the post were / are being managed by appointing the persons on contract basis.

Further with regard to financial implication involved for the creation of new posts, it is submitted that there will be 100% financial liability on the Government of India with regard to faculty posts for UG and PG Courses. However, with regard to MBA and MCA Department, there will be no financial liability on the Government of India, being Self Financing Courses. Further, there will be 100% financial liability on the Government of India for non-faculty posts.

The above proposal is being submitted to the Ministry directly without the recommendations and approval of the Finance Committee as well as Board as the meetings of these Committees is not likely to be held in near future as the Chairman of the Board/FC has not been appointed till now after the demise of our earlier Chairman, Er. C.B. Mathur.

Submitted for kind consideration and approval.

Yours faithfully,

AK 21/11

REGISTRAR
for DIRECTOR

0/29

Dated:

19/11/08
19/11/08 23/11/08

DA/As above.

May pl. be approved.
AK 21/11/08
DIR 21/11/08

Endst. No. Gen.-1/ 11239

A copy of the above is forwarded to Ms. Vandana Chaudhary, Section Officer, Government of India, Ministry of Human Resource Development, Department of Higher Education, New Delhi for information and further necessary action.

DA/As above.

AK 21/11
REGISTRAR
for DIRECTOR
0/29

19/11/08
19/11/08

NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA

The Staff Position as desired vide
letter No. F-23-17/2008-TS-III, dated 30.09.2008

Staff Position (for the years 2008-09 to 2014-15 separately)

Programme	Student Strength	Faculty (Faculty:Student::1:12)				Non-Faculty (Faculty: Non-Faculty::1:1.1)				
		Prof.	Asst. Prof.	Lecturer	Total	Officer (10%)	Technical (40%)	Ministerial (35%)	Supporting (15%)	Total 100%
2008-09										
B.Tech.	2012	24	48	97	169	19	14	45	28	186
M.Tech.	534	06	12	26	44	05	19	17	07	48
MBA (SF)	127	01	03	07	11	01	05	04	02	12
MCA (SF)	127	01	03	07	11	01	05	04	02	12
Total	2800	32	66	137	235	26	103	90	39	258
2009-10										
B.Tech.	2405	29	58	113	200	22	88	77	33	220
M.Tech.	618	07	15	30	52	06	23	20	08	57
MBA (SF)	147	01	03	08	12	01	05	05	02	13
MCA (SF)	207	02	06	10	17	02	08	07	02	19
Total	3377	39	81	161	281	31	124	109	45	309
2010-11										
B.Tech.	2700	32	63	130	225	25	90	87	37	248
M.Tech.	726	09	17	35	61	07	27	23	10	67
MBA (SF)	173	02	04	08	14	02	06	05	02	15
MCA (SF)	240	02	06	12	20	02	09	08	03	22
Total	3839	45	90	185	320	36	141	123	52	382
2011-12										
B.Tech.	2995	34	72	144	250	28	110	96	41	275
M.Tech.	780	09	18	37	64	07	28	25	10	70
MBA (SF)	186	02	05	09	16	02	07	06	03	18
MCA (SF)	266	03	06	13	22	02	10	08	04	24
Total	4227	48	101	203	352	39	155	135	58	387
2012-13										
B.Tech.	3225	41	77	151	269	30	118	104	44	296
M.Tech.	780	09	18	37	64	07	28	25	10	70
MBA (SF)	186	02	05	09	16	02	07	06	03	18
MCA (SF)	279	03	07	13	23	03	16	08	04	25
Total	4470	55	107	219	372	42	163	143	61	409

2012-14										
B.Tech.	3340	43	79	156	278	31	122	107	46	306
M.Tech.	780	09	18	37	64	07	28	25	10	70
MBA (SF)	186	02	05	09	16	02	07	06	03	18
MCA (SF)	279	03	07	13	23	03	10	08	04	25
Total	4585	57	109	215	381	43	167	146	63	419
2014-15										
B.Tech.	3340	43	79	156	278	31	122	107	46	306
M.Tech.	780	09	18	37	64	07	28	25	10	70
MBA (SF)	186	02	05	09	16	02	07	06	03	18
MCA (SF)	279	03	07	13	23	03	10	08	04	25
Total	4585	57	109	215	381	43	167	146	63	419

Kind Attention: - The detailed calculation sheets of Faculty Positions of UG, PG, MBA and MCA Department are enclosed as Annexure-A.

Item No. 18.7: Updating present rules for conduct of Institute examinations.

The following additional rules are proposed for the consideration and approval of the Senate.

1. (i) The end semester examinations for Odd and Even Semester courses are to be conducted in respective Semesters only.
(ii) However, for final semester students the reappear examinations of only final year B. Tech. / M. Tech. courses can be conducted in the month of July every year as a special case.
2. The evaluation of Odd / Even end semester examination answer sheets to be completed and 'soft as well as hard copies' of the awards be sent to Controller of Examinations within 10 days of the last date of end semester examinations. Further, all practical examinations in both the semesters be completed before the commencement of theory examinations in each semester. The result of Odd / Even semester examinations for all programs must be declared after one week of the last date for submission of the awards in each semester.
3. Computer typed question papers under sealed cover are to be submitted by concerned faculty to the Controller of Examinations (COE) at least two days before the scheduled date of the examination. The COE would be responsible for timely providing adequate number of question papers to the Centre Supdt. (Exams.). The handling and photocopying work at COE office be assigned to specific person(s) and COE as well as the assigned persons shall be responsible for ensuring confidentiality and secrecy of the question papers.
4. (i) The evaluated answer sheets may be shown to the students on one day as notified by the concerned faculty in the beginning of the ensuing semester. Dissatisfied students may opt for re-evaluation by filling up the 're-evaluation form' and paying a fee of Rs. 750/- per subject. The format of 're-evaluation form' to be prepared by a committee constituted by the Director and implemented after his approval.

- (ii) The students opting for re-evaluation will apply within one week after seeing their answer sheets, to the Controller of Examinations who will forward the applications to the concerned HOD. The concerned HOD shall constitute a committee of two faculty members excluding original evaluator faculty for the purpose of re-evaluation.
- (iii) The evaluation awards will be changed only if the re-evaluation leads to change in marks by equal to or more than (+/-) 15%. Both increase and decrease in awards after re-evaluation will be accepted as such.
5. All the faculty members can be assigned invigilation duties in the end semester examinations.
6. The sessional evaluation be made on the basis of only TWO midterm tests in the theory subjects instead of present practice of three sessional tests in a semester. However, there shall be a provision of a make-up test only for the students who miss one of the tests due to some valid reason (preferably with the prior permission of the HOD). If due to some compelling reasons, the student is unable to obtain the prior approval of the HOD for missing a test, he / she may apply for 'post-facto' approval to the HOD.
- The above issue was decided in the meeting dated 25th July, 2011 of all Deans and HODs under the Chairmanship of the Hon'ble Director.
7. It is proposed that question papers be designed such that the marks secured by a student and thus the corresponding grade closely represents the true understanding and competence level of the student. Thus the students securing higher grades should actually be capable of proving their worth with capability of solving more complex / typical problems in the subject.
- In view of the above, it is proposed that the question papers of end semester examinations be set considering difficulty levels such that questions carrying 25% marks are relatively simpler and for remaining 75% marks the questions may be designed with increasingly difficulty level in steps of 25% marks. Implementation of this may be carried out by concerned HODs by constituting a Departmental committee for this purpose.
- The Senate may consider for approval.

Item 18.8: Modification of M. Tech. program structure for increasing emphasis on research as followed in leading technical institutions–Revision of schemes.

Present curricula of M. Tech. programs has course work up to the 3rd semester including some initial work on dissertation and only 4th semester is devoted to dissertation work. It is also pertinent to mention that the premier technical institutions (IITs) and many other reputed institutions of the country offer the M. Tech. programs which have course work only during the 1st and 2nd semesters and subsequently full one year i.e. 3rd and 4th semesters are devoted to the dissertation work to provide greater emphasis on research at PG level with a view to improve the quality of M. Tech. dissertations and generate research output from dissertation work. This is also as per the guidelines of AICTE which have been accepted by MHRD for M. Tech. programs.

It is proposed that the M. Tech. schemes be revised to provide greater emphasis on research on the pattern of IIT's.

The Senate may consider for approval.

Item 18.9: Approval of schemes and syllabi of B. Tech. 2nd year ECE, CSE, and EEE branches of NIT, Uttarakhand.

As per the decision of the joint meeting of the BOG of new National Institutes of Technology, dated 13th May 2010 held in New Delhi, it was adopted that "The senate of mentor NITs will for the time being, function as the academic councils of the respective new NITs."

Accordingly, the Senate of NIT, Kurukshetra in its meeting held on 3rd July, 2010 under item no. 15.7 considered and approved the adoption of Academic Rules and Regulations, scheme and syllabi of B. Tech. 1st year course of NIT, Kurukshetra for NIT, Uttarakhand. Now Dean (Academic), NIT, Uttarakhand requested that:

1. The Scheme and syllabi of B.Tech 2nd year courses of NIT, Kurukshetra in the branches of CSE and ECE be adopted for B.Tech 2nd year CSE, ECE, respectively, of NIT, Uttarakhand w.e.f. academic session 2011-12
2. Scheme & syllabi of EEE for B.Tech 2nd year approved by BOS Electrical Engg. NIT, Kurukshetra be considered and approved for adoption at NIT, Uttarakhand w.e.f. academic session 2011-12.

The Hon'ble Chairman, Senate on the recommendations of the Dean (Academic), NIT, Kurukshetra has already approved the above in anticipation of the Senate approval. The scheme and syllabi for B. Tech. 2nd year EEE as approved by BOS of EE NIT, Kurukshetra is enclosed in Annexure 18.9.

Placed before the Senate for ratification.

In the joint meeting of the Board of Governors of new National Institutes of Technology held on 13th May 2010 in New Delhi it was adopted that "The senate of mentor NITs will for the time being, function as the academic Councils of the respective new NITs."

Accordingly, the senate of NIT Kurukshetra in its meeting held on 03 July 2010 under item no. 15.7 considered and approved the adoption of Academic Rules and regulations, scheme and syllabi of B.Tech 1st year course of NIT Kurukshetra for NIT Uttarakhand.

As new Academic session is going to start from July 2011 with the 2010 batch coming in 2nd year of B.Tech in the branches CSE, BCE & EEE, it is Proposed that

1. The scheme and syllabi of B.Tech 2nd year courses of NIT, Kurukshetra in the branches of CSE & BCE be adopted for NIT Uttarakhand.
2. The Scheme & Syllabi of EEE for B.Tech 2nd Year approved by BOS Elect. Engg. NIT KKR be considered & approved for adoption at NIT Uttarakhand.

Submitted for the inclusion of the above item in the agenda of the senate.

Sgtz
(Surjit Angra)
Dean (Acad.)
NIT Uttarakhand

Dean (Acad.)
NIT KKR.

Discussed with DIR. Dr. Angra may pl. compare syllabus of EEE with the syllabus of other reputed inst./univ. whether the program is found and submit the same for DIR consideration/approval.

Dean (Acad.) NIT Uttarakhand

The matter has been discussed with mentor HOD. Also by self NIT, KKR. He was requested by the then Director NIT, KKR to prepare a scheme & syllabi for B.Tech 2nd year.

have prepared by having inputs from all members
of Exec Engg and then has been approved
by P.C. of Exec Engg without or at meeting
held on 11-3-11 under item no. 2. File
submitted for further info at your end

Sd/-
(Dr. Suresh Arora)
Dean (Acad.)
NIT Uttarakhand.

Dear (Acad.)
NIT, Kharakholi

Re: Put up in the 2011

The scheme of BEE 2nd yr course passed by
EE Bus of NITKAT - The proposal of Dean,
NIT Uttarakhand is recommended for approval
of DIR (Chairman senate) in anticipation of
senate approval.

Sd/-
2011

~~Sd/-~~ 2011

Dear (Acad.)

The proposal of Dean, NIT Uttarakhand is approved
by Hon'ble Director in anticipation of senate approval.
The matter to be placed before senate in its next
meeting.

Sd/-
2011

Dean, NIT Uttarakhand

DEPARTMENT OF ELECTRICAL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY KURUKSHETRA

No. DEE/BOS/2011/157-62

Dated: 15.03.2011

MINUTES OF THE BOS MEETING HELD ON 11.03.2011

A meeting of the Board of Studies in Electrical Engineering Department convened vide letter No. DEE/2011/118 dated 25.02.2011 was held on 11.03.2011 (Friday) at 11.30 AM in the Conference Room (E-112) of the Department.

The following members were present:

1. Dr. SP Jain, PEE
2. Dr. A. Swarup, PEE
3. Dr. K.S. Sandhu, PEE ... (In Chair)
4. Dr. Ms. Lillie Dewan, PEE
5. Dr. RS Bhatia, PEE
6. Dr. GL Pahuja, PEE
7. Dr. A.K. Sharma, Assoc. Prof
8. Prof. (Ms.) Jyoti Ohri, Assoc. Prof.
9. Dr. J.S. Lather, Assoc. Prof.
10. Prof. Ms. Monika Mittal, Assoc. Prof.
11. Prof. Sathans, Asstt. Prof.
12. Prof. Yashpal
13. Mr. Vinod Kumar, ISRO, Bangalore } External Experts

The external members Dr. Indra Narayan Kar, Professor, Deptt. of Electrical Engg., IIT, Hauz Khas, New Delhi and the internal member Dr. K. Gopal, Professor, Electrical Engg. Deptt. could not attend the meeting.

The Head of the Department welcomed the members before taking up the agenda items.

Item - I To confirm the minutes of the last meeting of BOS held on 20.10.2010.

Resolved to confirm the minutes of the last meeting of the BOS held on 20.10.2010.

Item - II To consider & approve the syllabi and scheme of B.Tech. 3rd and 4th semester, Electrical and Electronics Engg. of NIT Uttarakhand.

Board of Studies approved the scheme and the syllabi of B.Tech. 3rd and 4th semester, Electrical and Electronics Engg. of NIT Uttarakhand. (Annexure I sent to Dean(Academic).

Item - III To recommend the examiners for M.Tech. dissertations.

Board of Studies approved the panel of examiners for M.Tech. dissertation. (Annexure II sent to COE).

Further, Board authorized the Chairman, BOS to appoint the examiners for M.Tech. Dissertation whenever required till the next BOS meeting.

Item - IV To recommend the panel of examiners for Ph.D. research scholar Mr. Saurabh Chanana.

The Board approved the panel of examiners of Ph.D. research scholar Mr Saurabh Chanana, Regn No. 2K04-NITK Ph.D 1011E as recommended by the DRC of Electrical Engg. Dept. (Annexure III sent to COE).

Item - V Any other item

The following item was taken up.

Appointing henceforth Paper-setters, evaluators and examiners for B.Tech. and M.Tech. courses in the credit based system in future.

Keeping in view that the Head of the Department decides the team of teachers to conduct a course during the semester; and that in the credit based system, the coordinator assisted by his team of teachers is to act as Paper-setter and evaluator/examiner for the examination, it is resolved that henceforth paper-setters, evaluators and examiners for various theory courses, the Practical/ Viva-voce courses for B.Tech. and M.Tech. be appointed by the Head of the Department himself.

The meeting ended with a vote of thanks to the Chair.


(K.S. Sandhu)
Chairman, BOS

All the BOS Members

1. Dr. K. Gopal, PEE
2. Dr. S P Jain, PEE
3. Dr. A. Swarup, PEE
4. Dr. K.S. Sandhu, PEE
5. Dr. Ms. Lillie Dewan, PEE
6. Dr. RS Bhatia, PEE
7. Dr. GL Pahuja, PEE
8. Dr. A.K.Sharma, Assoc.Prof
9. Prof. (Ms.) Jyoti Ohri, Assoc.Prof
10. Dr. J.S. Lather, Assoc.Prof
11. Prof. Sathans, Asstt. Prof.
12. Prof. Yashpal, Asstt.Prof
13. Prof. (Ms.) Monika Mittal, Assoc.Prof

External Experts:

14. Dr. Indra Narayan Kar, IIT Delhi
15. Mr. Vinod Kumar, ISRO, Bangalore

Copy to:

1. Dean(Acad.) with the information that eight hard copies and one soft of synopsis alongwith list of panel of examiners approved by BOS under item IV to be sent to COE.
2. DS to Director for kind information of the Director

**SCHEME OF EXAMINATION FOR B.TECH DEGREE COURSE
ELECTRICAL & ELECTRONICS ENGINEERING
THIRD SEMESTER EXAMINATION
(w.e.f. 2011-12)**

Course No	Subject	Teaching Schedule			Examination Schedule		Total	Credit Points	
		L	T	P/D	External	Internal			
MAT-201	Mathematics-III	3	1	-	4	50	50	100	3.5
EECT-201	Circuit Theory	3	1	-	4	50	50	100	3.5
EECT-203	Semiconductor Devices and Applications	4	1	-	5	50	50	100	4.5
EECT-205	Measurement and Instrumentation-I	3	1	-	4	50	50	100	3.5
EECT-207	Electrical Machines-I	4	1	-	5	50	50	100	4.5
EECT-209	Transmission and Distribution	3	1	-	4	50	50	100	3.5
EECT-211	Electrical Machines Lab-I			3		60	60	100	1.5
EECT-213	Measurements and Instrumentation Lab-I			2		40	40	100	1.0
EECT-215	Electronics Lab-I			2		40	40	100	1.0
EECT-217	Computational Techniques Lab			2		40	40	100	1.0
	Total	20	6	9				35	

**SCHEME OF EXAMINATION FOR B.TECH DEGREE COURSE
ELECTRICAL & ELECTRONICS ENGINEERING
FOURTH SEMESTER EXAMINATION
(w.e.f. 2011-12)**

Teaching Schedule				Examination Schedule		Total	Credit Points
L	T	P/D	Total	External	Internal		
2	1	-	3	50	50	100	2.5
3	1	-	4	50	50	100	3.5
4	1	-	5	50	50	100	4.5
3	1	-	4	50	50	100	3.5
3	1	-	4	50	50	100	3.5
3	1	-	4	50	50	100	3.5
3	1	-	4	50	50	100	4.5
ph-II	-	3	3	40	60	100	1.5
pr-I	-	2	2	40	60	100	1.0
-	-	2	2	40	60	100	1.0
21	7	7	35				

links to Practical Training after Fourth Semester Examination

Theory & Filter Design, New Age.

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
3rd SEMESTER
EEET-201 (CIRCUIT THEORY)

LT
31

Time 3 Hrs.

Classification of circuits, sources and signals, standard signals, source transformations.

Network topology, graph matrices, formulation and solution of circuit equations based on graph theory using different analysis techniques- circuit, cut set and mixed. Concept of duality.

Network theorems and their applications- Superposition, reciprocity, Thevenin, Norton, Maximum power transfer, Millman, Substitution, Compensation and Tellegan's theorem.

Analysis of circuits subject to periodic and non-periodic excitations using Fourier series and Laplace transforms. Concept of free and forced response of circuits. Time constants and Transient response under d.c. and a.c. excitation. Analysis of magnetically coupled circuits.

Series and parallel resonance circuits, bandwidth and Q-factor, response with variation in parameters and frequency.

Introduction to non-linear circuits and their analysis. Analysis of circuits with dependent sources.

SUGGESTED BOOKS-

1. Desoer & Kuh, "Basic Circuit theory", McGraw Hill.
2. Van Valkenberg, "Network Analysis", PHI.
3. Valkenberg & Kinariwala, "Linear Circuits", PHI.
4. Trick, "Introduction to circuit Analysis", Wiley.
5. Roy Choudhary, "Networks & systems", Wiley.
6. Iyer, "Circuit Analysis", TMH.
7. Aatre, "Network Theory & Filter Design", New Age.

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
3rd SEMESTER
EEET-203 SEMICONDUCTOR DEVICES & APPLICATIONS

L T
4 1

Time 3 Hrs

Review of semiconductor devices.
Transistor biasing circuits: Base bias, Emitter-feedback bias, collector-feedback bias,
Voltage-divider bias, emitter bias.
CE, CC & CB amplifiers, Darlington amplifier.
h-parameters, CE, CC and CB analysis.
Class A, B, C, D and S power amplifiers. Push-pull operation.
JFET: Gate bias, Self bias, Voltage-divider bias and source bias, current source bias, CS,
CD and CG amplifier.
MOSFET: Depletion type, Enhancement type MOSFET and their biasing.
OP-AMP, Differential amplifier and its DC, AC analysis, OP-AMP characteristics, Non-
Inverting/Inverting Voltage and Current feedback.
Linear and Non-Linear OP-AMP circuits, Regulated power supplies.
Barkhausen criteria of oscillations, Wein-bridge, RC oscillator
555 timer: its monostable and astable operation.

SUGGESTED BOOKS-

1. Millman and Halkias, "Integrated Electronics", Mc Graw Hill.
2. R. Boylestad and L. Nashelsky, "Electronics Devices and Circuits", Prentice Hall India.
3. Millman and Halkias, "Electronics Devices and Circuits", TMH Edition.
4. Malcolm Goode, "Analog Electronics Analysis and Synthesis", TMH Edition.
5. Malvino, "Electronics Principles", TMH Edition.

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
3rd SEMESTER
EEET-205 MEASUREMENT AND INSTRUMENTATION-I

L.T
3.1

Time 3 Hrs.

SI System of units, dimensional analysis.
Standards for mass, length, and time. Standards and sub-standards for R.C.M and
L. Standards for temperature and luminous intensity. Laboratory standards of EMF. IEEE
standards.
Errors in measurements, various types of error, error estimation, significant
figures, uncertainty in results.
Analog measuring instrument, classification, principle of operation, torque to
weight ratio, deflecting torque, control torque and damping torque. Scales.
Ammeters and voltmeters; Moving iron, moving coil, electrodynamic and rectifier
type.
Ohmmeter, multimeter ratio meter and power factor meter.
DC potentiometer – Vernier type.
AC potentiometer; Polar and Co-ordinate type.
Wattmeter; Induction and electrodynamic type.
Energy meter, Induction type – single and three phase.
Measurement of low, medium and high resistances. Substitution and null
methods.
Measurement of self-inductance and mutual inductance for low Q and high Q
coils using Maxwell's, Hay's, Anderson's, Campbell's, and capacitance using DeSauty's,
and Schering's bridges, shielding and grounding of bridges.
Magnetic measurements; Samples for Lloyd-Fisher square, separation of
hysteresis loss and eddy current loss.
Instrument transformers; Current transformer and potential transformer, their
performance characteristics.

SUGGESTED BOOKS-

1. AK Sawhney, "Electrical and Electronic Measurements & Instrumentation", Dhanpat Rai, Delhi.
2. C.T. Baldwin, "Fundamentals of Electrical Measurement", Lyall Book Depot.
3. E.W. Golding, "Electrical Measurement".

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
3rd SEMESTER
EEET-207 ELECTRICAL MACHINES-I

L T
4 1

Time 3 Hrs.

1. Electromechanical Energy Conversion-
Basic principle Energy, Force and Torque in singly and multiply excited systems.
2. Transformers-
 - a) Principle, construction and operation of single phase transformers, phasor diagram, equivalent circuit, voltage regulation, losses and efficiency.
 - b) Testing- Open & short circuit tests, Polarity test, Sumpner's test, Separation of hysteresis and eddy current losses.
 - c) Three phase Transformer: Construction, various types of connection and their comparative features.
 - d) Parallel operation of single phase and three phase transformers.
 - e) Autotransformers- Construction, Principle, Applications and Comparison with two winding transformer.
 - f) Excitation phenomenon in transformers, Harmonics in single phase and three phase transformers, Suppression of harmonics.
 - g) Phase conversion- Scott connections, Three phase to six phase conversion.
 - h) Tap changing Transformers- No load and on load tap changing of transformers.
 - i) Three winding Transformers.
 - j) Cooling methods of transformers.
3. D.C. Machines-
 - a) Working principle, construction and methods of excitation.
 - b) Armature Winding- Detailed study of simple lap and wave windings.
 - c) D.C. Generators- emf equation, Circuit models, Armature reaction, Effect of brush shift, Compensating winding, Characteristics of various types of generators, applications.
 - d) D.C. Motors- Torque equation, Circuit models Characteristics of d.c. shunt, series and compound motors, applications.
 - e) Starting & Speed Control- Starting methods and speed control of d.c. shunt and series motors.
 - f) Commutation- Causes of bad commutation, Methods of improvement.
 - g) Testing- Direct and regenerative methods to test d.c. machines.

SUGGESTED BOOKS-

1. Clayton, A.E. "Performance and Design of Direct Current Machines"
2. Irving L. Kosow, "Electric Machines and Transformers, Prentice-Hall of India"
3. George Mopherson, "An Introduction to Electrical Machines and Transformers", John Wiley & Sons, NY
4. Nagrath & Kothari, "Electric Machines", Tata McGraw Hill,
5. PS Bimbhra, "Electrical Machinery", Khanna Publishers
6. MG Say, Theory, "Performance & Design of A.C. Machines", CBS Publisher.

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
3rd SEMESTER
EEET-209 TRANSMISSION AND DISTRIBUTION

L T
3 1

Time 3 Hrs.

GENERAL- Importance of electric power, Power system components, Growth of power systems in India, power supply network, effect of voltage on conductor size, comparison of conductor vol. in typical supply systems elementary high voltage DC transmission and its advantages & disadvantages.

LINE PARAMETERS- Evaluation of inductance, capacitance, resistance for single phase, three-phase symmetrical, unsymmetrical, transposed, untransposed single circuit, double circuit lines; skin and proximity effect.

PERFORMANCE OF LINES- Classification of lines as short, medium and long, representation and detailed performance analysis of those lines including A B C D parameters. Detailed measurements and universal power circle diagram.

MECHANICAL CONSIDERATIONS- Various types of line conductors, line supports, poles and towers, sag calculations, effect of wind, ice and temperature, stringing chart, sag template, line vibrations.

INSULATORS- Various types of insulators, voltage distribution, string efficiency, methods of increasing string efficiency.

CORONA- Phenomenon of corona, disruptive critical voltage, visual critical voltage, corona loss, radio interference.

UNDERGROUND CABLES - Classification and construction, insulation resistance, capacitance, capacitance determination, power factor in cables, capacitance grading, use of intersheaths, losses, heat dissipation and temperature rise in cables, current rating, comparison with overhead lines.

SUGGESTED BOOKS-

1. IJ Nagrath and DP Kothari, " Power System Engineering,"
(Tata McGraw-Hill).
2. A Chakrabarti, ML Sani, PV Gupta and US Bhatnagar, " Power System
Engineering," (Dhanot Rai & Sons).
3. CL Wadhwa, " Electric Power Systems", (Wiley Eastern Ltd.).
4. WD Stevenson, " Elements of Power System Analysis," Jr (McGraw-Hill).
5. "Electrical Transmission and Distribution",
Westinghouse Electric and Manufacturing Co.(East Pittsburgh).

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
4th SEMESTER
EEET-202 SIGNALS AND SYSTEMS

L T
3 1

Time 3 Hrs.

SIGNALS-

Types of Signals- Deterministic and stochastic, periodic and aperiodic, impulse function and sequences, analog and discrete, singular functions.
Signal Representation in terms of singular functions- orthogonal functions and their use in signal representation, Fourier series, Fourier and Laplace transforms. Convolution theorem, geometrical interpretation and applications.

Probability concepts, random variable, pdf, cdf, moments, distributions, correlation functions, Characterization of stochastic signals.

Discretization of analog signals - Sampling, sampling theorem and its proof. Effect of under sampling, recovery of analog signals from sampled signal. Characterization of Discrete Signals - in terms of impulse sequences, Z-transforms. Properties, Inversion and applications of Laplace, Fourier and Z-transforms.

SYSTEMS-

Classification-linear and Non-linear, Time invariant and time varying, Lumped and Distributed, Deterministic and Stochastic, Causal and Non Causal, Analog and Discrete/Digital, memory and memory less, 1-port and N-port, SISO, SIMO, MISO, MIMO.

System Modeling in terms of differential equations, state variables, difference equations and transfer functions.

Linear time invariant system properties, elementary idea of response determination to deterministic and stochastic signal- Concept of Impulse response.

SUGGESTED BOOKS-

1. Fred J Taylor - "Principles of Signals and System," MGII.
2. Simon Haykins - "Signals and Systems," Wiley Eastern.
3. A Papoulis - "Circuits and System," Modern Approach HR W.
4. AV Oppenheim and AS Winesky - "Signals and System",PHI.
5. RP Singh and Sapre - Communication Systems TMH.
6. Schwatz - Modulation, noise and spectral analysis MGH.
7. John Prokias - Digital signal processing PHI.
8. RF Ziemon, WH Traiter and DR Frinnin - Signals & System- Continuous and Discrete Macmillan.

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
4th SEMESTER
EEET-204 ELECTRICAL MACHINES - II

L-T
4-1

Time 3 Hrs.

1. Basic concepts of Electrical Machines-
Winding factors, generated e.m.f. and m.m.f. of distributed a.s. winding, rotating magnetic field.
2. Induction Machines-
 - a) Constructional features: production of torque, phasor diagram, equivalent circuit, performance analysis, torque-slip characteristics.
 - b) Testing-Running light and blocked rotor test, load test.
 - c) Effect of rotor resistance: deep bar and double cage induction motor.
 - d) Generator Operation
 - e) Starting- Starting methods of squirrel cage and wound rotor induction motor.
 - f) Speed Control- Various methods of speed control of squirrel cage and wound rotor induction motor.
 - g) Effects of space harmonics.
3. Single phase induction motors-
 1. Constructional features, double revolving field theory, equivalent circuit, determination of parameters.
 2. Split phase starting methods & applications.
4. Synchronous Machines-
 - a) Constructional features.
 - b) Cylindrical rotor machine-
 - i) Synchronous Generator- Generated e.m.f., circuit model and phasor diagram, armature reaction, synchronous impedance, voltage regulation and different methods for its estimation.
 - ii) Synchronous Motor- Operating principle, circuit model, phasor diagram, effect of load.
 - iii) Operating characteristics of synchronous machines, V-curves, starting methods of synchronous motors.
 - c) Salient pole Machine-
Two reaction theory, analysis of phasor diagram, power angle characteristics, determination of x_d and x_q .
 - d) Parallel operation of Alternators
Synchronization and load division.

SUGGESTED BOOKS-

1. Fitzgerald & Kingsley, "Electric Machinery" McGraw Hill
2. Alexander S. Langsdon, "AC Machines", Tata McGraw Hill.
3. MG Say, "Theory Performance and Design of AC Machines" CBS Publisher
4. Nagrath & Koherl, "Electric Machines" TMH
5. PS Bhimbra, "Electrical Machinery", Khanna Publishers

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
4th SEMESTER
EET-206 POWER ELECTRONICS-I

L T
3 1

Time 3 Hrs.

Characteristics and switching behavior of different solid-state devices namely Power Diode, SCR, UJT, TRIAC, DIAC, GTO, MOSFET, IGBT, JFET and power transistor.

Two-transistor analogy of SCR, Firing circuits of SCR and TRIAC, SCR gate characteristics, SCR ratings.

Protection of SCR against over current, over voltage, high dV/dt , dI/dt . Thermal protection Methods of commutation.

Series and Parallel operation of SCR.

Classification of Rectifiers. Phase controlled rectifiers: Single phase half wave controlled, Fully controlled and half controlled rectifiers and their performance parameters.

Three phase half wave, full wave and half controlled rectifiers and their performance parameters.

Effect of source impedance on the performance of single phase and three phase controlled rectifiers. Single-phase and three phase Dual Converter.

SUGGESTED BOOKS-

1. M. Ramamoorthy, Thyristor and their applications, East West Publication.
2. PS Bhimbra, Power Electronics, Khanna Publishers.
3. MD Singh and KB Khanchandani, Power Electronics, TMH Edition.
4. AK Gupta and LP Singh, Power Electronics, Dhanpat Rai Publishing Co.
5. Rama Reddy, Fundamental of Power Electronics, Narosa Publishing.

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
4th SEMESTER
EEET-208 DIGITAL ELECTRONICS

L T
3 1

Time 3 Hrs.

1. Number System and Codes
Review of number systems, different codes and specifications, Integer and floating point systems.
2. Boolean Algebra: Basic theorems, commutative, associative, distributive laws, duality concept, SOP and POS form of Boolean expressions, minimization techniques up to six variables using K maps, QM method.
3. Logic gates and Logic Families
Logic gates, Universal gates, transistor as a switching element, Tri-state switch, Bipolar logic Families: RTL, DTL, TTL, ECL, I²L, MOS Logic families: NMOS, CMOS families and characteristics, TTL to CMOS interface, CMOS to TTL interface, various logic functions and their implementation.
4. Combinational Logic gates
Introduction to combinational circuits, arithmetic and logical operation, design of Half adder & full adder, subtractor circuits, parity generator & checker, code converter, decoders, multiplexers, demultiplexers, comparators, ROM, concept of PLD, PAL, PLA devices.
5. Sequential Circuits
Flip-flops, bistable circuits: RS, JK, D, T, Master/Slave Flip-flop, race around condition, latches, synchronous and asynchronous counters up & down counters, shift registers, state transition diagram, introduction to finite state machine concept.
6. Semiconductor Memory
Basics of memory, memory addressing, ROM, PROM, EPROM, static and dynamic RAM.
7. A/D & D/A Converters
D/A converter, accuracy, resolution and precision, variable resistor network, binary ladder, A/D converter, accuracy and resolution, simultaneous conversion, counter method, continuous A/D converter, dual slope, successive approximation method.

SUGGESTED BOOKS-

1. RP Jain, 'Modern Electronics'.
2. AP Malvino and DP Leach, 'Digital Principles and applications'.
3. Floyd, 'Digital Circuits'.
4. Charles Roth, 'Fundamentals of Logic Design'.
5. H. Taub and D. Schilling, 'Digital Integrated Electronics'.
6. Gothman, 'Digital Electronics'.

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
4th SEMESTER
EEET-210 FIELDS AND WAVES

L T
3 1

Time : 3 Hrs

1. Review of Vector Analysis :

Coordinate Systems, Vectors, gradient, divergence, curl, Laplacian, divergence theorem, Stoke's theorem.

2. Electric and Magnetic fields:

Electric fields due to distributed charges configurations (line(s) of charges, uniform plane surface and spherical volume charge distributions; behavior of conductors and dielectrics in electrostatic fields, boundary conditions, applications of ampere's law and Biot-Savart's law; capacitance and inductance calculations for simple configurations; time varying fields – displacement current, Maxwell's equations; Laplace's and Poisson's equations.

3. Electromagnetic Waves:

Wave equation, uniform plane waves, plane wave propagation in dielectric and conducting media. Reflection and refraction of plane wave (normal incidence). Wave propagation in bounded media, ground waves, sky waves, and space waves. Transmission line: Distributed parameter circuits, traveling and standing waves impedance matching, and smith chart.

Wave Guides: parallel plane guide, TE, TM and TEM waves, rectangular and cylindrical wave guides, resonators, planes transmission line; strip lines, microstrip line.

4. Antenna and Microwaves:

Electromagnetic radiation, elements of antenna theory (gain, BW, Bandwidth and polarization, effect of ground) antenna coupling, high frequency antennas, microwave antennas (introduction to microwave services, integrated circuits and measurements).

SUGGESTED BOOKS:

1. N.N. Rao Basic Electromagnetics with applications, PHI
2. E.C. Jordan and K.G. Balmain. Electromagnetic waves and radiating systems, PHI
3. J.D. Kraus Electromagnetism
4. D.J. Griffith Introduction to Electrodynamics, PHI
5. Guru & Hiziroglu Electromagnetic field theory fundamentals Vikas Publishing House Hayt's book.

B.TECH ELECTRICAL & ELECTRONICS ENGINEERING
4th SEMESTER
EEET-212 NETWORK ANALYSIS AND SYNTHESIS

L T
3 1

Time 3 Hrs.

Concept of generalized frequency, circuit representation and their response in terms of generalized frequency.

Concept of one port, two-port networks, characteristics and parameters, interrelationships of parameters, image & iterative impedance concept of characteristic impedance, scattering parameters, insertion loss, interconnection of 2-port networks, analysis of terminated 2-port networks, extensions to multiport networks.

Generalized network functions (Driving point and Transfer), concepts of poles and zeros, determination of free and forced response from poles and zeros, concept of minimum phase networks, analysis of ladder, lattice, T and bridged-T networks.

Introduction to state-space representation of networks and their analysis.

Concept of filtering, filter types and characteristics, classical design of T and PI passive filters, frequency transformations, Introduction to active filters, active filter specifications, design of first and second order RC-active filters, maximally flat and equi-ripple filter characteristics, implementation using passive elements and op-amps. Introduction to switched capacitor networks.

Network synthesis- Synthesis problem formulation, properties of positive real functions, hurwitz polynomials, properties of RC, LC and RL driving point functions, foster and cauer synthesis of LC and RC circuits.

SUGGESTED BOOKS-

1. Temes & LaPatra - Introduction to circuit Synthesis & Design, McGraw Hill.
2. Valkenberg - Modern Network Synthesis, PHI.
3. Weinberg - Network Analysis & Synthesis, McGraw Hill.
4. FF Kuo - Network Analysis.
5. SK Mitra - Analysis & Synthesis of Active Network.
6. Peikari - Fundamentals of Network Analysis & Synthesis, Wiley.

L T P
3 1 -

Time: 3 Hours

PART - A FINITE DIFFERENCES AND DIFFERENCE EQUATIONS: -

1. Finite Differences:

Finite Differences, Difference operators, Newton's Forward and backward interpolation formulae, Bessel's formulae and Stirling's formula, Lagrange's interpolation formula for unequal intervals, Numerical differentiation, Numerical integration: Newton-cotes's quadrature formula (Trapezoidal rule), Simpson's 1/3 and 3/8 rule), Gaussian quadrature formula. (9)

2. Difference Equations:

Formation of difference equations, Solution of linear difference equations. (4)

PART-B NUMERICAL METHODS WITH PROGRAMMING:

1. Numerical Solution of algebraic and transcendental Equations:

Bisection method, Regula-Falsi method, Newton Raphson method Secant method (4)

2. Solution of Linear Simultaneous Equations:

Gauss elimination method, Gauss-Jordan method, Crout's triangularisation method, Jacobi's iteration method, Gauss-seidal iteration method. (5L)

3. Numerical solution of ordinary differential equations:

Picard's method, Bullier's method, Runge-Kutta method, Milne's predictor-corrector method, Adams-Bashforth method. (6L)

PART-C

1. Statistical Methods:

Method of Least Square and curve fitting, Correlation, Coefficient of correlation, Rank correlation, Regression and lines of Regression, Binomial distribution, Poisson distribution and Normal distribution with their properties and application. (8L)

2. Operational Research:

Linear programming problems formulation, solving linear programming problems using (i) Graphical Methods (ii) Simplex Method (iii) Dual Simplex Method (5L)

NOTE TO PAPER SETTER:

Set 9 questions in all 3 from each part. Candidates have to attempt 5 questions selecting atleast 1 question from each part.

3. To : 4th Sem (E & Ec)

1 T
2 I

Industrial Sociology
HUT-211

Time : 3 Hrs.

Note for the Paper Setter: The total number of questions to be set will be six, one question in each unit. The examinees shall attempt any four. All questions shall carry equal marks.

UNIT-I INTRODUCTION

Concept of Organisational Behaviour, Nature of Organisational Behaviour, Organisational Behaviour and other similar fields of study - Psychology, Sociology, Anthropology, Political Science, Approaches to Organisational Behaviour, Challenges and opportunities for Organizational Behaviour

UNIT-II UNDERSTANDING AND MANAGING INDIVIDUAL BEHAVIOUR

Concept of Behaviour, Process of Behaviour, Foundations of Individual Behaviour, Values, Attitudes and Job Satisfaction: Importance of values, Types of values, Concept of Attitudes, Theories of Attitude Formation, Factors in Attitude Formation, Attitude Management, Measuring Job Satisfaction, the effect of Job Satisfaction on Employee Performance.

UNIT-III UNDERSTANDING PERSONALITY AND PERCEPTION

Personality

What is Personality? Personality Theories, Determinants of Personality, Personality Traits affecting Behaviour.

Perception

Concept of Perception, Perceptual Process, Factors influencing Perception.

Learning

Concept of Learning, Components of Learning Process, Factors affecting Learning.

UNIT-IV UNDERSTANDING AND MANAGING GROUP BEHAVIOUR

Group Dynamics

Concept of Group Dynamics, Concept of Group, Formal and Informal Groups, Group Behaviour.

Communication

Concept of Communication, The Communication Process, Barriers in Communication, Essentials of Effective Communication

Leadership

Meaning of Leadership, Leadership Theories-Charismatic Leadership Theory, Trait Theory, Behavioural Theory.

UNIT-V

UNDERSTANDING AND MANAGING ORGANISATIONAL SYSTEM

Design of Organization Structure

Concept of Organisation Structure, forms of Organisation Structure, Contingent Factors in Organisational Design.

Organisational Culture

What is Organisational Culture? What do Cultures Do? Creating and Sustaining Culture.

Work Stress

What is Stress? Course of Stress, Effects of Stress, Managing Stress.

Organisational Change

Nature of Organisational Change, Factors of Organisational Change, Planned Change, Process of Planned Change, Resistance to Change, Overcoming Resistance to Change.

UNIT-VI

UNDERSTANDING THE CONCEPT AND THEORIES OF MOTIVATION

Motivation

Concept of Motivation, Motivation and Behaviour, Theories of Motivation-Maslow's Need Hierarchy Theory, Herzberg's Motivation-Hygiene Theory, McClelland's Theory X and Theory Y.

Suggested Books

1. Organizational Behaviour - Stephen P. Robbins (Pearson Education)
2. Organizational Behaviour-avid Luthans (MacGraw Hill, New York)
3. Organizational Behaviour - Jit S. Chandra (Vikas Publishing House Pvt. Ltd.)
4. Organizational Behaviour - L.M. Prasad (Sultan Chand & Sons, New Delhi)
5. Human Relations & Organizational Behaviour- R.S. Dwivedi (Oxford, JBH)
6. Personnel Management - C.B. Mamoria (Himalayan Publications, New Delhi)

1. To separate hysteresis and eddy current losses of a single phase transformer at rated voltage and frequency by conducting no load test at different frequencies, keeping V/f ratio constant.
2. To operate two single phase transformers of different KVA rating in parallel and plot the variation of current shared by each transformer Vs load current.
3. To conduct Sumpner test on two identical single phase transformers and determine and plot the efficiency at different loads.
4. To perform direct load test on a DC shunt motor and plot variation of input current, speed, torque and efficiency against output power.
5. To obtain magnetization characteristics of a DC machine. Determine the critical field resistance of DC shunt generator. Measure field and armature winding resistance. Derive external characteristics of shunt generator using experimental data as obtained above.
6. To make Scott-connection of two single phase transformers and to verify the current relation by drawing phasor diagrams for balanced and unbalanced resistive loads.
7. To conduct open and short circuit tests on a three phase three winding transformer and determine the equivalent circuit parameters in per unit.
8. To conduct Swinburne test on a DC shunt motor. Compute and plot efficiency as motor for various loads.
9. To conduct load test on DC compound generator with
 - a) Shunt field alone.
 - b) Cumulative and Differential connections (short shunt)Plot the results.
10. To study the three-point starter for DC machine.
Speed control of DC shunt motor using armature and field control. Plot the variation of speed with added resistance.

1. To calibrate a D.C energy Meter at different loads.
 - a) Full load
 - b) Half load
 - c) Quarter load
2. To measure resistance of the order of 5 ohm using
 - a) Ammeter- Voltmeter Method
 - b) Method of Substitution
 - c) Carey Foster Bridge
3. To measure the inductance and equivalent series resistance of a given inductor at different Audio Frequencies 200 Hz to 10 KHz, using Maxwell's inductance capacitance Bridge, Heys Bridge.
4. To study the errors in wattmeter at various P. F. S. (power factors)
5. To measure a low resistance using Kelvin's Double Bridge.
6. To determine the current Ratio and phase angle of the given current transformer using direct deflection method.
7. To study Lloyd Fisher Square and separate Hysteresis and eddy current losses for the specimen in the square.
8. Study of Selsyn.
9. Calibration of D.C Voltmeter 0-300 Volt and Ammeter 0-10mA using Crompton Potentiometer.

B.Tech. 3rd sem (E&Ec)
(EEET-215) ELECTRONICS LAB-I

1. a) To plot the graph of forward and reverse bias behaviours of a silicon diode.
b) To test a semiconductor with the help of multimeter.
c) To observe forward biasing effect on LED.
2. To study the diode clipping, clamping & regulator circuits.
3. To observe input and output characteristics of NPN & PNP transistors.
4. To observe the performance of :-
a) Common emitter, b) Common base, c) Common collector amplifiers.
5. To connect and test the following circuits:-
a) Inverting amplifier, b) Non-inverting amplifier, c) Summer, d) Subtractor,
e) Differentiator, f) Integrator.
6. To study UJT as relaxation oscillator.
7. To study a regulated and unregulated power supply.
8. To study operational amplifier as:-
a) Astable multivibrator, b) Triangular wave generator. c) Schmitt trigger.
9. To perform the following experiments on JFET.
a) To observe the effect of drain to source voltage V_{ds} on drain current I_d
b) To observe the effect of reverse gate to source voltage V_{gs} on drain current I_d
c) To drain characteristics V_{ds} versus I_d transfer characteristics (V_{gs} versus I_d).
10. To study 555 as astable multivibrator.

B.Tech 3rd Sem (E & Ec)
E EcT -217 Computational Techniques Lab

- 1) Write mesh current equation for circuit shown in fig. 1 and solve using Gauss Elimination Method

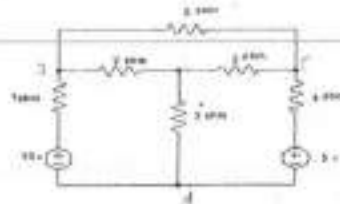


Fig. 1

- 2) Write node voltage equations for circuit shown in fig. 1 and solve using Gauss Seidel Method.
 3) Using Newton Raphson method, find the roots of following equations:
 a) $x^4 + x^3 - 7x^2 - x + 5 = 0$
 b) $e^x = x^2 + \cos 25x$
 4) Find the inverse of a 3×3 matrix using Crout's triangularisation Method.
 5) evaluate $\int_0^1 dx / (1+x^2)$ using
 a) Trapezoidal method
 b) Simpson's method
 6) Using Euler method find approximate value of y at $x=1$ given
 $\left(\frac{dy}{dx}\right) = (x+y)$
 and initial conditions are $y=1$ at $x=0$.
 7) In the circuit given in fig. 2 find the value of current at $t=0.5$ and at $t=1$ sec. using Runge-Kutta method if the switch S is closed at $t=0^+$.



Fig.2

- 8) Write a program to add, subtract and multiply two matrices of suitable dimension. Also find out transpose and inverse of matrix.
 9) Solve the linear simultaneous equation using gauss elimination/LLU factorization method.
 10) Write a program to find the highest eigen value and its associated eigen vector using power method.

B.Tech. (E & Ec) 4th Semester
EEET-214, Electrical Machines Lab-II

1. a) To conduct running light test on a three phase squirrel cage induction motor and measure & plot input current, power, power factor at different values of applied voltage.
b) To conduct blocked rotor test and measure stator winding resistance.
c) Draw equivalent circuit of the motor and compute the performance at a slip of 3%.
2. To conduct direct load test on a three phase squirrel cage induction motor and plot input current, torque, power factor, speed and efficiency v/s output power.
3. To determine the rotor resistance of a three phase squirrel cage induction motor by performing variable frequency blocked rotor test.
4. To start, run and reverse a single phase capacitor start induction motor. Perform running light and blocked rotor tests to determine its equivalent circuit parameters. Compute its performance at slip of 5%.
5. Q-axis reactance of a synchronous machine
Conduct the maximum lagging current test on the machine running as motor and plot the variation of armature current v/s field current (reduced to zero, reversed and then increased), Estimate the value of X_q .
6. Synchronous impedance of a synchronous machine
 - i) Obtain O.C.C. & S.C.C. at rated speed.
 - ii) Draw the variation of synchronous impedance with field current and determine the value of SCR.
 - iii) Estimate the full load regulation at 0.8 p.f. (lagging and leading) by e.m.f. & m.m.f. methods. Compare the results.
7. Zero pf characteristics of a synchronous Machine.
 - i) Obtain full load zero p.f. Lagging characteristics of a synchronous machine.
 - ii) Obtain O.C.C and field excitation to circulate the rated current during short circuit test
Draw the Potier triangle and estimate the full load regulation using Potier method at 0.8 a) lagging and b) leading pf.
8. V-curves for synchronous machines.
Run the machine as motor and plot the variation of armature current v/s excitation at different loads.
9. Slip test on a salient pole machine.



Conduct the test at different values of slip not exceeding 5% and plot the variation of d- axis and q axis reactance w/s slip.

10. To run the induction machine as a self excited induction generator and plot the variation of terminal voltage and frequency w/s speed for different excitation capacitances.

1. Study of following:
 - a) Protection circuits of SCR.
 - b) Forced commutation circuits of SCR.
2. To study the operation of full wave phase control of load using:
 - a) 1-phase full converter.
 - b) 1-phase full-wave half controlled rectifier.
3. Triggering (Firing) circuits of SCR & phase control using SCR.
4. UJT & relaxation Oscillator circuits.
5. Simple Power Electronics device circuits on PSIM.
6. Speed control of motor using TRIAC.
7. To study the 1-phase dual converter circuits.
8. To study 3-phase fully controlled rectifier feeding DC motor load.
9. Rectifier circuits on PSIM.
10. Dual-converter circuits on PSIM.

1. Verification of truth table of logic gates & Demorgan's Theorem.
(7400, 7402, 7404, 7408, 7432, 7486)
2. Verification of truth table of flip flops (RS, JK, D, T).
3. Study of combinational circuit of half adder, full adder, subtractor, encoder & multiplexer.
4. Study of 4 bit counters:-
 - (a) Serial and Parallel.
 - (b) Up/Down counter.
 - (c) Decade Counter.
5. Study of shift registers: SISO, SIPO, PISO, PIPO using shift register.
6. To verify the operation of a 4-bit digital comparator using 7485.
7. Design & implementation of (1) BCD to decimal decoder (2) BCD to 7-segment decoder (3) Binary to gray converter.
8. Design and Implementation of binary multiplier (4 bit * 3 BIT) Using 7483. (Digital IC Trainer)
9. Study and comparison of various TTL logic families and test their performance parameters.
10. Study of A/D & D/A Converter.

Item 18.10 To note the admission status of various UG / PG Courses in the Institute for the academic session 2011-12.

The Institute conducts 07 B. Tech., 16 M. Tech., and Ph. D regular programs besides self-financed MBA and MCA Courses. The details of number of students admitted in different programs in academic session 2011-12 are as below.

A. Undergraduate (B. Tech.)

Sr. No	Name of Course	Intake	Admission
1.	Civil Engineering	139	132+01=133
2.	Computer Engineering	92	80+01=81
3.	Electrical Engineering	139	133+03=136
4.	Electronics & Communication Engg.	139	129+02=131
5.	Industrial Engg. & Management	92	083
6.	Information Technology	92	089
7.	Mechanical Engineering	139	134+07=141
Total		832	789+14*=794

*Admissions under DASA / MEA / ICCR = 14

B. Postgraduate (M. Tech. / MBSA / MUA):

B-1. Regular Sanctioned Intake

Sr. No	Department	Name of Course	Intake*	Admission**
1.	Civil Engg.	Structural Engg.	16	11
		Transportation Engg.	16	09
		Soil Mech. Foundation	16	11
		Water Resource	16	06
		Environmental	20	09
				46
2.	Electrical Engg.	Control System	16	15
		Power System	16	18
		Power Electronics & Drives	16	17
				51
3.	Electronics & Comm. Engg.	Electronics & Comm. Engg.	20	24
		VLSI	20	08
				32
4.	Mechanical Engg.	Industrial Production Engg.	16	21
		Machine Design	16	16
		Thermal	20	20
				57
5.	Physics	Instrumentation	20	18
		Nano- Technology	20	18
				36
6.	Computer Engg.	Computer Engg.	20	25
7.	Business Admn.	Master of Business Administration	02	39
8.	Computer Applications	Master of Computer Applications	02	07
Total			468	373

*Note: In addition there are 5 sponsored seats in each discipline.

** Including sponsored seats

B-2. Intake under TEQIP-II

Sr. No	Department	Name of Course	Intake	Admission
1.	Civil Engg.	Structural Engg.	09	2
		Transportation Engg.		3
		Soil Mech. Foundation		2
		Water Resource		1
		Environmental		1
				09
2.	Electrical Engg.	Control System	12	3
		Power System		4
		Power Electronics & Drives		4
				11
3.	Electronics & Comm. Engg.	Electronics & Comm. Engg.	04	4
		VLSI	12	12
				16
4.	Mechanical Engg.	Industrial Production Engg.	12	4
		Machine Design		7
		Thermal		1
				12
5.	Computer Engg.	Computer Engg.	05	05
Total			54	53

C. Ph D (Admissions from 1-1-2011 to 30-09-2011)

Sr. No.	Name of departments	Number of Registered candidates		
		Full-time	Part time	Total
1.	Chemistry	04	01	= 05
2.	Civil	Nil	06	= 06
3.	Computer Engg.	01	04	= 05
4.	Electrical Engg.	Nil	05	= 05
5.	Electronics & Comm.	02	02	= 04
6.	Humanities & SS	01	04	= 05
7.	Mathematics	Nil	Nil	= Nil
8.	Mechanical Engg.	01	12	= 13
9.	Physics	06	01	= 07
10.	MCA	01	nil	= 01
Total		16	35	= 51

Part Time = 35
Full Time = 16 (4+ 5+7)

04 Nos. with Institute scholarship
05 Nos with UGC/ CSIR Scholarships
07 Nos. without scholarships


This is for kind information and record of the Senate.

Item 18.11: Authentication of 'Provisional Degree Certificates' by Dean Acad.) and Controller of Exams. and 'Character Certificates' by Dean (SW) and Dean (Acad.)

It is proposed that Provisional Degree Certificates may be signed by Controller of Exams. and Dean (Academic) and similarly the Character Certificates be authenticated by Dean (Students Welfare) and Dean (Academic). This is necessary to reduce the burden of signatures on the Hon'ble Director. The amended PDC and Character Certificate formats are enclosed in Annexure 18.11 for consideration and approval by the Senate.

Sr. No. _____

NATIONAL INSTITUTE OF TECHNOLOGY KURUKSHETRA



The logo features a gear with a central emblem containing a lamp and a book, surrounded by the text 'NATIONAL INSTITUTE OF TECHNOLOGY KURUKSHETRA' and a motto banner at the bottom.

PROVISIONAL DEGREE CERTIFICATE

This is to certify that Mr./Ms. _____ Roll No. _____
son/daughter of Shri. _____ has been a student of
Bachelor of Technology, Degree course at this Institute. He/She has successfully completed B.Tech.
(_____) Course in _____
He/She secured CGPA _____ out of 10.000.

Dated: _____

Controller of Exams. **Dean (Academic)**

Sr. No.

NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA



PROVISIONAL CERTIFICATE FOR DEGREE OF MASTER OF TECHNOLOGY (M. TECH.)

This is to certify that Mr./Ms. _____
Roll No. _____ son/daughter of Shri _____ has
been a student of **Master of Technology (M.Tech.)** Degree Course at this institute. After
successfully completing this Course, he/she has passed the final examination of the Master of
Technology (M.Tech.) Degree in _____ Engineering, with specialisation
in _____ of the National Institute of
Technology, Kurukshetra held in _____, securing a CGPA _____
out of the maximum CGPA of 10.000.

His/Her Dissertation entitled " _____"

was approved and adjudged worthy of Distinction.

Dated _____

Controller of Exams.

Dean (Academic)

Sr. No.....

Regn. No.....

***NATIONAL INSTITUTE OF TECHNOLOGY
KURUKSHETRA***



PROVISIONAL CERTIFICATE

This is to certify that Mr./Ms. _____
son/daughter of Sh. _____ has completed
his/her Ph.D. in the Department of _____
on _____ His/her Ph. D. Thesis title is _____

Controller of Exams.

Dean (Academic)

Dated: _____
Kurukshetra

Sr. No. _____

NATIONAL INSTITUTE OF TECHNOLOGY KURUKSHETRA



**PROVISIONAL CERTIFICATE FOR DEGREE OF
MASTER OF BUSINESS ADMINISTRATION**

This is to certify that Mr./Ms. _____ Roll No. _____
son/daughter of Sri. _____ has been a student of
Master of Business Administration Degree Course at this Institute. After successfully completing
this course, he/she has passed the final examination of Master of Business Administration of the
National Institute of Technology, Kurukshetra held in _____ securing a
CGPA _____ out of the maximum CGPA of 10.000.

Dated: _____

Controller of Exams.

Dean (Academic)

Sr. No. _____



**PROVISIONAL CERTIFICATE FOR DEGREE OF
MASTER OF COMPUTER APPLICATION**

This is to certify that Mr./Ms. _____ Roll No. _____
son/daughter of Shri. _____ has been a student of
Master of Computer Application Degree Course at this Institute. After successfully completing this
course, he/she has passed the final examination of Master of Computer Application of the National
Institute of Technology, Kurukshetra held in _____ securing a CGPA _____ out of the
maximum CGPA of 10.000.

Dated: _____

Controller of Exams.

Dean (Academic)

Sr. No. _____

NATIONAL INSTITUTE OF TECHNOLOGY KURUKSHETRA



CHARACTER CERTIFICATE

Certified that Mr./Ms. _____

Roll No. _____ Son/daughter of Shri _____

has been a student of B.Tech. Course (_____)

from _____ to _____

During his/her stay in the institute his/her conduct has been _____

Dated: _____

Dean (Student Welfare)

Dean (Academic)

Sr. No. _____

NATIONAL INSTITUTE OF TECHNOLOGY KURUKSHETRA



CHARACTER CERTIFICATE

Certified that Mr./Ms. _____

Roll No. _____ Son/daughter of Shri _____

has been a student of Master of Business Administration Degree Course from _____

to _____ During his/her stay in the institute his/her conduct has been _____

Dated: _____

Dean (Student Welfare)

Dean (Academic)

Sr. No. _____



CHARACTER CERTIFICATE

Certified that Mr./Ms. _____

Roll No _____ Son/daughter of Shri _____

has been a student of Master of Computer Application Degree Course from _____

to _____ During his/her stay in the institute his/her conduct has been _____

Dated: _____

Dean (Student Welfare)

Dean (Academic)

Item 18.12: Updating existing rules of Ph. D.

Following amendments to the existing Ph. D. rules are proposed.

- (i) The Ph. D. dissertation be uploaded on the Institute Website along with names and affiliations of evaluators with email and contact details only in readable form to avoid its copying / downloading.
- (ii) Para 4-III (please see Annexure 18-12) in Ph.D. evaluation report format be included.
- (iii) The rule R. 13.2 of Ph. D. Ordinance which reads as "A research scholar can submit his thesis only on having published at least two research papers out of his Ph. D. research work in refereed journals" be modified to read as below:
"A research scholar be allowed to submit his / her Ph. D. thesis only after publishing / acceptance of at least 02 research papers out of his / her research work in reputed refereed journals from the list of journals approved by the concerned DRC".

The Senate may consider for approval.

Annexure:18.12

NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA
BILL FOR EXAMINING THE THESIS SUBMITTED FOR Ph.D. DEGREE "PRE-RECEIPTED"

Identity No. _____
(to be filled in by the office)

Name of the Examiner : _____ Designation : _____

Address : _____

Tel. No. _____ Mobile No. _____

Title of the thesis : _____

Name of the Candidate : _____

Remuneration for evaluation : @ Rs. _____ Amount Claimed

Conducting the viva-voce : @ Rs. _____ examination, if any

Postage, if any (Postal Receipt to be attached) Total Rs. : _____

(in words Rs.): _____
Received payment Affix Revenue Stamp

Dated : _____ (Signature of the Examiner)

(FOR OFFICE USE ONLY)

1. Name of the candidate _____ Department _____

2. List of appointment sent vide letter No. _____ dated _____

3. The examiner has evaluated the Ph.D. Thesis of the above candidate and conducted his/her viva-voce examination also.

Bill verified for Rs. : _____

Dealing Clerk/Asstt.

Dy. Supdt.

Asstt. Registrar

Controller of Exams.

Kindly Despatch by Regd. Post to :

Controller of Examinations
National Institute of Technology,
Kurukshetra-136119 (Haryana)

NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA
FORM OF REPORT OF Ph.D. THESIS

1. Name of the Candidate.....
2. Title of the Thesis.....
.....
.....

IMPORTANT

The examiner is requested to send his/her report/recommendations under the following heads:

1. General and critical appreciation of the thesis :

Contd..p/2

2. Positive aspects of the thesis indicating the good points therein :
-

3. Negative aspects, if any :

Contd.p/3

4. Recommendations :

- | | | | |
|----|---|-----|-------------------------|
| I | (a) Whether the thesis is a piece of research work characterised either by discovery of new facts;
OR
Enunciation of a new theory;
OR
by fresh interpretation of known facts or theories; | (a) |
.....
..... |
| | (b) whether the thesis evinces candidates capacity for critical Analysis/ examination and judgement so far as its literary presentation is concerned. | (b) |
.....
..... |
| II | The evaluator will state categorically whether in his or her opinion:
(a) Thesis should be accepted for the award of Ph.D. Degree.
OR
(b) It should be referred back to the candidate for presenting it again in revised form.
OR
(c) It should be rejected. | |
.....
..... |

III. If approved for award of PhD, whether it is recommended for publication.

5. Suggestions, if any, for modification/improvement of the thesis in case the thesis has been recommended for publication after award of degree.

6. Questions for Viva (at least six questions may be given)

(Signature of the examiner)

Name.....

Address.....

.....

.....

Note :- [If necessary, blank sheets may be added to complete the report under any particular head(s) above]

Item 18.13: Considering the recommendations of SCSA at its 36th meeting, dated 16th May, 2011 regarding reservation for physically disabled candidates in M. Tech. program.

The SCSA at its 36th meeting, dated 16th May, 2011 has considered the application of Mr. Abhinav Sukhija regarding reservation in M.Tech programs for persons with disability. In this context, a letter from MHRD has also been received regarding implementation of the Central Educational Institution (Reservation in admission) Act, 2006 and persons with Disability Act, 1995 whose relevant Para 3 is reproduced below.

'It is mandatory under section 39 of the Persons with Disability (Equal Opportunities Protection of Rights and Full Participation) Act, 1995 that all the Govt institutions and other Educational institutions receiving aid from govt. shall reserve not less than 3% seats in all courses for persons with disability'- copy enclosed as Annexure 18.13 (a). Further, the attention of the Senate is also required on provisions in Section 3 and 4 of the Central Educational Institution (Reservation in Admission) Act 2006 as stated in the enclosed MHRD letter.

The proposed seat matrix including the reservation for Persons with disability is given in Annexure 18.13 (b).

Senate may consider for approval.

2510 411811

Director's Office
Received on 28/8/11
Time 8:50 P.M.
NT, KURUKSHETRA, B

No.24-52/2008-TS-II
Government of India
Ministry of Human Resource Development
Department of Higher Education
Technical Section (Coord)

Shashtri Bhawan, New Delhi-110001
Dated : 15.09.2011

To
The Director
All Centrally Funded Technical Institution
(as per list attached)

DS
K. S. Rao
Dy. Secy (Acad.)

Subject: Status regarding implementation of the Central Educational Institution (Reservation in Admission) Act, 2006 and Persons with Disability Act, 1995.

The undersigned is directed to refer to the various Provisions of the Central Educational Institution (Reservation in admission) Act, 2006, which inter-alia includes the following :-

> The provisions in Section 3 of this Act states that :

The reservation of seats in admission and its extent in a Central Educational Institution should be provided in the following manner, namely :-

- (i) Out of the annual permitted strength in each branch of study or faculty, fifteen percent seats shall be reserved for the Scheduled Castes;
- (ii) Out of the annual permitted strength in each branch of study or faculty, seven and one-half percent seats shall be reserved for the Scheduled Tribes;
- (iii) Out of the annual permitted strength in each branch of study or faculty, twenty-seven percent seats shall be reserved for the other Backward Classes.

> Section 4 states that the provision of section 3 of this Act shall not apply to:

- i) A Central Educational Institution established in the tribal areas referred to in the Sixth Schedule to the Constitution;
- ii) The Institutions of excellence, research institutions, institutions of national and strategic importance specified in the Schedule to this Act;
- iii) A Minority Educational Institution as defined in this Act;
- iv) A course or programme at high levels of specialization, including at the post-doctoral level, within any branch of study or faculty, which the Central Government may in consultation with the appropriate authority, specify;

> The provisions of Section 5 of the Act provides that :-

(1) Notwithstanding anything contained in clause (iii) of section 3 and in any other law for the time being in force, every Central Educational Institution shall, with the prior approval of the appropriate authority, increase the number of seats in a branch of study or faculty over and above its annual permitted strength so that the number of seats excluding those reserved for the persons belonging to the Scheduled Castes, the Scheduled Tribes and the Other

Backward Classes, is not less than the number of such seats available for the academic session immediately preceding the date of the coming into force of this act.

(2) Where, on a representation by any Central Educational Institution, the Central Government, in consultation with the appropriate authority, is satisfied that for reasons of financial, physical or academic limitations or in order to maintain the standards of education, the annual permitted strength in any branch of study or faculty of such institution cannot be increased for the academic session following the commencement of this Act, it may permit by notification in the Official Gazette, such institution to increase the annual permitted strength over a maximum period of three years beginning with the academic session following the commencement of this Act; and then the extent of reservation for the Other Backward Classes as provided in clause (iii) of section 5 shall be limited for that academic session in such manner that the number of seats available to the other Backward classes for each academic session are commensurate with the increase in the permitted strength for each year.

> Section 6 of the CEI Act 2006, states that :

The Central Educational Institutions shall take all necessary steps, which are required in giving effect to the provisions of section 3, 4 and 5 of this Act, for the purposes of reservation of seats in admissions to its academic sessions commencing on and from the calendar year, 2007.

(3) It is mandatory under section 39 of the Persons with Disability (Equal Opportunities Protection of Rights and Full Participation) Act, 1995 that all the Govt institutions and other Educational institutions receiving aid from govt. shall reserve not less than 3% seats in all courses for persons with disability.

In view of the above, it has been decided to prepare a status Report on admission in respect of all Central Educational Institutions under the jurisdiction of Department of Higher Education. Therefore, it is requested to furnish the information pertaining to admission for the year 2011 in the prescribed proforma (copy enclosed) in respect of all Central Education Institutions and other educational institutions of Department of Higher Education to this section on priority basis.


(R.C. Meena)
Economic Advisor (HE)

End. as above

Copy to: - DS(IT)/DS(NIT)/Dir(T)/Dir(Mgt.)/DS(TEL)/DEA(T) with a request to follow up the matter in respect of institutions under their administrative control.

**PROCEDURE AND ADMISSION RULES FOR
M.TECH. DEGREE COURSES**

I. Number of Seats:

Department	Specialization	No. of Seats				PH	Total	Remarks
		Open	SC	ST	OBC			
(a) Civil Engg.	(i) Soil Mechanics & Foundation Engineering	08	3	1	4		16	
	(ii) Structural Engineering	08	3	1	4		16	
	(iii) Water Resources Engineering	08	3	1	4		16	
	(iv) Transportation Engineering	08	3	1	4		16	
	(v) Environmental Engineering	09	2	1	5	03	20	
(b) Electrical Engg.	(i) Control System	08	3	1	4		16	
	(ii) Power System	08	3	1	4		16	
	(iii) Power Electronics & Drives	08	2	1	4	1	16	
(c) Electronics & Comm. Engg.	(i) Electronics & Comm. Engineering	10	3	2	5		20	
	(ii) VLSI Design	10	2	2	5	1	20	
(d) Mechanical Engg.	(i) Industrial and Production Engg.	08	3	1	4		16	
	(ii) Machine Design	08	3	1	4		16	
	(iii) Thermal Engineering	09	2	2	5	2	20	
(e) Physics	(i) Instrumentation	10	3	2	5		20	
	(ii) Nano-Technology	10	2	2	5	1	20	
(f) Computer Engg.	Computer Engg.	10	3	1	5	1	20	
		140	43	21	71	9	284	
	% Seats	49.3	15.1	7.4	25	3.2		

Item 18.14 To consider amendment of MBA degree format for including 'Major' and 'Minor' specializations.

Majority of employers of MBA qualified students make recruitments based on the specialization and they have been insisting that specializations of MBA students be mentioned in the Degree. As per our MBA curriculum the students are required to choose a 'Major Specialization' by taking 06 courses and a 'Minor Specialization' based on opting 04 courses during their second year of study and these course have to be taken from respective Major / Minor specialization.

In view of the requirements of recruiting organizations and our MBA curriculum it is proposed that the specializations of MBA students be mentioned in their Degrees for which the proposed degree format is given in Annexure 18.14 (a). The existing MBA degree format is also given in Annexure 18.14 (b) for reference.

The Senate may consider for approval.

क्रम संख्या / Sr. No. _____

अनुक्रमांक / Roll No. _____

Annexure:18.14(a)

राष्ट्रीय प्रौद्योगिकी संस्थान
कुरुक्षेत्र
एतद्वारा

मास्टर ऑफ बिजनेस एडमिनिस्ट्रेशन

की उपाधि _____
पुत्र पुत्री श्री _____ को
प्रदान करता है, जिन्होंने _____ में मुख्य
विशेषज्ञता एवं _____ में अल्प विशेषज्ञता प्राप्त
कर सफलतापूर्वक माध्यम पूर्ण किया।

*National Institute of Technology
Kurukshetra*

*hereby confers the degree of
Master of Business Administration*

on _____
son/daughter of Shri _____ who has
successfully completed the course of studies with _____ as
major and _____ as minor specializations and passed the
prescribed examinations.

कुलाचिव
Registrar

निदेशक
Director

अध्यक्ष, नियामक मण्डल
Chairman
Board of Governors

Annexure: 18.

क्रम संख्या/Sr. No. 019

अनुक्रमांक/Hall No. 308022

राष्ट्रीय प्रौद्योगिकी संस्थान
कुरुक्षेत्र

एतद्वारा

मास्टर ऑफ बिजनेस एडमिनिस्ट्रेशन

की उपाधि _____ शुभाम कंसल _____
पुत्र/पुत्री श्री _____ प्रेम कंसल _____ को
प्रदान करता है, जिन्होंने पाठ्यक्रम का अध्ययन सफलतापूर्वक पूर्ण किया और निर्धारित परीक्षाएं उत्तीर्ण की हैं।
यह मुद्रित उपाधि _____ 31 मार्च 2011 _____ को प्रदत्त की गई।

National Institute of Technology
Kurukshetra

hereby confers the degree of

Master of Business Administration

on _____ Shubham Kansal _____
son/daughter of Shri _____ Prem Kansal _____ who
has successfully completed the course of studies and passed the prescribed
examinations.

Given this day, the _____ 31st _____ of _____ March 2011 _____ under the
seal of the Institute.



R. Samant
कुलसचिव
Registrar

K. K.
निदेशक
Director

J. K.
अध्यक्ष, विद्यालय नवसल
Chairman
Board of Governors

Item 18.15: To consider and approve the modifications in the scheme and syllabi of M. Tech. ECE, M. Tech. VLSI Design, and B. Tech. ECE courses.

The BOS of ECE Department has recommended following modifications in the scheme and syllabi:

1. Syllabi Modifications:

- (i) The Syllabus of 'Digital Signal Processing' (MTEC-102) of M.Tech ECE 1st semester be modified as per Annexure 18.15 (b).
- (ii) The syllabus of 'Advance Digital Signal Processing' (MTEC-324) of M. Tech. VLSI 2nd semester be modified to as in Annexure 18.15 (c).
- (iii) The syllabus of 'Digital Signal Processing' (ECT-306) of B. Tech. 6th semester be modified to as in Annexure 18.15 (d).

2. Scheme Modifications:

- (i) It is proposed that 'Hardware Project' (MTEC-312) of M. Tech. ECE 3rd semester be named as 'Major Project' with same course number.
- (ii) The scheme of B. Tech. ECE 6th Semester be modified as given in Annexure 18.15 (e).

The relevant portions of the BOS minutes approving the above modifications are given in Annexure 18.15 (a).

The Senate may consider for approval.

NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA

No. ECE/BOS/11/ 7-9/11

Annexure:18.15(a)
Date: 05.10.2011

Minutes of the Board of Studies meeting of ECE deptt. held on 05.10.2011 at 11.00 a.m. in the Departmental Conference room

Present

- | | |
|---|----------|
| 1. Prof. O.P. Sahu, HOD | In Chair |
| 2. Prof. B.J. Singh, Professor | Member |
| 3. Prof. Umesh Ghankar, Assoc. Professor | Member |
| 4. Prof. Rajoo Pandey, Assoc. Professor | Member |
| 5. Prof. Vikas Mittal, Asst. Professor | Member |
| 6. Prof. Sandeep Santosh, Asst. Professor | Member |

Prof. A.K. Gupta, Prof. R.K. Sharma, Prof. Arvind Kumar, External Experts: Prof. A.K. Saxena, Professor Deptt. of Electronics and Computer Engg. IIT, Roorkee and Prof. Vinod Kumar, Professor, Deptt. of Electronics & Computer Engg. NIT, Hamirpur could not attend the meeting.

The following decisions were taken:

1. To consider the appointment of Paper Setters/Practical Examiners/Evaluators
 - (i) Paper setters/evaluators for theory paper of B.Tech (ECE), M.Tech (ECE) & M. Tech (VLSI design) for odd semester 2011-2012.
 - (ii) Internal examiners for practical examinations of B.Tech (ECE), M. Tech (ECE) and M.Tech. (VLSI design) for odd semester 2011-2012.

The BOS approved the names of the examiners for the above mentioned examinations as listed in (Annexure-I).

2. To consider any proposed modifications in scheme/syllabi of B.Tech. & M.Tech. courses.
 - (i) BOS decided to replace (MTEC-312) Hardware Project by (MTEC-312) Major Project in M.Tech.(ECE) 3rd semester

Justification: The change will help in maintaining continuity from (MTEC-210) Minor Project in 2nd semester to dissertation work in 4th semester.

- (ii) BOS decided to make minor modification in the syllabus of following courses.

- (a) (MTEC-102) Digital Signal Processing, M.Tech. (ECE) 1st semester (copy enclosed)
- (b) (MTEC-324) Advance Digital Signal Processing, M.Tech. (VLSI) 3rd semester (copy enclosed)
- (c) (ECT-306) Digital Signal Processing, B.Tech. 6th Semester (Copy enclosed)

DIGITAL SIGNAL PROCESSING
MTEC-102

L T P
3 1 0

Sessional : 50
Exam : 50
Time : 3 Hrs

UNIT-1 DFT & FFT

Frequency-Domain Sampling- The Discrete Fourier Transform: Frequency-Domain sampling and reconstruction of Discrete-Time Signals, Discrete Fourier Transform, DFT as a linear transformation, Relationship of the DFT to other transforms.

Properties of the DFT: Periodicity, Linearity, and Symmetry properties, Multiplication of two DFT's and circular convolution, Additional DFT properties.

Linear Filtering Methods based on the DFT: Use of the DFT in linear filtering, Filtering of long data sequences.

The Discrete Cosine Transform: Forward DCT, Inverse DCT, DCT as an orthogonal transform.

Efficient Computation of the DFT-FFT Algorithms: Direct computation of the DFT, Divide-and-conquer approach to computation of the DFT, Radix-2 FFT algorithms, Radix-4 FFT algorithms, Split-Radix FFT algorithms.

Applications of FFT Algorithms: Efficient computation of the DFT of two real sequences, Efficient computation of the DFT of a $2N$ -Point real sequences.

UNIT-2 Filter Structures & Design

Structures for FIR Systems: Direct-form structures, Cascade-form structures, Frequency-sampling structures, Lattice structure.

Structures for IIR Systems: Direct-form structures, Signal flow graphs and transposed structures, Cascade form structures, Parallel form structures, and Lattice and lattice-ladder structures for IIR systems.

General Considerations: Causality and its implications, Characteristics of practical frequency selective filters.

Design of FIR Filters: Symmetric and anti-symmetric FIR filters, Design of linear-phase FIR filters using windows, Design of linear-phase FIR filters by the frequency-sampling method, Design of optimum equiripple linear-phase FIR filters, Comparison of design methods for linear-phase FIR filters.

Design of IIR Filters from Analog Filters: IIR filter design by approximation of derivatives, IIR filter design by the bilinear transformation, Characteristics of commonly used analog filters.

UNIT-3 Multirate Digital Signal Processing

Introduction, Decimation by a factor D , Interpolation by a factor I , Sampling rate conversion by a rational factor I/D .

Implementation of Sampling Rate Conversion: Polyphase filter structures, Interchange of filters and downsamplers/upsamplers, Sampling rate conversion with cascaded integrator comb filters, Polyphase structures for decimation and interpolation filters, structures for rational sampling rate conversion.

Handwritten signature and date:
A.R. Joshi
5/12/2011

Multirate Implementation of Sampling Rate Conversion, Sampling Rate Conversion of Bandpass Signals.

Sampling Rate Conversion by an Arbitrary Factor: Arbitrary resampling with Polyphase interpolators, Arbitrary resampling with Farrow filter structures.

Applications of Multirate Signal Processing: Design of phase shifters, Interfacing of digital systems with different sampling rates, Implementation of narrowband lowpass filters, Subband coding of speech signals.

Digital Filter Banks: Polyphase structures of uniform filter banks, transmultiplexers.

Two-Channel Quadrature Mirror Filter Bank: Elimination of aliasing, Condition for perfect reconstruction, Polyphase form of the QMF bank, Linear phase FIR QMF bank, IIR QMF bank, Perfect reconstruction two-channel FIR QMF bank, Two-channel QMF banks in subband coding.

M-Channel QMF Bank: Alias-free and perfect reconstruction condition, Polyphase form of the M-Channel QMF bank.

UNIT-4 Linear Prediction and Adaptive Filters

Innovations Representation of a Stationary Random Process: Rational power spectra, Relationships between the filter parameters and the autocorrelation sequence.

Forward and Backward Linear Prediction: Forward linear prediction, backward linear prediction, Optimum reflection coefficients for the lattice forward and backward predictors, Relationship of an AR process to linear prediction.

Wiener Filters for Filtering and Prediction: FIR Wiener filter, Orthogonality principle in linear mean-square estimation, IIR Wiener filter, Noncausal Wiener filter.

Applications of Adaptive Filters: System identification or system modelling, Adaptive channel equalization, Echo cancellation in data transmission over telephone channels, Suppression of narrowband interference in a wideband signal, Adaptive line enhancer, Adaptive noise cancelling, Linear predictive coding of speech signals, Adaptive arrays.

Adaptive Direct-Form FIR Filters-The LMS Algorithm: Minimum mean-square-error criterion, LMS algorithm, Related stochastic gradient algorithms, Properties of the LMS algorithm.

Note: Eight questions will be set and the students will be asked to attempt any five questions.

REFERENCES:

1. Roman Kuc: Introduction to Digital Signal Processing, MGH
2. JG Proakis: Digital Signal Processing PHL
3. Oppenheim Schaffer: Discrete Time Signal Processing, PHI
4. Sanon Haykin, Adaptive Filter Theory, PTH

Relationships between the filter parameters and the autocorrelation sequence.

Forward linear prediction, backward linear prediction, Optimum reflection coefficients for the lattice forward and backward predictors.

Orthogonality principle in linear mean-square estimation, IIR Wiener filter, Noncausal Wiener filter.

System identification or system modelling, Adaptive channel equalization, Echo cancellation in data transmission over telephone channels.

Suppression of narrowband interference in a wideband signal, Adaptive line enhancer, Adaptive noise cancelling, Linear predictive coding of speech signals, Adaptive arrays.

Minimum mean-square-error criterion, LMS algorithm, Related stochastic gradient algorithms, Properties of the LMS algorithm.

Eight questions will be set and the students will be asked to attempt any five questions.

Programme Elective
ADVANCE DIGITAL SIGNAL PROCESSING
 MTEC-324

L T P
 3 1 0

Sessional : 50
 Exam : 50
 Time: 3 Hrs

UNIT-1 DFT & FFT

Frequency-Domain Sampling- The Discrete Fourier Transform: Frequency-Domain sampling and reconstruction of Discrete-Time Signals, Discrete Fourier Transform, DFT as a linear transformation, Relationship of the DFT to other transforms.

Properties of the DFT: Periodicity, Linearity, and Symmetry properties, Multiplication of two DFT's and circular convolution, Additional DFT properties.

Linear Filtering Methods based on the DFT: Use of the DFT in linear filtering, Filtering of long data sequences.

The Discrete Cosine Transform: Forward DCT, Inverse DCT, DCT as an orthogonal transform.

Efficient Computation of the DFT-FFT Algorithms: Direct computation of the DFT, Divide-and-conquer approach to computation of the DFT, Radix-2 FFT algorithms, Radix-4 FFT algorithms, Split-Radix FFT algorithms.

Applications of FFT Algorithms: Efficient computation of the DFT of two real sequences, Efficient computation of the DFT of a 2N-Point real sequences.

UNIT-2 Filter Structures & Design

Structures for FIR Systems: Direct-form structures, Cascade-form structures, Frequency-sampling structures, Lattice structure.

Structures for IIR Systems: Direct-form structures, Signal flow graphs and transposed structures, Cascade form structures, Parallel form structures, and Lattice and lattice-ladder structures for IIR systems.

General Considerations: Causality and its implications, Characteristics of practical frequency selective filters.

Design of FIR Filters: Symmetric and anti-symmetric FIR filters, Design of linear-phase FIR filters using windows, Design of linear-phase FIR filters by the frequency-sampling method, Design of optimum equiripple linear-phase FIR filters, Comparison of design methods for linear-phase FIR filters.

Design of IIR Filters from Analog Filters: IIR filter design by approximation of derivatives, IIR filter design by the bilinear transformation, Characteristics of commonly used analog filters.

UNIT-3 Multirate Digital Signal Processing

Introduction, Decimation by a factor D, Interpolation by a factor I, Sampling rate conversion by a rational factor I/D .

Implementation of Sampling Rate Conversion: Polyphase filter structures, Interchange of filters and downsamplers/upsamplers, Sampling rate conversion with cascaded integrator comb filters, Polyphase structures for decimation and interpolation filters, structures for rational sampling rate conversion.

Bandpass Sampling: Bandpass sampling, and Lattice and lattice-ladder structures.

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Multirate Implementation of Sampling Rate Conversion, Sampling Rate Conversion of Bandpass Signals.

Sampling Rate Conversion by an Arbitrary Factor: Arbitrary resampling with Polyphase interpolators, Arbitrary resampling with farrow filter structures.

Applications of Multirate Signal Processing: Design of phase shifters, Interfacing of digital systems with different sampling rates, Implementation of narrowband lowpass filters, Subband coding of speech signals.

Digital Filter Banks: Polyphase structures of uniform filter banks, transmultiplexers.

Two-Channel Quadrature Mirror Filter Bank: Elimination of aliasing, Condition for perfect reconstruction, Polyphase form of the QMF bank, Linear phase FIR QMF bank, IIR QMF bank, Perfect reconstruction two-channel FIR QMF bank, Two-channel QMF banks in subband coding.

M-Channel QMF Bank: Alias-free and perfect reconstruction condition, Polyphase form of the M-Channel QMF bank.

UNIT-4 Linear Prediction and Adaptive Filters

Innovations Representation of a Stationary Random Process: Rational power spectra, Relationships between the filter parameters and the autocorrelation sequence.

Forward and Backward Linear Prediction: Forward linear prediction, backward linear prediction, Optimum reflection coefficients for the lattice forward and backward predictors, Relationship of an AR process to linear prediction.

Wiener Filters for Filtering and Prediction: FIR wiener filter, Orthogonality principle in linear mean-square estimation, IIR wiener filter, Noncausal wiener filter.

Applications of Adaptive Filters: System identification or system modelling, Adaptive channel equalization, Echo cancellation in data transmission over telephone channels, Suppression of narrowband interference in a wideband signal, Adaptive line enhancer, Adaptive noise cancelling, Linear predictive coding of speech signals, Adaptive arrays.

Adaptive Direct-Form FIR Filters-The LMS Algorithm: Minimum mean-square-error criterion, LMS algorithm, Related stochastic gradient algorithms, Properties of the LMS algorithm.

Note: Eight questions will be set and the students will be asked to attempt any five questions.

REFERENCES:

1. Roman Kuc: Introduction to Digital Signal Processing, MGH
2. JG Proakis: Digital Signal Processing PHI
3. Oppenheim Schafer: Discrete Time Signal Processing, PHI
4. Simon Haykin, Adaptive Filter Theory, PTH

Relationships between the filter parameters and the autocorrelation sequence.

Orthogonality principle in linear mean-square estimation, IIR wiener filter, Noncausal wiener filter.

Minimum mean-square-error criterion, LMS algorithm, Related stochastic gradient algorithms, Properties of the LMS algorithm.

Properties of the LMS algorithm.

Eight questions will be set and the students will be asked to attempt any five questions.

1. Roman Kuc: Introduction to Digital Signal Processing, MGH
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**B.TECH V SEMESTER
DIGITAL SIGNAL PROCESSING
(ECT-306)**

Theory : 50
Sessional : 50
Time : 3Hrs

UNIT - I:
THE Z- TRANSFORM: Z- transform and its properties, poles and zeros, inversion of Z-transform, One sided Z-transform and solution of differential equations. Analysis of LTI systems in Z-domain, causality, stability, schur-cohn stability test; relationship between Z-transform and Fourier transform. Frequency selective filters; all pass filters, minimum-phase, maximum-phase and mixed-phase systems. Schur-cohn, stability criterion.

UNIT - II:
DFT AND FFT: Frequency domain sampling and DFT; properties of DFT, Linear filtering using DFT, Frequency analysis of signals using DFT, DCT, radix 2, radix-4 and split radix FFT algorithms, goertzel algorithm, Chirp Z-transform, applications of FFT algorithm, computation of DFT of real sequences.

UNIT - III:
IMPLEMENTATION OF DISCRETE TIME SYSTEMS: Direct form, cascade form, frequency sampling and lattice structures for FIR systems. Direct forms, transposed form, cascade form parallel form. Lattice and lattice ladder structures for IIR systems. State space structures, structures for all pass filters.

UNIT - IV:
DESIGN OF DIGITAL FILTERS: Characteristics of practical frequency selective filters. Filters design specifications peak pass band ripple, minimum stop band attenuation. Four types of FIR filters Design of FIR filters using windows. Kaiser window method comparison of design methods for FIR filters Gibbs phenomenon, design of FIR filters by frequency sampling method, design of optimum equiripple FIR filters, alternation theorem. Design of IIR filters from analog filters, Design by approximation of derivatives, impulse invariance method bilinear transformation method characteristics of Butterworth, Chebyshev, and Elliptical analog filters and design of IIR filters, Frequency transformation, least square methods, design of IIR filters in frequency domain.

NOTE:
The question paper shall have eight questions in all distributed uniformly over the entire syllabus. The candidate shall have to attempt any five questions.

REFERENCES:

1. John G. Proakis, Digital Signal Processing, PHI
2. S. K. Mitra, Digital Signal Processing, TMH
3. Rabiner and Gold, Digital Signal Processing, PHI
4. Salivahan, Digital Signal Processing, TMH

(iii) BOS decided to change the scheme of B.Tech. (ECE) 6th semester in the following manner.

Existing Scheme				Modified scheme as decided by the BOS			
	L	T	P		L	T	P
1. Microwave Engg.	3	2	0	1. Microwave Engg.	3	1	0
2. Digital Signal Processing	3	2	0	2. Digital Signal Processing	3	1	0
3. Digital Communication	3	2	0	3. Digital Communication	3	1	0
4. Object Oriented Programming with C++	0	0	0	4. Object Oriented Programming with C++	0	0	3

Justification: Two tutorial classes are not required for each of the above courses, only one tutorial class is sufficient. Moreover, object oriented programming with C++ comes under minimum requirement criteria of many companies in the campus interviews, and in the absence of knowledge of this course ECE students are not considered by several companies. Introduction of this course will expand the scope of the students in many companies.

3. To authorize the HOD to appoint examiners for any leftover courses in case of urgencies.

BOS authorized the HOD to appoint examiners for any leftover courses in case of urgencies.

There being no business, the meeting ended with thanks to the chair.

Digital Communication

Object Oriented

Programming with C++

(O.P. Sahu, HOD)

Copy to:

- All Members of BOS in ECE.
- ✓ Dean (Acad.) with a request to put the BOS decisions about revised scheme/syllabus as an agenda item for approval of the senate in the next meeting.
- Controller of Exams, NIT, Kurukshetra
- DS to Director for kind information of the Director.

