

# Poornima Group of Colleges, Jaipur

Session: 2011-12 (ODD Sem.)

**Name of College: Poornima College of Engineering**

**Department of Electrical Engineering**

## Zero Lecture

Name of Faculty: Neha Jain

Branch: Electrical Engineering

**1). Name of Subject with Code:** Electrical Technology– (3EI5)

### **2). Self-Introduction:**

a). *Name:* Neha jain

b). *Qualification:* Bachelor of Technology

c). *Designation:* Lecturer

d). *Research Area:* power system

e). *E-mail Id:* nehajain919@gmail.com

### **3). Introduction of Students:**

a). *Identifying and keeping records* of students based on merit/ weak in academics, smart/ dull in extra & co-curricular activity, day scholar/ hosteller, Hindi or English medium, urban or rural family background, their learning style (seeing, hearing, doing) etc.

b). *Achievement of students in previous years*

Sr. No.	Year	Result At PCE	Univ. Result (In %)	Name of student scored highest marks with the scored marks.	Fail (no. of students)	Marks between 40%-60% (no. of students)	Marks 60% above (no. of students)
1.	2008		100%		0	15	11
2.	2009		91.18%		1	18	13
3.	2010		97.22%		5	14	10

**4). Instructional Language: - .....%English; .....% Hindi (English not less than 60%)**

**5). Introduction to subject: -** (Pl. separate out subject specific matter and general matter valid for all subjects and group/place them appropriately)

a). **Relevance to Branch:** Electrical Power System and Electrical Machines is very important subject for the students of instrumentation Branch because it deals with controlling phenomenon of electrical machines and devices for further reference. Electrical Power System explains about the transmission and distribution, working and operation of the sub station and protection used in the field of power system engineering. This is very useful in determining the electrical values of physical parameters so that electrical modeling of a physical system can be done.

b). **Relevance to Society:** Modern Industry relies heavily on automation for economic viability and mass production. The availability of sophisticated instruments and variety of circuit methodologies has great improved not only the quality of the products but also contribution to reduction of costs. In the present times, it is impossible to think of industrial production without electricity. Students of engineering are therefore called upon to learn the rudiment of instruments and control strategies very early in their graduation courses.

c). **Relevance to Self:** This subject moves us to the depth of knowledge. The subject has become interesting with the advent of neural networks and all the devices becoming intelligent. If one is interested in the practical applications then this is useful like in further studies, in projects. As this subject brushes up the thinking power so we come up to the most optimum utilization of the things and subjects.

d). **Relation with laboratory:** This subject is implemented practically in the laboratory like implementation of oc sc test in machine speed control of dc motor by various method different and the results obtained can be varified.

e). **Connection with previous year and next year:** In the previous year we had studied conventional electrical technology and basic idea of machine. Now we'll study further power system and transmission and distribution, protection and electrical machines like d.c motor, induction motor, synchronous motor.

## **6). Syllabus of Rajasthan Technical University, Kota**

a). *Index Terms/ Key Words:*

b). *RTU Syllabus with Name of Subject & Code*

### **3E15 ELECTRICAL TECHNOLOGY**

#### **UNIT 1 : DC MACHINES**

**(I) DC GENERATORS :** Generated voltage, Types of DC generators, No load and load characteristics Parallel operation.

**(II) DC MOTORS :** Production of torque, Back emf. Torque current and torque speed characteristics, Starting speed control of DC motors, Losses and efficiency.

**UNIT 2 : INDUCTION MOTORS :** Construction, Basic principles, Torque slip curves, Effect of rotor resistance cogging, Crawling, Starting, speed control and breaking of induction motors. Losses and efficiency, Single-phase induction motor: Starting methods.

**UNIT 3 : SYNCHRONOUS MACHINES:** Basic principles starting of synchronous motors, OC and SC and zero power factor characteristics. Single phase synchronous motor.

**UNIT 4 : TRANSMISSION AND DISTRIBUTION SYSTEM :** General idea of transmission and distribution system, electrical equipment of a sub station, Interface of power lines with telecommunication circuits. Conductors and insulators for transmission lines.

**UNIT 5 : PROTECTION:** Basic types of faults caused and consequences of faults in power system, over current relay and elementary idea of static relays and their advantages and limitations

c). ABC analysis (RGB method) of unit & topics (*Green: Easy, Blue:Medium, Red: Difficult*)

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## 7). Books/ Website/Journals & Handbooks/ Association & Institution:

a). Recommended Text & Reference Books and Websites:

S. No.	Title of Book	Authors	Publisher	Cost (Rs.)	No. of books in Library
Text Books					
T1	ELECTRICAL MACHINE	Ashfaq Hussain	Dhanpat Rai	240	10
T2	ELECTRICAL MACHINERY	P.S. bhimrao	Ramesh chander khanna	280	12
T3	ELECTRICAL POWER SYSTEM	J.B.gupta	Katson	450	11
Reference Books					
R1	ELECTRICAL TECHNOLOGY VOL 2	B.L .Thereja	S.CHAND	250	15
Websites related to subject					
1	www.wikipedia.org				
2	ie.org.in				

b). *Journals & Handbooks:* -

- 1 IEEE magazine (www.ieee.org.in)
- 2 Institute of Engineers (www.ie.org.in)
- 3 IETE publications...

c). *Associations and Institutions:* -

- 1 IETE
- 2 IEEE

### 8). Syllabus Deployment: -

a). *Total weeks available for academics (excluding exams/ holidays) as per PGC calendar-*

Semester	I	III	V	VII
No. of Working days available(Approx.)	79	76	76	72
No. of Weeks (Approx.)	13	12.5	12.5	12

- Total weeks available for covering RTU syllabus- 10-11 weeks (Approx.)
- Total weeks available for special activities (as mentioned below)- 02 weeks (Approx.)

**Note: Individual faculty must calculate the exact no. of lectures available according to time table etc. after consultation with HOD.**

b). *Special Activities* (To be approved by HOD, Dean & Campus Director & must be mentioned in deployment):

- Open Book Test- Once in a semester
- Quiz (50% Technical & 50% Aptitude)- Once in a semester
- Special Lectures (SPL)- 10% of total no. of lectures including following
  - i. One PPT by the faculty, who is teaching the subject
  - ii. SPL by expert faculty at PGC level
  - iii. SPL by expert from industry/academia (other institution)
- Revision classes:- 1 to 3 turn at the end of semester (Before II Mid Term Exam)
- Solving Important Question Bank- 1 Turn before I & II Mid Term Exam (each) - Total Two turn.

c). *Lecture schedule per week*

- i). University scheme (L+T+P) = 3+1/0+0
- ii). PGC scheme (L+T+P) = 3/4+1/0+0

Sr. No.	Name of Unit	No. of lectures	Broad Area	Degree of difficulty (High/Medium/Lo)	No. of Question in RTU Exam.	Text/ Reference books
1.	DC MACHINES	10	Machine	Medium	2	B.L THAREJA
2.	INDUCTION MOTOR	9	Speed control	Medium	2	ASFAQ HUSSAIN
3.	SYNCHRONOUS MOTOR	7	Characteristics	High	2	B.L THAREJA
4.	TRANSMISSION AND DISTRIBUTION	8	Electrical equipment	Medium	2	B.R GUPTA
5.	PROTECTION	4	Relays	Low	2	J.B. GUPTA

d). *Introduction & Conclusion:*

**UNIT 1 : DC MACHINES** This unit explains the construction and operation of DC machines, this unit lays emphasis on the basic principle of DC generator and DC motor will also be discussed in this unit.

**UNIT 2 : INDUCTION MOTORS** This unit explains the construction and operation of induction motor, this unit lays emphasis on the basic principle of induction motor. Application and limitation of induction motor will also be discussed in this unit.

**UNIT 3 : SYNCHRONOUS MACHINES** This unit explains the construction and operation of induction motor, this unit lays emphasis on the basic principle of induction motor. Application and limitation of induction motor will also be discussed in this unit.

**UNIT 4 : TRANSMISSION AND DISTRIBUTION SYSTEM** In this unit General idea of transmission and distribution system and electrical equipment of a substation Interface of power lines with Telecommunication circuits will be discussed.

**UNIT 5 : PROTECTION:**

In this unit fault and protection in power system will be studied.

e). *Time Distribution in lecture class:* - Time allotted: 60 min.

- i. First 5 min. should be utilized for paying attention towards students who were absent for last lecture or continuously absent for many days + taking attendance by calling the names of the students and also sharing any new/relevant information.
- ii. Actual lecture delivery should be of 50 min.
- iii. Last 5 min. should be utilized by recapping/ conclusion of the topic. Providing brief introduction of the coming up lecture and suggesting portion to read.
- iv. After completion of any Unit/Chapter a short quiz should be organized.
- v. During lecture student should be encouraged to ask the question.

**Note:** Pl. ensure that each student is having Lecture Note Book. Pl. Write on the black board day and date, name of the teacher, name of sub. with code, unit and lecture no. and topics to be covered at the beginning of each lecture and ensure that students write in lecture note book. Ask students to leave 4/5 pages blank for copying the note from fellow students in case of their absenteeism.

**\9). Tutorial: - An essential component of Teaching- Learning process in Professional Education.**

Objective: - To enhance the recall mechanism.

To promote logical reasoning and thinking of the students.

To interact personally to the students for improve numerical solving ability.

a). *Tutorial processing:* - Tutorial sheet shall be provided to each students

I<sup>st</sup> Phase: - It is consisting of questions to be solved in the class assignment session in test mode on perforated sheet given in tutorial notebook and to be collected & kept by respective faculty for review & analysis (20 minutes).

II<sup>nd</sup> Phase: - Indicating/Initializing the weak issues/ drawback and Evaluating and providing the grade. Making a group with good student for assisting the weak students to explain/solve questions by every student on plain papers given in tutorial note book (20 minutes).

III<sup>rd</sup> Phase: - Solving/ explaining difficulties of lecture class and providing the new home assignment (20 minutes). To be done in tutorial note book.

b). *Home assignment shall comprise of two parts:*

Part (i) Minimum essential questions, which are to be solved and submitted by all with in specified due date.

Part (ii) Other important questions, which may also be solved and submitted for examining and guidance by teacher.

**10). Examination Systems:**

<b>Sr. No.</b>	<b>Name of the Exam</b>	<b>Max. Marks</b>	<b>% of passing marks</b>	<b>Nature of paper Theory + Numerical</b>	<b>Syllabus coverage (in %)</b>	<b>Conducted by</b>
1.	Ist Mid Term Exam	40	40	40+60%	60	PGC
2.	IInd Mid Term Exam	40	40	40+60%	40	PGC
3.	University (End) Term Exam	80	30	40+60%	100	RTU

**11). Any other important point:**

Place & Date: JAIPUR

Name of Faculty with Designation  
NEHA JAIN LECTURE(EE)  
PCE