

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), Nov.-Dec. 2015

B. Tech in Electrical Engineering, Semester V

Roll No.....

EE522: Advanced Distribution System

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Short answer type/Objective type questions (10 questions @ 1 mark) 10

- i. Give the acronym of HVDS.
- ii. Variance- give the formula for it.
- iii. Define Correlation theory.
- iv. Give the formula for reactive power consumption by a distribution transformer.
- v. Enlist two merits external fuse or internal fuse.
- vi. Define harmonics.
- vii. What do you mean by earthing?
- viii. For the safe touch potential, what is the asymptotic value of body resistance?
- ix. As per standard, how much current a human body can handle safely for a long time?
- x. What is Router?

Q.2 Short answer type questions (4 questions @ 2.5 marks) 10

- i. Make the diagram of 2-phase 4-wire system.
- ii. Arrange a table showing the pattern of utilization of electrical energy (per cent) in different load sectors.
- iii. Write down the typical power factor for the following:
 - (a) Fluorescent lamps
 - (b) Neon signs
 - (c) Arc lamps used in auditorium
 - (d) Fans
 - (e) Induction heaters
- iv. Show typical connection of capacitor with a distribution transformer by making a clean diagram.

Q.3A By making the schematic diagram of power system, write down typical working voltage in the various sections of the power system. 2.5 + 2.5

Q.3B Enlist the key differences between primary selective and secondary selective distribution systems. Also make clean diagram of these. 03 + 02

Q.4A	According to Vision 2020, What are the key changes which India going to make in electricity sector upto 2020.	05
Q.4B	What are the different type of loads? Explain all of those with giving demand factor, load factor and diversity factor.	05
Q.5A	What do you mean by Regression analysis? Support your answer by making some regression curves and writing regression functions.	05
Q.5B	What is the basic aim in installing power capacitors in distribution system? Also explain reactive power and loads requiring reactive power.	02 + 03
Q.6A	Explain by making suitable diagram and characteristics, how system voltage can be maintained by using capacitors?	05
Q.6B	Show the effect of shunt capacitor compensation on distribution system by making equivalent circuit and vector diagram.	05
OR		
Q.6B	Show the effect of series capacitor compensation on distribution system by making equivalent circuit and vector diagram.	05
Q.7A	For an earthing system to be totally effective, which are the conditions it should be satisfied? Give the recommended maximum earthing resistance limits for different distribution apparatus.	03.+ 02
Q.7B	Briefly explain the following: (a) Effect of rod size on resistance (b) Effect of soil resistivity on earth electrode resistance	2.5 + 2.5
OR		
Q.7B	Write down different empirical formulas to calculate the earth resistance for different earth electrodes.	05
Q.8A	What are the different types of earthing? Explain any two of them.	10
Q.9A	Define distribution automation. What are the components DA contain? What are the benefits of DA? What are the various functions of DA?	1+2+ 2+5
Q.9B	Define and explain following terms used in DA: (1) Automatic switching controls (2) Data concentrator unit (3) Ethernet (4) Intelligent electronic device	2.5 + 2.5 + 2.5 + 2.5
OR		
Q.9B	Define and explain following terms used in DA: (1) Human machine interface (2) Remote terminal unit (3) Programmable logic controller	2.5 + 05 + 2.5