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**B.E / B.Tech ( Full Time ) DEGREE END SEMESTER EXAMINATIONS, NOV. /DEC. 2013**

Common to Materials Science / Mechanical / manufacturing./ Printing/ Mining Engineering

Second Semester (II)

**EE 9166/EE 192/EE 291- Basic Electrical Engineering and Measurements.**  
(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. What is phase sequence?
2. Define an ideal voltage source.
3. How will you change the direction of rotation of a d.c. motor?.
4. Define voltage regulation of a transformer.
5. Compare moving coil and moving iron instruments.
6. What are the limitations of a megger?
7. What are active transducers? Give an example.
8. Write the applications of LVDT.
9. What is the use of S/H circuit?
10. Distinguish between LED and LCD displays.

**Part – B ( 5 x 16 = 80 marks)**

11. (i) With a neat diagram explain the operation, role and applications of Instrumentation amplifier. (10)  
(ii) Write a technical note on data acquisition. (6)
12. a) Three resistors 12 ohm, 18 ohm and 36 ohm are connected in parallel. This parallel circuit is connected in series with a resistor 'R'. The whole circuit is connected is supplied at 60 Volt and it is found that power developed in 12 ohm resistor is 48 watts. Determine the value of R and total power.  
**OR**  
b) A balanced load connected to a three phase supply comprises three identical coils in star. The line current is 25 A, KVA input is 20, KW input is 11. Find the phase voltage, line voltage, KVA<sub>r</sub> input, resistance and reactance of each coil of the load.
13. a) A 8 kW ,220-V Dc shunt motor draws a line current of 5.6A, while running at a no-load speed of 1000 rpm. It has an armature resistance of 0.30 ohm and a field resistance of 150 ohm. Estimate the efficiency of the motor when it delivers rated load..  
**OR**

- b) (i) Explain the operating principle of three phase induction motor. (6)  
(ii) with neat sketches discuss the principle, construction and applications of single phase transformer. (10)

14. a) Explain the construction and operation of moving coil and moving iron instruments with suitable sketches.

OR

- b) (i) With neat diagrams explain the three phase power measurement techniques. (8)  
(ii) Explain the construction and working principle of energy meter with neat diagrams. (8)

15. a) Explain the principle of operation, construction details, advantages and application of thermocouples.

OR

- b) Write a technical note on the following (8)  
(i) Fiber Optic Transducers. (8)  
(ii) Elastic Sensor and viscosity sensors (8)