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B.E /B.Tech (Full Time) END SEMESTER EXAMINATIONS, April / May 2019

B.E INDUSTRIAL ENGINEERING
II Semester

EE7253 FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING
(Regulation 2015)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. A current of 20A flows through two ammeters A and B joined in series. The potential drop across A is 0.2V while that across B is 0.3V. Find how the same current will divide between A and B when they are joined in parallel.
2. Define RMS value of an alternating current .
3. Calculate the e.m.f generated by 4 pole wave wound generator having 65 slots with 12 conductors per slot when driven at 1200 r.p.m. the flux per pole is 0.02wb.
4. What is the necessity of Motor Starters?
5. Why Transformer rating in kVA?
6. Give reasons for preferring three phase power over single phase power.
7. Why single phase induction motor is not self starting?
8. Differentiate squirrel cage rotor with slip ring rotor?
9. Compare moving coil and moving iron instruments based on any two salient features.
10. What is the purpose of Instrument transformers?

Part – B (5 x 13 = 65 marks)

11. a) Determine the currents through 5Ω resistor of the circuit shown in Figure 1. (13)

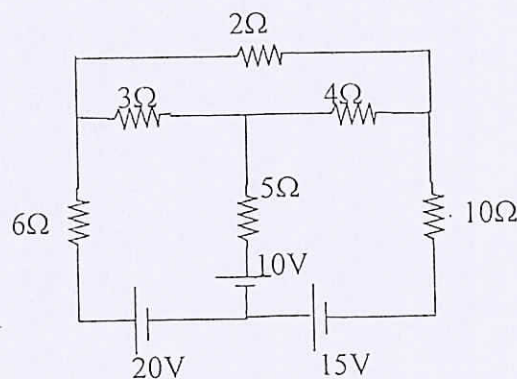


Figure 1



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(OR)

- b) A Wheatstone bridge ABCD has the following details: $AB = 20\Omega$; $BC = 30\Omega$; $CD = 90\Omega$; and $DA = 10\Omega$. A battery of e.m.f. 100V and negligible internal resistance is connected between A and C with A positive. A galvanometer of 9Ω resistance is connected between B and D. Determine the magnitude and direction of current in the galvanometer. (13)
12. a) (i) Discuss in detail the construction of DC machine. (8)
(ii) How does a DC motor work? (5)
(OR)
b) Explain the different methods of speed control of DC shunt motor with neat diagrams. (13)
13. a) (i) Explain the principle of operation of transformer. (8)
(ii). Derive its EMF equation (5)
(OR)
b) (i) Derive the relation between line and phase values of star connected three phase system. (7)
(ii) Three identical inductive loads of resistance 15Ω and reactance 40Ω are connected in star to a 440V, 3-phase supply. Calculate (a) phase current, (b) line current and (c) power absorbed. (6)
14. a) With neat sketch explain the construction and working of Three Phase Induction Motor. (13)
(OR)
b) Discuss the operation of any two types of Single Phase Induction Motor with relevant diagrams. (13)
15. a) Explain the construction and operation of Megger with neat diagram. (13)
(OR)
b) With neat sketch explain the construction and principle of operation of Permanent Magnet Moving coil Instruments. (13)

PART – C (1 x 15 = 15 marks)

16. Explain in detail the instrument used for measurement of electrical energy in a.c circuits Also find , how many kilowatt-hours of energy is consumed and the cost of energy at the rate of 50 paise per kWh by a certain appliance that uses 200 W, which is allowed to run continuously for the month of April. (15)

