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MORNING

[Total No pages: 02]

Uni. Roll No.

25 MAY 2019

Program/Course: B.Tech. (Sem. 1st and 2nd)

Basic Electric Engineering

Subject Code: ESC-101

Paper ID: 15929

Time Allowed: 3 Hours

Max.Marks: 60

Note:

- 1) Part –A and B are compulsory.
- 2) Part-C has two question Q8 and Q9.Both are compulsory, but with internal choice.
- 3) Any missing data may be assumed appropriately.

Part-A

[Marks: 02 each]

Q1.

- a) State ohms law. Give its limitations.
- b) Classify various measuring instruments.
- c) Define power factor of an ac circuit.
- d) What is earthing? Why it is provided?
- e) A battery has taken a charging current of 5.2 A for 24hours at a voltage of 2.25 V, while discharging it gave a current of 4.5 A for 24 hours at an average voltage of 1.85V. Calculate the quantity efficiency and the energy efficiency of the battery.
- f) A 50 Hz, 4 pole, 3 phase induction motor has rotor current of frequency 2 Hz. Calculate slip and speed of motor.

Part-B

[Marks: 04 each]

Q2. For a single phase sinusoidal waveform, find average and rms values in terms of maximum value. Hence determine form factor of the sine wave.

Q3. Give Analogy between Electric and Magnetic circuits.

Q4. Define primary and secondary batteries. Explain any two types of batteries in details.

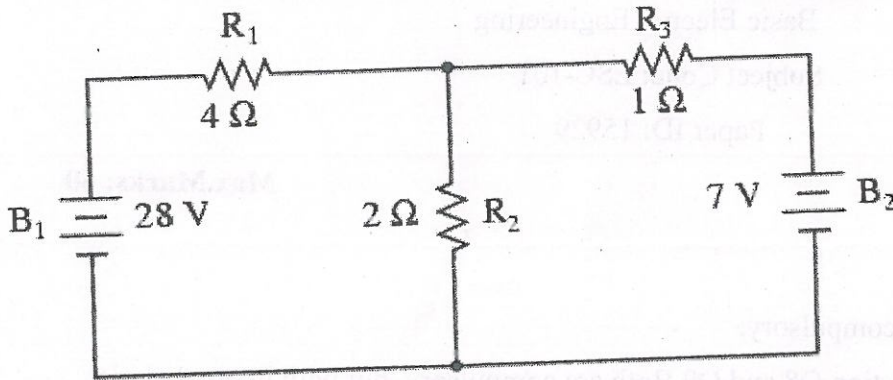
Q5. When a star connected network is transformed to delta connected network, shows that Resistance of an arm of delta = Sum of star resistances connected across that arm plus product of the arm two resistances divided by the third. Also calculate the equivalent delta arm resistance if all star arm resistance is 9 ohms.

Q6. Draw and explain torque speed characteristics of separately excited Dc motor.

Q7. State Thevenin's theorem. Determine Thevenin's equivalent circuit between terminals A and B for the shown network

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Part-C

[Marks: 12 each]

Q8. (a) Describe the constructional details of transformer. Explain different types of losses in a transformer and also derive condition for maximum efficiency of the transformer.

Or

(b) What is resonance? Discuss the condition of resonance for series circuit.

Q9. (a) Explain the operating principle and working of a Permanent magnet moving coil.

Or

(b) Why starters are necessary for starting of 3 phase induction motor? What are the various types of starters? Explain any two starters in detail.
