Code No: 154AE **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester (Special) Examinations, January/February - 2021
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to CE, ME)

Time: 2 hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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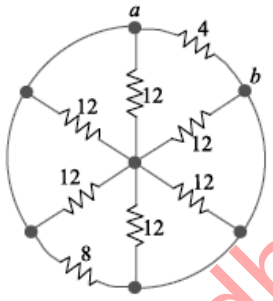
1.a) An alternating current is represented by i = 70.7 sin 520 t. Determine (i) the frequency (ii) the current 0.0015 second after passing through zero, increasing positively.
b) Find the equivalent resistance between terminals a and b of the network shown in Figure. [7+8]



2.a) A resistor carries two alternating currents having the same frequency and phase and having the same value of maximum current i.e. 10 A. One is sinusoidal and the other is rectangular in waveform. Find the r.m.s. value of the resultant current.
b) Given a balanced 3−φ, 3-wire system with Y-connected load for which line voltage is 230 V and impedance of each phase is (6 + j8) ohm. Find the line current and power absorbed by each phase. [7+8]

3.a) What are the applications of MCCB? Explain the working principle of MCCB.
b) Give the construction and the working of a lead acid storage battery. [7+8]

4.a) What is the necessity of earthing the electrical equipment? Give a cross-sectional view of the earthing arrangement.
b) List out the advantages of power factor improvement in electrical systems. Explain how Synchronous Condenser can be used to improve the power factor. [7+8]

5.a) Discuss with suitable diagrams different types of dc generators and their field of applications.
b) Explain the principle of working of transformer. Why the primary of transformer draws current from the mains when the secondary is open circuited? [7+8]

6.a) Explain the working principle of DC Motor.
b) Describe the constructional differences between a squirrel cage rotor and wound rotor of an induction motor. Discuss their relative advantages and disadvantages. [8+7]

7.a) Draw the circuits of a full wave rectifier using 2-diodes and 4-diodes. Discuss the relative merits and demerits.

b) Describe the pnp transistor in common Emitter configuration. How the transistor is used as an amplifier? [7+8]

8.a) What is early effect? Explain how it affects the BJT characteristics in CB configuration.

b) What is meant by depletion region in JFET? Explain with suitable diagrams what are the basic differences between BJT and JFET? [8+7]

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