R09

Code No: 53015

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, March - 2017

ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to PTM, AME, CE, ME)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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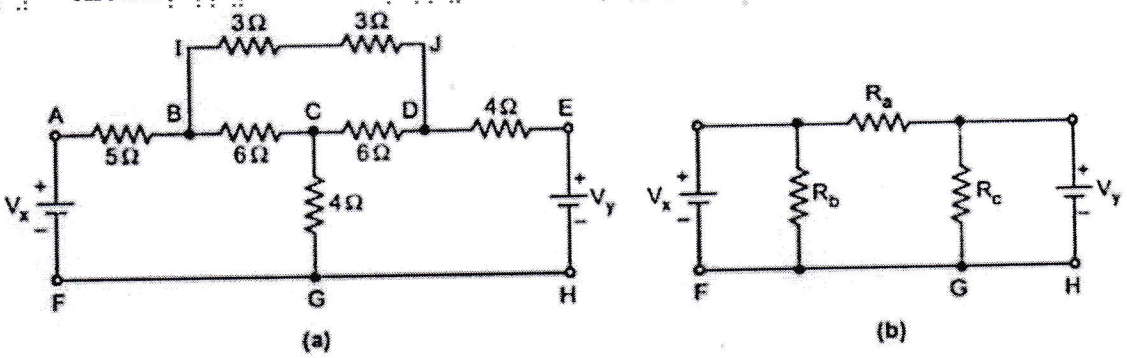
1.a) A circuit is shown in figure a. Using delta-star analysis, reduce it to the circuit as shown in the figure b. Find the values of R_a, R_b, R_c in the equivalent form of the circuit.



b) A 20V battery with an internal resistance of 5 ohms is connected to a resistor of x ohms. If an additional resistance of 6. is connected across the battery, find the value of x, so that the external power supplied by the battery remain the same. [7+8]

2.a) Discuss the working principle of DC generator.

b) A DC generator has an armature emf of 100 V when the useful flux per pole is 20 m Wb, and the speed is 800 rpm. Calculate the generated emf (i) with the same flux and a speed of 1000 rpm, (ii) with a flux per pole of 24 m Wb and a speed of 900 rpm. [7+8]

3. Calculate efficiency and regulation at full load, 0.8 p.f lagging for a 10 kVA, 1phase, 50Hz, 500/250 V transformer gave following results:
a) OC test (LV) side: 250V, 3.0A, 200W
b) SC test (LV) side: 15 V,30A, 300 W. [7+8]

4.a) Sketch the torque slip characteristic of a 3-ph induction motor indicating there in the starting torque, maximum torque and the operating region. How do starting and maximum torques vary with the rotor resistance.

b) Find the no load phase and line voltage of a star connected 3 ph, 6 pole alternator which runs at 1200 rpm, having flux per pole of 0.1 Wb sinusoidaly distributed. Its stator has 54-slots having double layer winding. Each coil has 8 turns and the coil is chorded by 1 slot. [7+8]

5.a) Explain the constructional features of the following type instruments Moving Coil.

b) With the help of neat sketches explain the working of moving iron Instrument. [8+7]

6.a) What is ripple factor and obtain the ripple factor for single phase full wave Rectifier?

b) Describe the action of pn junction diode under forward and reverse bias conditions. [8+7]

7.a) Classify and Explain the types of Feedback amplifiers.

b) Write short notes on: (i) Transistor as an amplifier, (ii) SCR characteristics and applications. [7+8]

8.a) Explain how the applied voltage wave is displayed on the screen of a cathode ray tube. Sketch the same.

b) Explain with block diagram the various parts of a CRT. What extra components are needed to make it a CRO? Explain how would you measure frequency using a CRO. [7+8]

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