

Reg. No. :

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**J 3903**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2009.

Second Semester

Electronics and Communication Engineering

EC 2151 — ELECTRIC CIRCUITS AND ELECTRON DEVICES

(Common to Biomedical Engineering, Computer Science and Engineering and Information Technology)

(Regulation 2008)

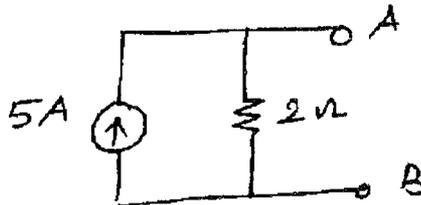
Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State maximum power transfer theorem.
2. Draw the equivalent circuit with the voltage source between terminals A and B.

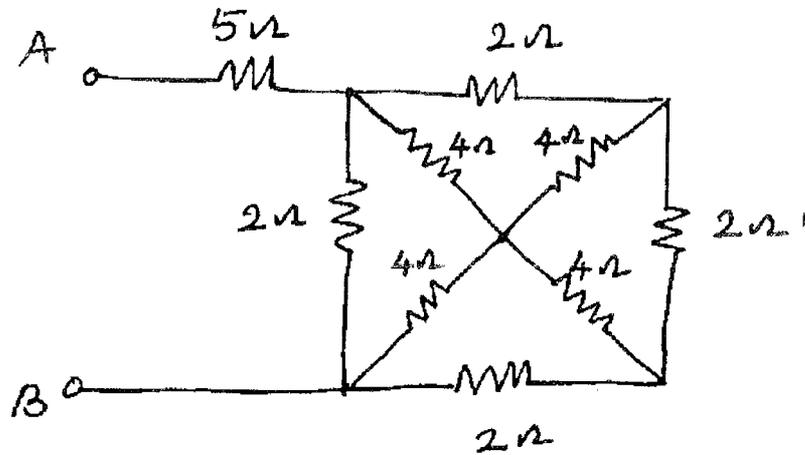


3. A 50 Hz sinusoidal voltage  $V = 311\sin\omega t$  is applied to a RL series circuit. If the magnitude of resistance is  $5\Omega$  and that of inductance is 0.02 H, calculate the effective value of steady state current and relative phase angle.
4. What is selectivity?
5. Define transition capacitance.
6. What is clipper? List the various types of clipper.

7. What is large signal current gain?
8. Compare any four salient features of BJT with JFET.
9. Draw the equivalent circuit of tunnel diode.
10. What is intrinsic stand-off ratio?

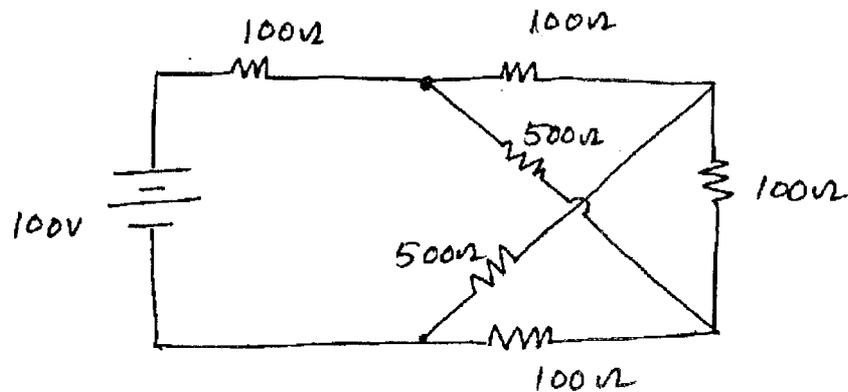
PART B — (5 × 16 = 80 marks)

11. (a) Use Delta - star conversion to find resistance between terminals 'AB' of the circuit shown : (16)

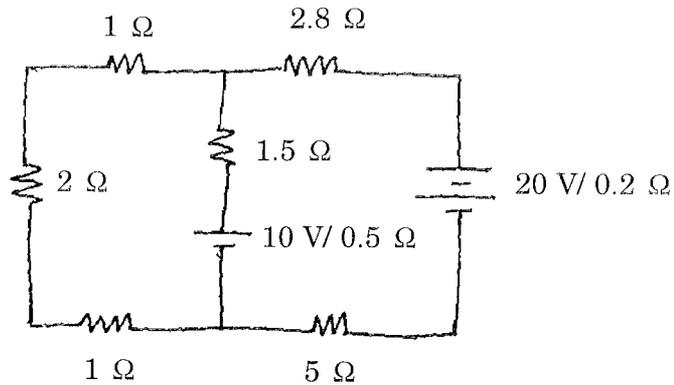


Or

- (b) (i) State and explain Kirchoff's laws. Determine the current supplied by the voltage source in the given circuit. (10)



- (ii) Find the currents in all the resistors by superposition theorem in the circuit shown. Calculate the power consumed. (6)



12. (a) Explain the parallel resonance of RLC circuits and derive the Q factor of the same. (16)

Or

- (b) Discuss in detail the transient response of series RC circuit with sinusoidal excitation. Derive the steady state current for the same.
13. (a) Derive the PN diode current equation from the quantitative theory of diode currents. (16)

Or

- (b) (i) With a neat circuit diagram, explain the operation of zener voltage regulator. (8)
- (ii) Define and derive the drift and diffusion currents. (8)
14. (a) Explain, how does the construction and operation and also the characteristics of enhancement MOSFET differ from depletion MOSFET. (16)

Or

- (b) (i) Explain the CE configuration of BJT in detail with required diagrams. (10)
- (ii) Define and compare  $\alpha$ ,  $\beta$  and  $\gamma$ . (6)

15. (a) Explain the construction and operation of LCD. (16)

Or

(b) (i) Draw and explain the two transistor equivalent model of SCR. (10)

(ii) Draw and explain the V-I characteristics of TRIAC. (6)