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Question Paper Code : 73439

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Second Semester

Electronics and Communication Engineering

EC 2151/EC 25/080290007/EE 1152/10144 EC 205 — ELECTRIC CIRCUITS AND
ELECTRON DEVICES

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

(Regulations 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Kirchhoff's current law.
2. State Thevenin's theorem.
3. Define Q factor of series resonant circuit.
4. Draw frequency response of R-L network.
5. State the effect of temperature of PN junction diode.
6. What is diffusion capacitance?
7. Give the biasing arrangement for an NPN transistor to operate in the active region.
8. Write the equation for drain current of JFET.
9. What is tunnelling phenomenon?
10. Name two applications of photoconductive cells.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Find the current through each resistor of the circuit shown in Fig. 11 (a) (i) using nodal analysis. (10)

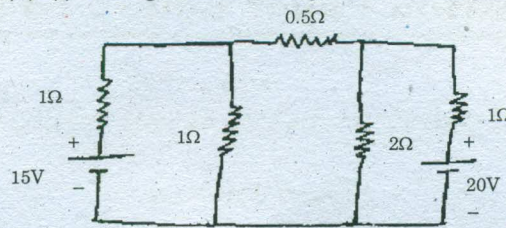


Fig.11(a) (i)

- (ii) State and prove maximum power transfer theorem. (6)

Or

- (b) (i) Find the Thevenin's equivalent circuit for the network in Fig. 11 (b) (i) at terminals AB. (10)

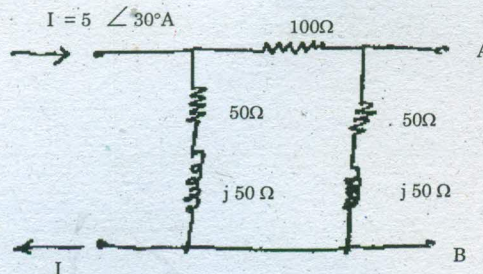


Fig.11(b) (i)

- (ii) Explain superposition theorem by assuming a suitable circuit. (6)

12. (a) Obtain expression for the instantaneous current through the RLC series circuit with sinusoidal input. (16)

Or

- (b) What is Q factor? Find value of Q factor for an inductor and capacitor, connected in series. (16)

13. (a) Derive the PN diode current equation from the quantitative theory of diode currents. (16)

Or

- (b) (i) Sketch and explain the V-I characteristics of zener diodes. (8)

- (ii) Explain briefly the following :

(1) Avalanche breakdown. (4)

(2) Zener breakdown. (4)

14. (a) (i) Draw and explain the characteristics of PNP transistor in CB configuration. (8)
- (ii) Compare CB, CE and CC transistor configurations. (8)

Or

- (b) (i) Describe the construction, operation and characteristics of N-channel JFET. (8)
- (ii) Draw the structure of N-channel depletion type MOSFET and explain its operation and characteristics. (8)
15. (a) (i) Explain the construction, operation and characteristics of UJT. (8)
- (ii) Sketch the symbol of DIAC and explain its operation and characteristics (8)

Or

- (b) (i) Discuss the construction and operation of
- (1) Dynamic Scattering LCD (4)
- (2) Field Effect LCD. (4)
- (ii) What is the basic property of a Photoconductive cell? With the help of sketches, explain its construction, symbol and operation. (8)
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