Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 60441

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Second Semester

Electronics and Communication Engineering

EC 2151/EC 25/10144 EC 205/080290007/EE 1152 — 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 Kirchoffs current and voltage laws.

2. State superposition theorem.

3. A series RL circuit, with R = 10 Ω and L = 1H, has a 100 V source applied at t = 0. Find the current for t>0.

4. What is the power factor of the circuit under series resonance?

5. What is meant by PIV (Peak Inverse Voltage) of a PN junction diode?

6. What is meant by zener effect?

7. Compare BJT and FET.

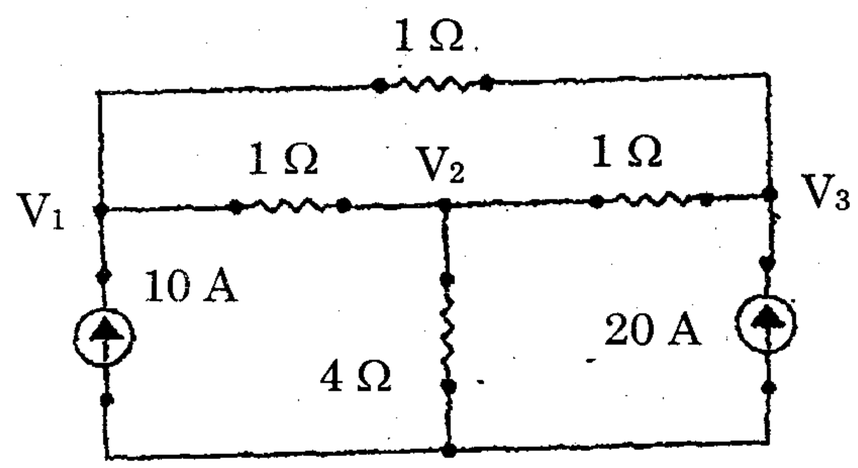
8. When a FET acts as a voltage variable resistor?

9. Mention any two applications of DIAC.

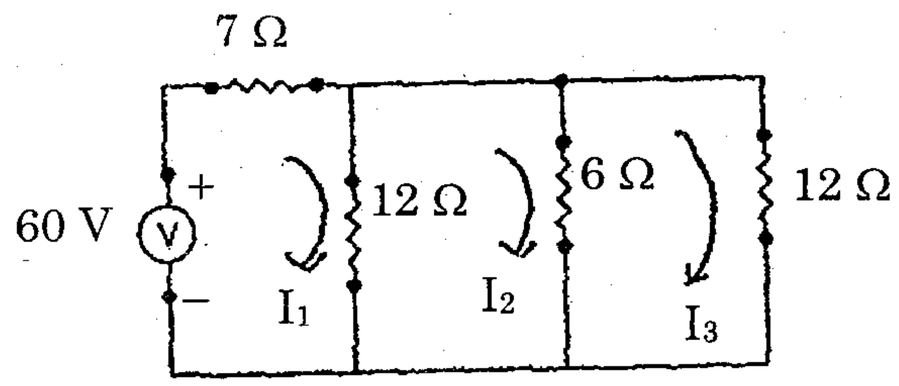
10. What is Photovoltaic effect?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Find the power in 4 ohms resistor of the circuit, shown below, by nodal analysis. (8)

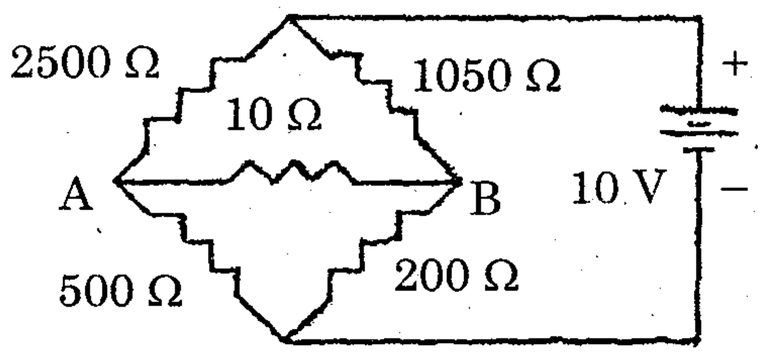


(ii) Solve for I_1, I_2 and I_3, in the circuit shown below, by mesh current method. (8)

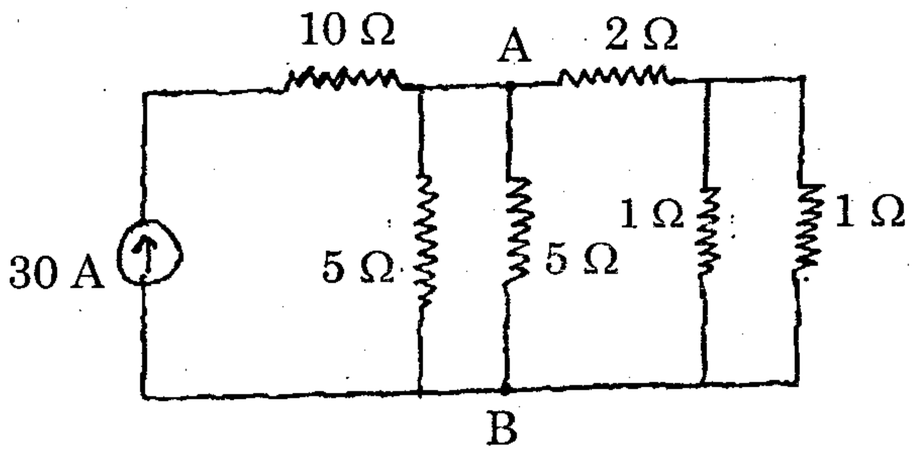


Or

(b) (i) Using Thevenin's theorem find the current passing through 10Ω resistor in the circuit shown below. (8)



(ii) Obtain the Norton's equivalent circuit for the network shown below and find the current through AB. (8)



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) Explain the working of a PN junction diode derive the expression for the current through a PN junction diode and explain its VI characteristics.

Or

(b) (i) Define the following with respect to a diode

(1) Cut in voltage

(2) Reverse breakdown voltage

(3) Diffusion capacitance

(4) Transition capacitance.

(5) Intrinsic and extrinsic semiconductors. (10)

(ii) Distinguish between Zener breakdown and Avalanche breakdown. (6)

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)
