

PART B — (5 × 16 = 80 marks)

11. (a) (i) For the circuit shown in Fig.11 a(i), calculate the value of resistor R, when then total current taken by the network is 1.5 A. (8)

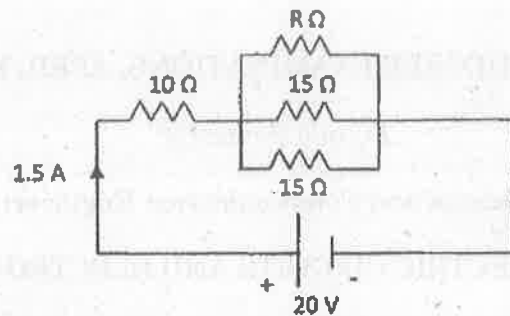


Fig.11 a(i)

- (ii) Find the equivalent resistance between the terminals A and B of Fig. 11 a (ii), using star-delta transformation. (8)

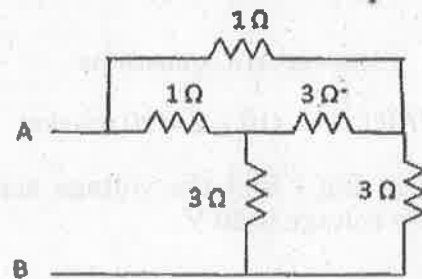


Fig.11 a(ii)

Or

- (b) (i) State Thevenin's and Norton's theorems. (6)
 (ii) For the circuit shown in Fig. 11 b (ii), determine the value of R_L , to get the maximum power. Also find the maximum power transferred to the load. (10)

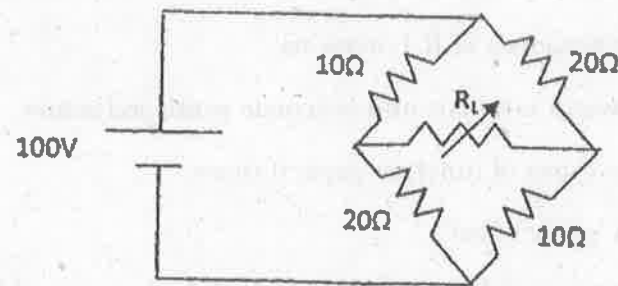


Fig.11 b(ii)

12. (a) (i) Derive expressions for resonant frequency and bandwidth of a series resonant circuit. Draw its frequency response. (8)
 (ii) Discuss the response of a series RL circuit to sinusoidal input. (8)

Or

- (b) With a neat sketch define the following terms in respect of step response of a second order system. (16)
 (i) Delay time
 (ii) Rise time
 (iii) Peak time
 (iv) Peak overshoot
 (v) Settling time.

Also write the equation for the response.

13. (a) Draw and explain zener diode and its characteristics. (16)

Or

- (b) What is transition capacitance? and obtain expression for transition capacitance in PN junction diode. (16)
 14. (a) (i) Draw the circuit for the CE configuration of a NPN transistor and explain in brief its input and output characteristics. (10)
 (ii) Compare the performance of a transistor in the CE, CB and CC configurations. (6)

Or

- (b) (i) Sketch and explain the construction of N-channel JFET. Give also its symbol. (4)
 (ii) Explain the operation of N-channel JFET. Sketch and explain the drain characteristics. (8)
 (iii) Define the following parameters of JFET : (4)
 (1) Transconductance
 (2) Drain resistance
 (3) Amplification factor
 (4) Power dissipation