17215

11819

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any TEN : **2 × 10 = 20**

(a) Give the detail classification of capacitor.

(b) Write two applications of (i) LED (ii) photodiode.

(c) State maximum power transfer theorem.

(d) Define active and passive network.

(e) List four specifications of resistor.

(f) Draw ideal and practical voltage source and current source.

(g) List two applications of (i) clipper (ii) clamper.

(h) Draw the symbol of (i) Iron core inductor (ii) variable capacitor (iii) resistor (iv) Ferrite core inductor.

(i) State the need of filters.

(j) Define ferromagnetic and ferrimagnetic materials.

(k) State Kirchoff's current and voltage law (kCL & kVL).

(l) Define self and mutual induced emf.

2. Attempt any FOUR : **4 × 4 = 16**

(a) Draw negative clamper circuit and explain its working.

(b) Draw Thevenin's equivalent circuit for the circuit shown in fig. 2 (b).

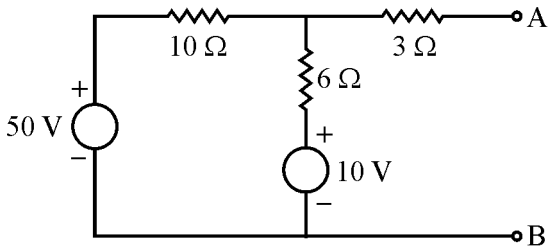


Fig.-2(b)

(c) Draw and describe circuit diagram of centre tapped rectifier with LC filter along with its input and output waveforms.

(d) Find resistance value for the given colour codes :

(i) Red Brown Black Gold

(ii) Blue Yellow Grey

(iii) Blue Violet Red Silver

(iv) Red Red Orange Gold

(e) Compare half and full wave bridge rectifier on the basis of :

(i) DC output voltage

(ii) Ripple factor

(iii) Efficiency

(iv) rms value of voltage

(f) Draw and describe constructional diagram of electrolytic capacitor.

3. Attempt any FOUR : **4 × 4 = 16**

(a) Draw B-H curve and define coercivity and reluctivity.

(b) Draw and describe working of RC integrator with output waveform for square wave input.

(c) Compare C, L, LC & Π filter. (any four points)

(d) Draw and describe working of series biased clipper with input – output waveforms.

(e) Calculate I_L for the network shown in fig. (3 e)

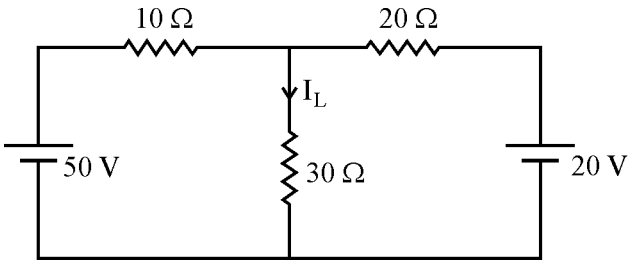


Fig.-3(e)

(f) Draw and describe working of bridge rectifier with its input and output waveforms.

4. Attempt any FOUR : **4 × 4 = 16**

(a) Compare PN junction diode with zener diode (any four points).

(b) State Norton's theorem with suitable example.

(c) Draw VI characteristic of PN junction diode and define knee voltage, leakage current, reverse saturation current, breakdown volage.

(d) Draw VI characteristic of Tunnel diode and describe it.

(e) Draw and describe the construction of LDR.

(f) Define :

(i) Linear network (ii) Non-linear network

(iii) Bilateral network (iv) Unilateral network

5. Attempt any FOUR : **4 × 4 = 16**

(a) Compare clipper and clamper circuit (any four points).

(b) Describe the working principle of LED with neat construction.

(c) Define :

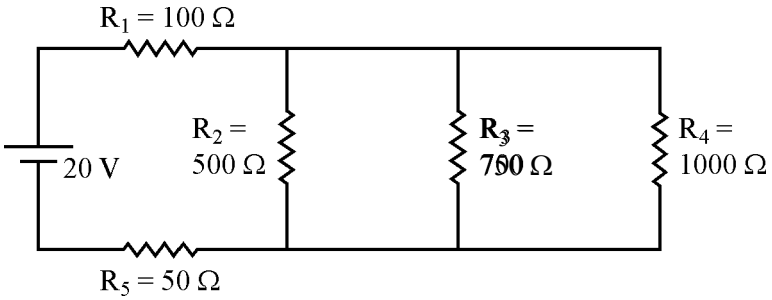
(i) Rectifier (ii) PIV of diode

(iii) Ripple factor (iv) Rectifier efficiency

P.T.O.

(d) An AC supply of 230 V is applied to half wave rectifier through a transformer with turns ratio 10:1. Find DC output voltage and PIV of diode.

(e) Find current through R_1 in following circuit :

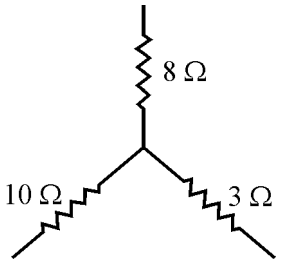


(f) List types of TDR and compare them. (any two)

6. Attempt any FOUR : **4 × 4 = 16**

(a) Describe working of schottky diode with neat construction.

(b) Convert the given star network into equivalent delta network.



(c) Compare RC integrator with RC differentiator (any four points).

(d) Describe working principle of LASER.

(e) State superposition theorem with suitable example.

(f) Draw and describe the VI characteristics of zener diode.