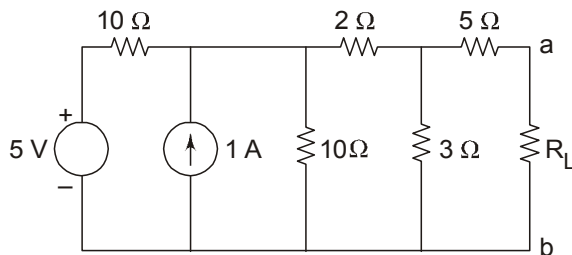


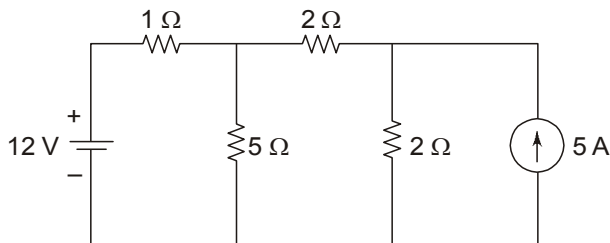
Solved Paper 2010

Electrical Engineering (Paper II)

1. (a) In the network shown in fig. Find resistance R_L so that maximum power is developed across R_L . (10)



- (b) Find current through 5Ω resistor in the circuit shown in Fig., using Thevenin's theorem. (10)



- (c) What do you understand by statically and dynamically induced emf? Write down difference between them with example. (10)
2. (a) A coil of power factor 0.6 is in series with a $100\ \mu\text{F}$ capacitor. When connected to a 50Hz supply the voltage across the capacitor is equal to the voltage across the coil. Find the resistance and inductance of the coil. (15)
- (b) Explain with neat sketch the working principle of repulsion type moving iron instrument. Prove that the deflection of the moving iron ammeter is proportional to the square of rms value of the current. (15)
3. (a) Describe the construction and principle of working of a capacitor-start capacitor-run single-phase induction motor. (10)
- (b) A 11000/400 V, distribution transformer takes a no load primary current of 1 A at a power factor of 0.24 lagging. Find (10)
- core loss current and magnetising current
 - core loss in the transformer.

- (c) Explain different types of distribution systems with the help of neat sketches. (10)

4. (a) Describe the working of vacuum tube voltmeter VTVM. State the disadvantages of VTVM. (15)

- (b) Describe the operation of PN junction diode under forward bias condition. (5)

- (c) What is meant by doping in a semiconductor? How does the energy band structure of a semiconductor differ from that of a conductor and an insulator? (10)

5. (a) What are different turn-on methods of SCR? Explain gate triggering process to turn on the SCR. Draw the gate characteristics of SCR. (15)

- (b) Define the following terms: (6)

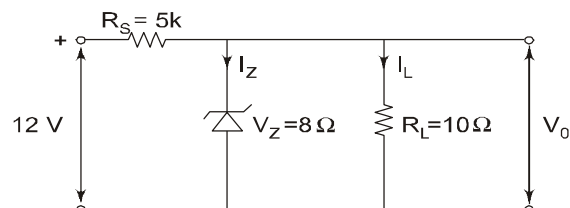
- Pinch-off voltage
- Peak inverse voltage
- Avalanche breakdown

- (c) In a certain transistor, collector current is 0.98 mA and base current is $20\ \mu\text{A}$. Determine the values of (9)

- emitter current
- current amplification factor
- current gain factor.

6. (a) For the circuit given in Fig. below find

- output voltage V_o
- voltage across R_s
- current through Zener diode.



- (b) With the help of neat diagram explain the V – I characteristics of UJT.

- (c) Explain the following:

- Intrinsic and Extrinsic semiconductor
- N-type and P-type semiconductor