Total number of printed pages = 4

19/2nd Sem/DEE 203

2022

FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Write notes on intrinsic semiconductor and extrinsic semiconductor. 5

   (b) Write down the distinction between p-type and n-type semiconductor. 5

   (c) What is a P-N junction ? Write a note on formation of P-N junction. 7

   (d) Write down the applications of P-N junction diode. 3

2. (a) How does current flows in P-N junction diode in forward and reverse bias ? Draw a I-V characteristic for it. 10

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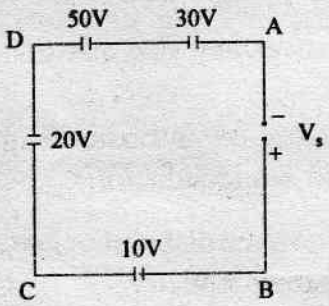
(b) What is Bipolar Junction Transistor (BJT). Make symbols of PNP and NPN BJT. 5

(c) Write a note on construction of PNP and NPN bipolar junction transistor. 5

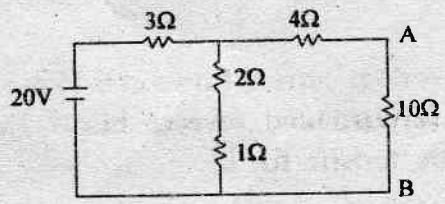
3. (a) Write a note on different types of biasing system of bipolar transistor. 5

(b) Write down the Kirchoff's voltage law. 5

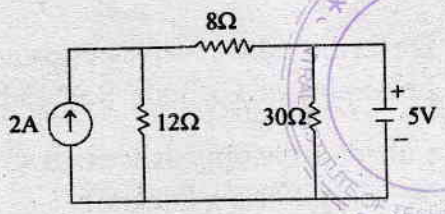
(c) Calculate the voltage Vs across the open switch in the given circuit ? 10



4. (a) Find the Thevenin equivalent circuit between the terminal A and B in the Figure shown below also find the load current. 5



(b) Find the current across 8Ω register using superposition theorem in the circuit shown below : 5



(c) Explain the different types of energy sources and differentiate between conventional as well as non-conventional source of energy. 10

5. (a) A series AC circuit contains a resistor, an inductor of 220 mH, a capacitor of 4.70 μF4·70 μF, and a generator with $\Delta V_{max} = 240\,V$ operating at 50.0 Hz. The maximum current in the circuit is 200 mA.

(i) Calculate the inductive reactance.

(ii) Calculate the capacitive reactance.

(iii) Calculate the impedance.

(iv) Calculate the phase angle between the current and the generator voltage. 10

(b) What is Full wave rectifier ? Draw and explain the working principle of Full wave rectifier. 5

(c) Write note on Peak Inversion Voltage. 5

6. (a) Describe the construction and working principles of Cathode Ray Tube (CRT). 10

(b) Calculate the impedance in R-C parallel circuit by using Phasor Diagram. 5

(c) Explain the advantages of full-wave rectifier over Half-wave rectifier as well as compare their efficiencies. 5