

**BACHELOR OF TECHNOLOGY (C.B.C.S.) (2021-COURSE)**  
**B. Tech. Sem - I E&C :SUMMER- 2022**  
**SUBJECT : ELECTRONIC COMPONENT & DEVICES**

Day : Wednesday  
 Date : 20-07-2022

S-24085-2022

Time : 10:00 AM-01:00 PM  
 Max. Marks : 60

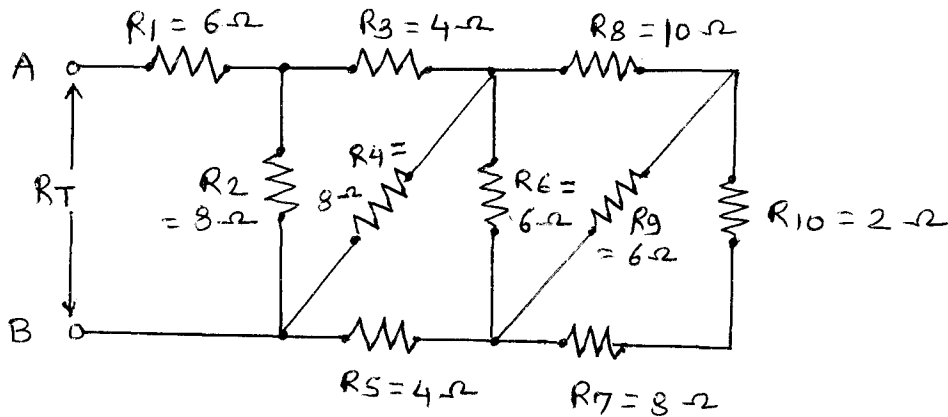
**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Use of non-programmable calculator is **allowed**.
- 4) Assume suitable data **WHEREVER** necessary.
- 5) Draw neat labeled diagrams **WHEREVER** necessary.

**Q.1** Describe Air-core inductor, Iron-core inductors and Ferrite-core inductor with their applications. (10)

**OR**

**Q.1 a)** Find the total resistance of the circuit across points A and B. (06)



**b)** Describe an Electrolytic capacitor with diagram. (04)

**Q.2** Describe the effect of forward and reverse biasing on the width of depletion region. Also draw V-I characteristic graph for ideal diode and practical diode. (10)

**OR**

**Q.2** Draw and explain the construction and working of full wave Bridge rectifier with suitable waveforms. Compare efficiency of half wave rectifier and bridge rectifier circuit. (10)

**Q.3** Describe the operation of BJT in Common Emitter Configuration with circuit diagram. Sketch the input and output characteristics for the same. (10)

**OR**

- Q.3 a)** A transistor has  $\beta = 150$ . Find the value of  $\alpha$ ,  $I_C$  and  $I_B$  if  $I_E = 10\text{mA}$ . (06)
- b)** Explain the concept of leakage current ( $I_{CBO}$ ) present in Common Base configuration. (04)

**Q.4** Define the concept of D.C. load line. Discuss the shifting of operating point near to the cut-off region, near to saturation region and at center of active region with suitable diagram. (10)

**OR**

- Q.4 a)** Draw and describe operation of voltage divider biasing circuit. (06)
- b)** Derive the general expression for stability factor of transistor. (04)

PTO

**Q.5** What is mean by pinch-off state? Describe p-channel JFET with diagram. Draw drain and transfer characteristics graph for p-channel JFET. (10)

**OR**

**Q.5** Describe following parameters of JFET (10)

- i) Drain resistance
- ii) Transconductance
- iii) Amplification factor.

Derive relation between above parameters.

**Q.6 a)** What is photodiode? Why photodiode is always connected in reverse biased condition? (06)

**b)** Describe operation of photovoltaic cell. (04)

**OR**

**Q.6** Describe the construction, working and V-I characteristics of Light Emitting Diode (LED). State applications of LED. (10)

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