



R17 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous & Accredited by NAAC with 'A' Grade)

Subject: **1E1AK**

B.Tech. I Year I Semester Supplementary Examinations, September 2023

Basic Electrical and Electronics Engineering

(Common to EEE, ECE, CSE & IT)

Maximum Marks: 70

Date: 06.10.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

10X2M=20 Marks

1. What are the network reduction techniques give related expressions?
2. Define Nodal and mesh Analysis.
3. State the Norton's theorem.
4. Define Thevenin's theorem.
5. Compare ideal versus practical characteristic of PN junction diode?
6. The reverse saturation current at 300K of a p-n junction Ge diode is 5micro amps. Find the voltage to be applied across the junction to obtain a forward current of 50milli amps?
7. What is the necessity of the Filter in Rectifier?
8. Define Rectifier Efficiency.
9. Why transistor is consider as current controlled device.
10. When FET act as a voltage variable resistor?

Part B

Answer all the questions

5X10M = 50 Marks

11. Two resistances of 20ohms and 30ohms respectively are connected in parallel. A third resistance of 6 ohms is connected in series with the combination and a D.C supply of 220V is applied to the ends of the completed circuits. Calculate the current in each resistance. 10M

(OR)

12. A series circuit comprising R, L and C is supplied at 220V, Indian standard AC Frequency. At resonance, the voltage across the capacitor is 440V. The current at resonance is 2A. Determine the circuit parameters R, L and C. 10M

13. Find the current flowing through 4-ohm resistor for the circuit given below Figure: 1, using Thevenin's Theorem. 10M

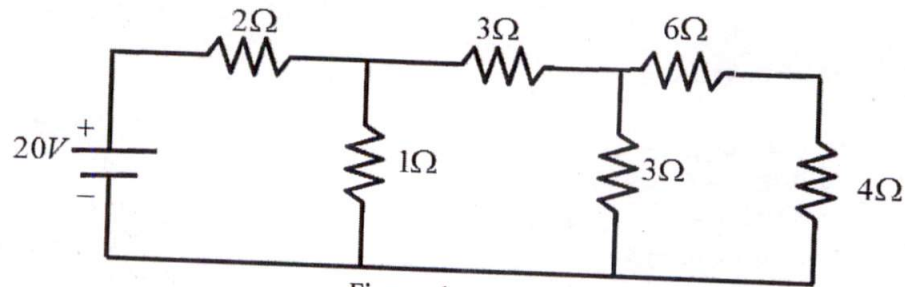


Figure: 1

(OR)

14. What is the Importance of Millman's theorem gives one Example. 10M

15. Explain the working of a PN junction diode with its V-I characteristics. 10M

(OR)

16. Draw the V-I characteristic of SCR and explain its operation, and Indicate Holding & latching Current in V-I Characteristic. 10M

17. Explain the operation of full-Wave Rectifier with neat waveforms. 10M

(OR)

18. Draw the Bridge Rectifier with help of π - Section filter Compare input and output waveforms. 10M

19. Explain the operation of an N-Channel Enhancement type MOSFET with the help of its Drain and Transfer Characteristics. 10M

(OR)

20. Design a collector to base bias circuit to meet the following requirements. $I_C = 8 \text{ mA}$, $V_{CE} = 6 \text{ V}$, $\beta = 100$ and $V_{CC} = 18 \text{ V}$. 10M