R17 Regulation *Subject: 1E1AK*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous & Accredited by NAAC with 'A+' Grade)

B.Tech. I Year I Semester Supplementary Examinations, February 2024

Basic Electrical and Electronics Engineering

(Common to Electrical & Electronics Engineering, Electronics & Communication Engineering, Computer Science& Engineering & Information Technology)

Maximum Marks:70 Date:30.01.2024 Duration: 3hours

Part-A

Answer all the following questions **10x2M=20 Marks**

1. What are the network reduction techniques give related expressions?
2. Define Nodal and mesh Analysis?
3. How to calculate Norton's theorem in current?
4. Define non-circuit theorem.
5. Compare ideal versus practical characteristic of PN junction diode?
6. Draw Diode symbol and indicate terminals.
7. What is the necessity of the Filter in Rectifier?
8. Define Rectifier Efficiency.
9. Why transistor is considering as current controlled device.
10. When FET act as a voltage variable resistor?

Part B

Answer *all the* questions: **10X5M = 50M**

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. [10]

(OR)

12. Derive an expression for power in a single-phase circuit contains R, C elements in series across sinusoidal voltage. [10]

13. Find the current flowing through 4 ohm resister for the circuit given below Figure: 1, using Thevenin's Theorem. [10]

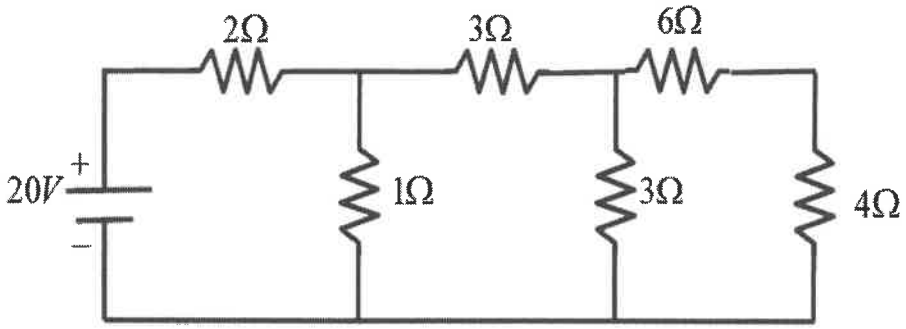

Figure: 1

(OR)

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

15. With help of energy band diagram, Explain Principle of operation and characteristics of Tunnel diode. [10]

(OR)

16. Draw the VI characteristic of SCR and explain its operation, and Indicate Holding & latching Current in VI Characteristic. [10]

17. Draw the full-Wave Rectifier with help of L Section Filter and compare input/output waveforms. [10]

(OR)

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

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

(OR)

20. Sketch and explain the characteristics of N-Channel JFET. [10]