R17 Regulation *Subject Code: 1E2AE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech. I Year II Semester Supplementary Examinations, June 2024

Basic Electrical and Electronics Engineering

(Common to CE & ME)

Maximum Marks:70 Date:02.07.2024 Duration: 3hours

Part-A

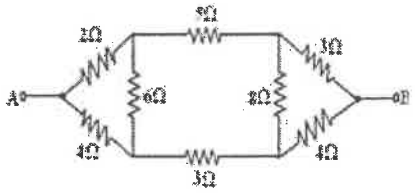
Answer all the following questions 10X2M=20 Marks

1. Define the KCL and KVL.
2. Define RMS Value and Average Value.
3. State Maximum Power Transfer Theorem (AC).
4. Differentiate between Avalanche breakdown and Zener breakdown.
5. Write the applications of Tunnel diode?
6. Define PIV and Ripple factor of a Rectifier
7. Draw the circuit diagram of Bridge Rectifier and its waveforms.
8. Define Early effect.
9. Write the differences between BJT and FET.
10. Define gm in FET.

Part-B

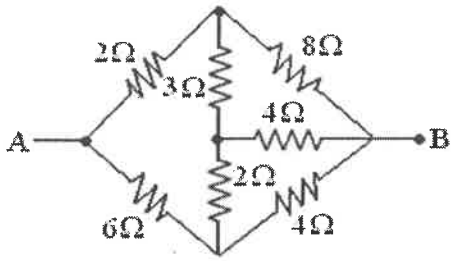
Answer the following questions: 5X10M=50M

11. Find the voltage to be applied across 'A-B' in order to drive a current of 10 A into the circuit as shown in below figure using star-delta transformation. (10M)



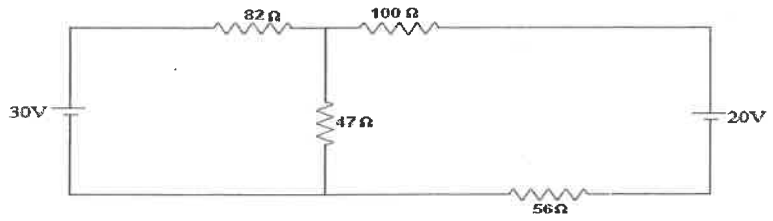
(OR)

12. Determine the resistance between the terminals 'A-B' in the network shown in below figure. (10M)



13. a) State and explain the super position theorem with an example. (5M)

b) Find the current flowing through the 47ohm resistor using superposition theorem. (5M)



(OR)

14. a) State and explain the Thevenin's theorem with an example. (5M)

b) State and explain the NORTONS theorem with an example. (5M)

15. Draw and explain V-I characteristics of P-N junction diode. (10M)

(OR)

16. Explain the operation of a SCR and draw its characteristics. (10M)

17. Draw the circuit and explain the operation of a Full wave Rectifier. Derive its RMS current and Ripple factor. (10M)

(OR)

18. Draw and explain the circuit diagram of full wave rectifier with π section filter. (10M)

19. Explain the input and output characteristics of CE configured transistor circuit. (10M)

(OR)

20. a) Explain Drain and transfer characteristics of JFET (6M)

b) Determine the operating point for a fixed bias circuit whose V_{cc}=10V, R_c=4KΩ, R_b=930KΩ, β=100 Ω for a silicon transistor. (4M)