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, October 2022

Basic Electrical and Electronics Engineering

(Common to CE & ME)

Maximum Marks: 70 Date:20.10.2022 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 Define the doping.
2 Define the n-type and p-type semiconductor.
3 Distinguish between ideal and practical voltage source?
4 Define the resonance in electric circuits?
5 Write down the applications of Zener diode?
6 Write down the diode applications?
7 Define the Transformer utilization factor.
8 Define the Efficiency.
9 What is pinch-off voltage for a JFET?
10 Draw the BJT symbol.

Part-B

Answer All the following questions. (10M X 5=50Marks)

11 a) Deduce an expression for the equivalent capacitance of three capacitors connected in i) Parallel and ii) Series. Hence calculate the equivalent capacitance if three capacitors of capacitances 4, 2, and 8 micro – Farads are connected in 1) Series 2) Parallel
If a voltage of 20V is connected, calculate the charge stored in each case. (5M)

b) A series circuit comprising R, L and C is supplied at 230 V, 50 Hz. At resonance, the voltage across the capacitor is 500 V. The current at resonance is 2A. Determine the circuit parameters R, L and C. (5M)

OR

12 a) Explain in detail the volt-ampere relationship of R, L and C elements with neat diagrams. (5M)
b) Explain in detail about the steady state analysis of a series RL circuit with sinusoidal excitation. (5M)

13 a) State and explain Superposition theorem. (5M)
b) The Q factor of a RLC series circuit is 5 at a resonance frequency of 1 KHz. Assuming the power dissipation of 250W, when the current drawn is 1A, find the circuit parameters. (5M)

OR

14 State and explain the Compensation theorem for AC Excitation. (10M)

15 Draw PN junction diode and explain the V-I characteristics. (10M)

OR

16 Define the terms dynamic resistance of a diode and Diffusion capacitance of a diode. (10M)

17 Compare the characteristics of L - section, capacitor and π -filters. (10M)

OR

18 Explain the Bridge rectifier with neat waveforms and derive the ripple factor and efficiency. (10M)

19 Explain the V-I characteristics of FET. (10M)

OR

20 a) Draw the circuit and explain the drain and gate characteristics of a JFET. (5M)

b) Differentiate between BJT and FET. (5M)