



JAIN COLLEGE

463/465, 18th Main Road, SS Royal, 80 Feet Road, Rajarajeshwari Nagar,
Bangalore - 560 098

Date:

SUBJECT: ELECTRONICS

**I PUC
Mock**

Timings Allowed: 3 Hrs.

Total Marks:70

- Note:** i. Question paper contains **five** parts.
ii. Part **A** is compulsory. Part **D** contains problems
iii. Part **E** contains essay type questions.
iv. Explanation **without** circuit diagram, wherever necessary, does not **carry** mark

PART - A

Answer ALL questions. Each question carries ONE mark.

1X10=10

1. Expand TRIAC.
2. Who invented first battery?
3. Write the relation between rms value and peak value.
4. What do you mean by transient phenomenon?
5. Mention the radius of an electron.
6. Name the diode which exhibits negative resistance characteristics over a part of this operating range.
7. Write any one application of transistor.
8. What is dark current?
9. Write the hexadecimal equivalent of binary number $(110110101100)_2$
10. Write the significance of a Duty cycle. ~

PART - B

Answer any FIVE questions. Each question carries TWO marks.

2X5=10

11. Name the two type of electrochemical cells.
12. Find V_{rms} when $V_m=1V$.
13. Define Apparent power. Write the expression for phase angle between voltage and current in RLC series resonant circuit.
14. Write the significance of Emission co-efficient in semiconductor diode.
15. A silicon diode has a bulk resistance of 1.27Ω and forward current of $7.83mA$. What is the forward voltage drop across the diode?
16. Derive the relationship between α and β in a transistor.
17. Mention the importance of digital electronics.
18. Define the terms (i) Radix (ii) Weight

PART - C

Answer FIVE questions. Each question carries THREE marks.

3X5 = 15

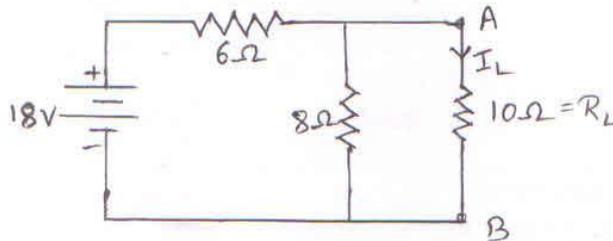
19. Write a note on digital Integrated circuit.
20. State and explain Kirchoff's law.
21. Explain the essentials of Electronic instruments.
22. Explain the specification of Resistors.
23. With a lattice structure, explain n-type semiconductor.
24. Distinguish between germanium and silicon diode.
25. Explain the working of npn transistor with diagram.
26. List any three advantages of data sheet

PART - D

Answer **THREE** questions. Each question carries **FIVE** marks.

5X3 = 15

27. Convert the circuit into Thevenin's equivalent circuit and find the current I_L through R_L .

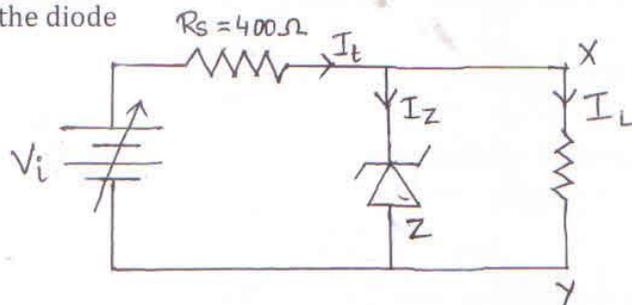


28. Two capacitors of capacitance 10pF and 20 pF are connected in parallel across 50V dc supply. Determine (i) Effective capacitance of the combination, (ii) the charge on each capacitor, (iii) the total charge on the combination.

29. A 230V to (9-0-9)V to stepdown transformer is used in a centre tapper Full wave Rectifier connected load of 200Ω. Determine the following:

- (i) Maximum value of the output voltage of the transformer
- (ii) DC output voltage
- (iii) DC load current
- (iv) DC output power delivered to the load
- (v) PIV of the diode

30.



Where Z- zener diode of $V_Z=10V$, $P_Z=2W$, $I_{Z \text{ min}}$ for voltage regulation is 5mA.

Calculate $I_{Z \text{ max}}$, I_L , $V_i \text{ min}$ and $V_i \text{ max}$ for voltage regulation. Suppose in the above circuit if $V_i=20V$, what should be the minimum load resistance (R_L) required for voltage regulation?

31. Perform the binary division of $(1100)_2$ by $(100)_2$. (2)

Subtract $(101)_2$ from $(1010)_2$ using 2's complement method. (3)

PART - E

Answer **FOUR** questions. Each question carries **FIVE** marks.

5X4 = 20

32. Define the terms (i) Closed loop (ii) Node (iii) Mesh
(iv) Linear network (v) Unilateral network

33. (a) Explain the construction of Carbon composition resistor. (4)
(b) Draw the symbol of transformer. (1)

34. With the diagram, explain the construction and working of Loudspeaker. Name the temperature sensitive device.

35. (a) With a circuit diagram and graph, explain decay of the current in the RL circuit. (4)
(b) Draw the Phasor diagram of RC low pass filter. (1)

36. (a) State and prove De Morgan's theorem. (4)
(b) Prove that $A+AB=A$ (1)

37. (a) Explain the working of two input diode NOR gate. (4)
(b) Draw the timing diagram for the output of NOT gate. (1)