



# JAIN COLLEGE

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

**SUBJECT: ELECTRONICS**

**I PUC  
MOCK - I**

**Timings Allowed: 3 Hrs 15 Minutes**

**Total Marks: 70**

- Note:** i. Question paper contains **four** parts.  
ii. Part **A** is compulsory. Part **D** contains two sub parts (a) **problems** (b) **essay** type questions.  
iii. Explanation **without** circuit diagram, wherever necessary, does not **carry** mark.

## **PART - A**

**I. Answer ALL questions. Each question carries ONE mark.**

**1X10 = 10**

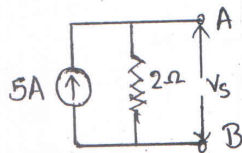
1. Expand SCR.
2. What is meant by bilateral network.
3. Name the device used to measure arterial pressure.
4. What is transducer?
5. What is the effect of reverse bias on the width of depletion region.
6. Draw the symbol of tunnel diode.
7. Write the relation between quality factor, bandwidth and resonant frequency.
8. What is an opto-coupler.
9. Draw logic symbol of NAND gate.
10. What is a bit?

## **PART - B**

**II. Answer any FIVE questions. Each question carries TWO marks.**

**2X5 = 10**

11. What is the difference between the conventional current and electron current.
12. Convert the current source of 5A with internal resistance  $2\Omega$  into voltage source.



13. What is Mutual-inductance? Explain.
14. Distinguish between full wave and half wave rectifier.
15. Draw the circuit diagram of a common anode seven segment display using LED.
16. Draw the graph of growth of current in RL circuit.
17. Mention lightly doped and the moderately doped regions of a transistor.
18. Perform the binary division for  $(10100)_2$  by  $(100)_2$ .

## **PART - C**

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

**3X5 = 15**

19. Write a note on Nano electronics.
20. Derive an expression for the effective resistance of two resistors connected in parallel.
21. Mention the advantages and applications of ultrasound scan.
22. Write the constructional features of ceramic capacitor.

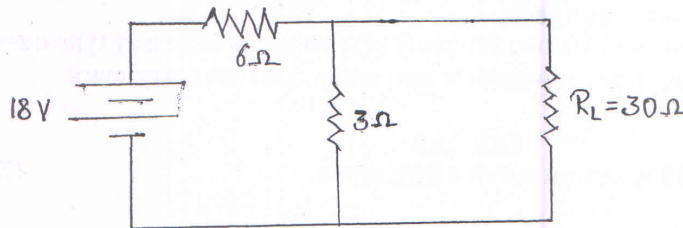
23. Classify solids on basis of band diagram.  
 24. Explain the action of series positive clipper.  
 25. Explain input and output characteristics of a npn transistor in a CE mode.  
 26. List any four advantages of data sheet.

**PART - D**

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

5X3 = 15

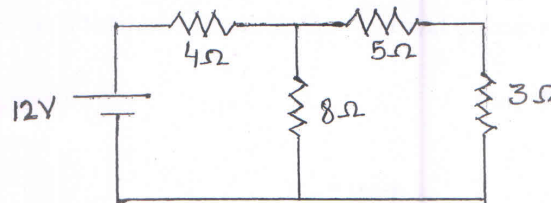
27. Determine branch currents and voltage drop across each resistor.



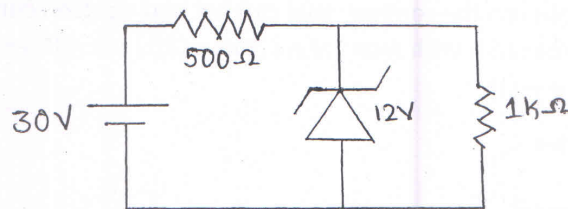
28. A step down transformer having a power output of 10KW and efficiency 90% reduces the voltage from 11KV to 220V. Calculate

- (i) number of turns in the primary if secondary has 100 turns  
 (ii) the current in the primary.

29. Convert the circuit into Thevenin's equivalent circuit and find the current  $I_C$  through  $R_L$ .



30. For the zener diode, voltage regulator circuit with  $V_S=25V$ ,  $R_S=250$ ,  $V_Z=15V$ ,  $R_Z=800$ , calculate  
 (i) Load voltage (ii) voltage across the series resistor (iii) input current (iv) load current (v) zener current.



31. (i) Convert  $(4DD)_{16}$  into equivalent binary number.  
 (ii) Subtract  $(56)_2$  from  $(99)_2$  using 2's complement method.

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

5X4 = 20

32. a) State superposition theorem.  
 b) Write the procedure to Thevenise the given circuit. (4+2)  
 33. a) Explain the construction and working of a loudspeaker.  
 b) What is the unit of inductance? (4+1)  
 34. a) Discuss the charging of capacitor in a RC circuit.  
 b) What is high pass filter? (4+1)  
 35. What is choke? Explain the construction of metal film resistor.  
 36. With the help of output waveform and circuit, explain Astable multivibrator.  
 37. a) Explain the construction working of DTL NAND gate.  
 b) Prove that  $Y = AB(\overline{AC} + B)$  using Boolean laws. (4+1)