



# JAIN COLLEGE

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

Date: 2019-2020

SUBJECT: Electronics

I PUC

Mock Examination 2019-20

Timings Allowed: 3Hr 15 Minutes.

Total Marks: 70

Note: i) questions paper contains four parts.

ii) Part-A is compulsory

iii) Part -D contains two sub parts. Problems and essay type questions.

iv) Draw circuit diagrams wherever necessary.

## PART- A

ANSWER ALL THE QUESTIONS:

10 X 1=10

1. Who invented Integrated circuit?
2. What is a linear bilateral network?
3. Define half power frequencies?
4. What is the relation between RMS value and peak value of voltage.
5. Expand ECG.
6. What does the fifth band of a five band colour code resistor indicate?
7. Draw the symbol of zener diode.
8. Mention the lightly doped region of a transistor.
9. Write the 2's compliment of binary number  $(11010)_2$
10. Write the logical symbol of a NOT gate with neat labelling?

## PART- B

ANSWER ANY FIVE QUESTIONS

05 X 2=10

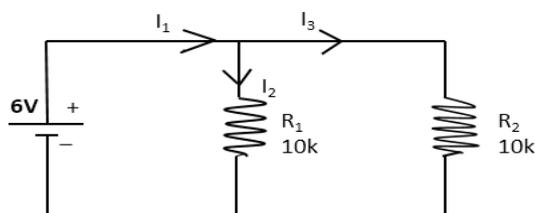
11. What are the job requirements available in the field of electronics?
12. Name the factors on which inductance of a coil depend on.
13. Define inductive reactance and give expression for the inductive reactance?
14. What is the maximum rectification efficiency of a Half wave rectifier and Full wave rectifier?
15. Derive expression for  $\beta$  in terms of  $\alpha$ .
16. A transistor has  $\beta=150$ , and  $I_c=20\text{mA}$ . Calculate  $I_e$ .
17.  $ABCD_{(16)} = \text{_____}_{(2)} = \text{_____}_{(10)}$
18. Write the truth table and sketch timing diagram for AND gate.

## PART- C

ANSWER ANY FIVE QUESTIONS

05 X 3=15

19. Derive an expression for the effective capacitance of two Resistance connected in series.
20. Find the total current flowing in the circuit given below also find the branch currents.



21. Explain any three controls of the CRO.
22. Write a note on Zener breakdown.
23. Write a note on construction of carbon composition resistor.

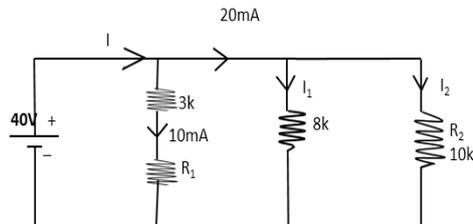
24. Differentiate positive and negative logic.
25. Explain input characteristics of a transistor in CE mode with neat circuit diagram.
26. Write the steps involved in PCB designing.

### PART- D

#### I ANSWER ANY THREE QUESTIONS

03 X 05=15

27. In the circuit diagram below determine the unknown branch currents and unknown resistance of resistors.



28. Three capacitors are connected in series across 75V supply. The voltage across each of them is 20V, 25V and 30V respectively. The charge on each capacitor is 3nC. Find the effective capacitance and also find the individual capacitances.
- 29 a. The time constant of an RC circuit is 25mS. If  $R = 30k\Omega$ . Find the capacitance of the capacitor.  
b. A series resonant circuit has resonant frequency of 45kHz. If  $R = 100\Omega$ ,  $C = 0.01\mu F$ . Find L.
30. For the Zener diode voltage regulator with  $V_S = 20V$ ,  $R_S = 100\Omega$ ,  $V_Z = 12V$ .  $R_L = 680\Omega$   
Determine a) Load voltage b) voltage drop across series resistance and c) current through zener diode.
31. Simplify the given Boolean expression and draw logic diagram for the simplified expression

$$Y = ABC\bar{C} + \bar{A} + ABCD + CD$$

#### II ANSWER ANY FOUR QUESTIONS

04 X 05= 20

32. State and explain Thevenin's theorem.
33. Explain construction and working of microphone.
34. Write a note on three approximations of diode
35. Explain High pass filter with neat circuit diagram, frequency response and phasor diagram.
36. Compare LED and LCD display.
37. Draw the circuit diagram of 2- input DTL NAND gate. Explain its working. Write its logic symbol and truth table.

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