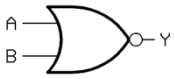
JAIN COLLEGE, J C Road Bangalore
Mock Paper February - 2015
I PUC – Electronics (40)

Time: 3 Hours 15 Minutes **Max. Marks: 70**

PART - A

I. Answer all the questions: **1 X 10 = 10**

1. Expand IGBT.
2. Name the network which is used to get different voltages from a single voltage source.
3. What is a Pulse oximeter?
4. Draw the circuit symbol of electrolytic capacitor.
5. Write an expression for instantaneous current in RL circuit during decay of the current.
6. What is the use of bleeder resistor?
7. Define acceptor impurity.
8. What is the function of base in BC147 transistor?
9. Convert $(101101)_2$ into hexadecimal system.
10. Name the logic gate for the symbol shown below.



PART – B

II. Answer any FIVE questions: **2 X 5 = 10**

11. Mention any four applications of electronics in the field of defence.
12. Using source conversion, convert the voltage source into an equivalent current source Given Vs = 12v and Rs = 1KΩ.
13. Distinguish between resistance and reactance.
14. Define transient period.
15. What is a shottky diode? Write its symbol.
16. What is high pass filter? Draw its circuit diagram.
17. Prove $\beta=\alpha/ 1-\alpha$
18. What do you mean by SIP and DIP packages?

PART – C

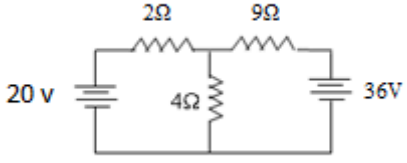
III. Answer any FIVE questions: **3 X 5 = 15**

19. Explain current divider rule.
20. State maximum power transfer theorem and write its advantages.
21. Explain the construction and working of electromagnetic relay.
22. Derive an expression for resonance in a series LCR circuit.
23. Explain the V-I characteristics of a pn junction diode with neat waveform.
24. What is avalanche breakdown?
25. A transistor amplifier connected in CE mode has $\beta=100$ and $I_B=50\mu A$. Calculate the values of I_C, I_E and α.
26. Distinguish between LED and LCD.

PART – D

IV. Answer any THREE questions: **5 X 3 = 15**

27. Find the potential drop across 4Ω resistor in the following circuit using superposition theorem.



28. a) A step down transformer having a power output of 10Kw and efficiency 90% reduces the voltage

from 11KV to 220 V. Calculate (i) the number of turns in the primary if the secondary has 100 turns and (ii) the current in the primary.

b) Calculate the value of capacitance for two plates each with common area $3m^2$, separated by 0.2cm with a dielectric of air.

29. A 10Ω resistance in series with X_L=50Ω and X_c =25Ω. The applied voltage is v=50mV with 50Hz . Calculate impedance, current and phase angle between applied voltage and current.
30. Calculate maximum and minimum values of zener current if Vs=60-80V, Rs=5KΩ, Vz=12V and R_L=5KΩ.
31. a) Demorganize the given equation

$$Y=\overline{\overline{A\bar{B}}+ABC+A(B+A\bar{B})}$$

b) Perform the binary subtraction for the following values using 2's compliment method. 88_{10}-56_{10} .

V. Answer any FOUR questions: 5 X 4 = 20

32. Explain with neat diagram working of carbon potentiometer. Write its applications.
33. With a neat diagram, explain the working of a Loudspeaker. Mention any one application.
34. Describe with a neat circuit diagram and waveform the charging of current in RC circuit
35. With a neat diagram explain the working of a zener diode as a voltage regulator.
36. Explain the working of two input diode AND gate. Write its truth table and timing diagram
37. Simplify the equation and draw the logic circuit for the simplified equation.

$$Y=\overline{AB}+AC+\bar{A}\bar{B}C.$$

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