SUI ELECTRONICS Time: 3 hours

MAXIMUM MARKS: 70

Design of model Paper

Type of Questions	Weightage of Marks	No. Of Questions	Total Marks
Long Answer type Questions	05	04	20
Short Answer type Questions II	03	08	24
Very Short Answer type Questions II	02	08	16
MCQ'S	01	10	10

Long Answer Type Questions **4x5 marks each**

1. Explain the concept of depletion region in PN junction diode.

OR

Draw and explain the VI Characteristics of PN junction diode.

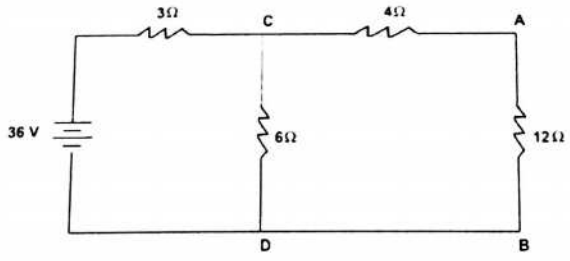
2. Describe the behaviour of Sinusoidal Voltage through the series combination of resistance R and capacitor C.

OR

A resistor of 12Ω , a capacitor of reactance 14Ω and an inductor of inductive reactance 30Ω are joined in series. The combination is connected across 200 v, 50 Hz a.c supply. Calculate

a) Overall impedance Z
b) Current I
c) Power factor

3. State Thevenins theorem. Apply this to find the current through 12Ω resistor of the circuit give below in fig (a)



OR

State Norton's Theorem. Use this to calculate the current flowing through 12Ω register in circuit given in fig (a) above.

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4. Draw the Full Wave R

tion. Explain its working.

Describe the working of a Zener Diode as a voltage regulator.

Very Short Answer Type Questions II **8x03=36 Marks**

5. Define Amplitude, Frequency and Time period of an a.c. signal.
6. What is resistance? What is its unit? Name different types of resistors.
7. State Kirchhoff's current law. Explain it by giving an example.
8. Describe the difference between p type and n type Semiconductors. Name the Doping materials used for their construction?
9. Differentiate Conductors, Semiconductors and Insulators on the basis of Band gap.
10. What are emitter injection efficiency and bare transport factor and how do they influence the transistor operation.
11. Show that th maximum Rectification Efficiency of Half Wave Rectifier is 40.6%.
12. Determine the impedance of LR Series Circuit

Very Short Answer Type Questions I **8x2 marks each**

13. What is the RMS value and average value of an a.c. signal
14. The colour code sequence of a resistor is red, brown, orange and silver. What is it resistance
15. The Capacitor of value 12 μF, 18 μF and 15 μF are connected in series. What is the resultant capacitance.
16. Write an expression for Current in an A. C. Circuit with Inductor only.
17. What is difference between intrinsic and extrinsic semi conductors
18. What are the two mechanisms of breakdown in a PN junction
19. How is Ripple Factor defined.

20. Why collector is made larger than emitter and base in a Bipolar junction transistors?

Objective Type Questions **10 x 1 mark each**

21. The rms value of a sinusoidal A.C. current is
    a) 60.70 percent of maximum value.
    b) 63.70 percent of maximum value.
    c) 70.70 percent of maximum value.
    d) 70.07 percent of maximum value.
22. In an R-L circuit, the voltage
    a) Lags the current
    b) Leads the current
    c) Neither leads nor lags the current
    d) None of the above
23. While calculating R_{th} constant-current sources in the circuit are
    a) Replaced by opens
    b) Replaced by shorts
    c) Treated in parallel with other voltage sources
    d) Converted into equivalent voltage sources
24. When the normal atom loses an electron, the atom
    a) becomes an positive ion
    b) becomes an negative ion
    c) becomes electrically neutral
    d) is then free to move about
25. In the forward region of its characteristics, the diode appears as
    a) OFF switch
    b) a high resistance
    c) an ON switch
    d) a Capacitor

26. Which of the following is used as a passive component in a circuit
    a) Transistor
    b) Diode
    c) Resistor
    d) None

27. When forward bias is applied to a junction diode, it
    a) Increases the potential barrier
    b) decreases the potential barrier
    c) reduces the majority carrier current to zero
    d) reduces the minority carrier current to zero

28. In the forward region of its characteristics, the diode appears as
e) OFF switch
f) a high resistance
g) an ON switch
h) a Capacitor

29. When used in a circuit, the zener diode is always
a) forward biased
b) connected in series
c) reverse biased
d) troubled by heating

30. if V_m is peak voltage across the secondary of a transformer in a half wave rectifier (without any filter circuit), the maximum voltage on reverse biased diode is:
a) V_m b) 2 V_m c) ½ V_m d) none of these