FAR WESTERN UNIVERSITY

Semester End Examination-2079

Electronic Principles (CSIT.114)

Faculty: Science and Technology (CSIT)

Level: Undergraduate | Full Marks: 100

Semester: First | Time: 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Group – 'A'

Attempt all questions (Very Short Questions) **8×3=24**

1. Define voltage source and current source.
2. What is Barkhausen criterion for oscillation?
3. Define pinch-off voltage and gate-source cut-off voltage.
4. Differentiate between BJT and FET.
5. Explain the significance of Q-point in a dc load line.
6. What happens to the width of the depletion layer when reverse biasing is increased across the junction of p-n junction diode?
7. Define regulated and unregulated power supply.
8. Describe in brief about virtual ground concept.

Group – 'B'

Attempt any five questions. (Short Questions) **5×8=40**

9. What do you understand by Thevenin's theorem? Draw a suitable circuit of your own to explain Thevenin's theorem.
10. Define operational amplifier. Explain the working of an inverting operational amplifier and derive an expression for closed loop gain.
11. Discuss about the common base mode characteristic of a NPN transistor with suitable diagram.
12. Define photodiode? Discuss about its construction and theory.
13. Why biasing of a transistor is important? How does transistor act as a switch, explain?
14. Define oscillator? With well label diagram discuss about Hartely oscillator.

P.T.O.

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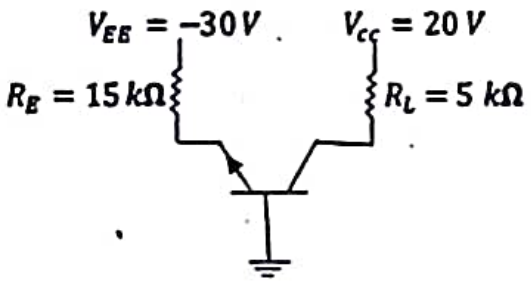
Group – 'C'

Attempt any three questions. (Long Questions) **3×12=36**

15. (a) What are the difference between Zener diode and p-n junction diode? How does Zener diode regulate the voltage? Explain with necessary theory. (8)
    (b) A transistor has $\alpha = 0.98\,\mu A$, $I_B = 100\ \mu A$ and $I_{CO} = 6\,\mu A$. Calculate I_C and I_E. (4)
16. (a) Draw a circuit diagram for the common collector amplifier and obtain relation for its voltage gain. Explain why there is phase inversion between input and output? (8)
    (b) For the given circuit diagram draw the dc load line. (4)



17. (a) Define MOSFET? Explain the working of enhancement mode MOSFET and draw its static characteristics. (8)
    (b) Show that for adder circuit output voltage is proportional to the algebraic sum of two or more input voltages. (4)
18. (a) Define rectifier. Discuss about full wave rectifier. (8)
    (b) Use the second approximation to calculate the load voltage, load current and diode power in given figure. (4)