PHYSICS
FIRST SEMESTER

COURSE   :   **MAJOR CORE**
PAPER   :   **ELECTRONICS - I**
TIME   :   **3 HOURS**   **MAX. MARKS : 100**

SECTION - A
ANSWER ALL QUESTIONS: **(10x3=30)**

1. What is transconductance? Mention its significance.
2. What is meant by pinch-off voltage in FET?
3. Differentiate between a counter and a register.
4. What is I^2L logic? Mention its advantages.
5. Mention few characteristics of op-amp.
6. What is a transducer? Mentions few of its applications.
7. How many interrupts does 8085 have? Mention them.
8. Differentiate between instruction cycle and machine cycle in 8085.
9. What are the basic operational modes of 8255?
10. Give the meaning of the control signals STB, IBF, INTR in 8255.

SECTION – B
ANSWER ANY FIVE QUESTIONS: **(5x5=25)**

11. How is SCR used as half wave and full wave rectifier?
12. Give the characteristics of TRIAC.
13. Explain the working of Maser-Slave flip-flop.
14. Describe the working of up-down counter
15. Explain the working of 555 timer as monostable multivibrator.
16. Explain the various addressing modes in 8085.
17. Explain the interfacing of multiplexed 7 segment display using 8255.

SECTION – C
ANSWER ANY THREE QUESTIONS: **(3x15=45)**

18. (a) Explain the FET characteristics with a neat graphs. (b) How is FET used as common drain amplifier?
19. (a) Differentiate between asynchronous and synchronous counters. (b) Explain the working of ripple counter. (c) Discuss the working of mod-8 counter
20. Design a circuit with op-amps to solve the following (a) simultaneous equations, x+y=3 and 2x+3y=7, (b) second order differential equation, $\frac{d^2x}{dt^2} + 4\frac{dx}{dt} + 25 = \sin(20t + 36)$.
21. Explain with a neat diagrams, (a) the architecture of 8085, (b) the timing diagram for memory READ and memory WRITE cycles.
22. Discuss the interfacing (a) ADC and (b) Stepper motor with 8255.

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