

[03 - 3123]

III/IV B.E. DEGREE EXAMINATION.

First Semester

Mechanical Engineering

Elective — INDUSTRIAL ELECTRONICS

(Common with Marine Engineering and
Naval Architecture Engineering)

(Effective from the admitted batch of 2010–2011)

Time : Three hours

Maximum : 70 marks

Question No. 1 is compulsory.

Answer any FOUR from the remaining.

All questions carry equal marks.

1. (a) Explain diode current equation.
- (b) Write two applications of CRO.
- (c) Explain the function of relay circuits.
- (d) Write the truth table for XOR function.
- (e) Explain D-flip flop.
- (f) Write the instructions used for stack operations in 8085 ALP.
- (g) Write the timing diagram of MOV A, B.

2. (a) Explain the V-I characteristics of P-N Junction diode.
- (b) Explain avalanche and zener breakdown.
3. (a) Explain the operation of RC-phase shift oscillator and its advantages.
- (b) Explain how transistor is used for amplification.
4. (a) Explain open loop and closed loop systems with real time examples.
- (b) Explain controlling of motor speed using voltage.
5. (a) Write the Binary code, Hexadecimal code, and Binary coded decimal code for the number 98.
- (b) Explain the operation of full subtractor.
6. (a) Simplify the following Boolean functions.
 - (i)
$$X = BC\bar{D} + \bar{A}BC\bar{D} + AB\bar{C}D + \bar{A}BCD + ABCD$$
 - (ii) $f(A, B, C, D) = \Sigma(1, 2, 4, 7, 9, 12)$
- (b) Explain the construction of 3-bit counter using J-K flip flop.

7. (a) Explain the architecture of 8085 microprocessor.
- (b) Write an ALP in 8085 to find the average of n numbers.
8. Explain any two of the following :
- (a) Poly phase rectifier
- (b) CRO
- (c) Addressing modes in 8085.