B.Tech. Degree IV Semester Examination in Marine Engineering May 2017

MRE 1404 MARINE ELECTRONICS
(2013 Scheme)

Time: 3 Hours   Maximum Marks: 100

(5 × 20 = 100)

I. (a) What is a power amplifier? Explain the different performance parameters of power amplifiers.   (10)
    (b) With neat diagram, explain the working of push-pull amplifier. What are its advantages and disadvantages?   (10)

OR

II. (a) Draw and explain the circuit of a differential and a non-inverting amplifier. Derive the gain equations for these circuits.   (10)
    (b) Explain the following terms with respect to an Op-Amp.   (10)
          (i) CMRR
          (ii) Slew rate
          (iii) Input offset voltage
          (iv) Input bias current
          (v) Gain

III. (a) Draw and explain SISO and PIPO shift registers.   (10)
     (b) Explain any one ADC using neat diagrams.   (10)

OR

IV. (a) What are universal gates? Implement the AND, OR, NOT and XOR gates using universal gates.   (10)
    (b) Reduce using K-map: (10)
          $F = \sum m(1,2,6,7,8,13,14,15) + d(3,5,12)$

V. (a) Explain how a NAND gate is realized using TTL and CMOS circuits.   (10)
    (b) Write short notes on ROM, RAM, and PROM.   (10)

OR

VI. (a) Explain the V-I characteristics of SCR.   (10)
    (b) Explain with neat diagrams and waveforms a half wave rectifier using SCR.   (10)

VII. (a) Write short notes on pulse communication.   (10)
     (b) Write short note on satellite communication.   (10)

OR

VIII. (a) Write short notes on AM, FM and PM.   (10)
      (b) What is modulation and demodulation? Explain the need for modulation.   (10)

IX. (a) Explain the architecture of 8085 microprocessor.   (12)
    (b) Write an assembly language program to Add two 8-bit numbers stored at locations 9000H and 9001H and store the sum at 9002H and carry at 9003H.   (8)

OR

X. (a) Explain the flag register and other registers in 8085 microprocessor.   (10)
   (b) Write an assembly language program to multiply two 8-bit numbers stored at locations 9000H and 9001H and store the result at 9002H.   (10)

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