B. Tech Degree IV Semester Examination in Marine Engineering July 2010

MRE 404 MARINE ELECTRONICS

Time : 3 Hours   Maximum Marks : 100

I.   Explain the working of a push pull amplifier with neat diagram. Derive its efficiency.   (20)
                                              OR
II.   (a)   Compare the characteristics of class A, B and C amplifiers.   (12)
       (b)   Explain the need for heat sinks.   (4)
       (c)   What is a differential amplifier? What is their relevance in OP amp circuit?   (4)

III.   (a)   State De Morgan's theorems.   (3)
       (b)   Draw the circuit for a full adder using universal gates (any) alone.   (10)
       (c)   What is a multiplexer? Implement a half adder using MUX.   (7)
                                              OR
IV.   (a)   Draw and explain the working of a 3 bit asynchronous up counter.   (10)
       (b)   What is DAC? Where is it used? Explain *any one* type of DAC with neat sketches.   (10)

V.   (a)   Compare between ROM, RAM and PROM.   (5)
       (b)   Describe a single bit memory cell, with neat circuit diagram.   (15)
                                              OR
VI.   (a)   Explain the use of SCR in controlled rectification, with neat waveforms.   (10)
       (b)   Explain the working of -
                    (i)   Photo diode   (3)
                    (ii)   Inverter   (7)

VII.   (a)   Explain the need for modulation in transmission. Differentiate between modulation
             in AM/FM/PM systems.   (12)
       (b)   Explain the concept of pulse communication.   (8)
                                              OR
VIII. (a)   Draw the block diagram of Radio transmitter and receiver.   (12)
       (b)   Draw the block diagram of Radar.   (8)

IX.   Explain the working of *any two* among the following with neat diagrams :
                    (i)   Cathode ray oscilloscope
                    (ii)   Signal Generator
                    (iii) Multi-meter
                    (iv)   Q – meter
                    (v)   Frequency meters.   (2 x 10 = 20)

***