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***B.Tech. Degree IV Semester Supplementary Examination in
Marine Engineering May 2016***

MRE 404 MARINE ELECTRONICS

Time : 3 Hours

Maximum Marks : 100

(5 × 20 = 100)

- I. (a) What are the different classes of power amplifiers? Explain. (10)
 (b) Derive the collector efficiency of class A power amplifier. (10)
OR
- II. (a) Explain inverting and non-inverting configurations of op-amp with feedback and derive the gain equations. (12)
 (b) List the characteristics of Ideal Op-amps. (8)
- III. (a) What are universal gates? Explain. (5)
 (b) State and prove De-Morgan's theorems. (7)
 (c) Draw the circuit of a master-slave JK flip-flop and explain it. (8)
OR
- IV. (a) Draw the circuit diagram of a 3-bit up-counter and explain it. (10)
 (b) Draw and explain the working of any one type of DAC. (10)
- V. (a) Draw and explain TTL totem-pole NAND gate circuit. (10)
 (b) What is an SCR? Explain its V-I characteristics. (10)
OR
- VI. (a) Write short notes on RAM, ROM, PROM, EPROM and EEPROM. (10)
 (b) Explain LEDs and photo-diodes. (10)
- VII. (a) What is the need for modulation? Explain various types of modulation. (10)
 (b) Explain a typical AM receiver. (10)
OR
- VIII. (a) Using a block diagram explain the working of a RADAR. Derive its Range Equation. (10)
 (b) Explain pulse communication. (10)
- IX. (a) Explain the working of CRO with the help of a neat diagram. (10)
 (b) What are the applications of CRO? (10)
OR
- X. (a) Explain any one type of frequency meter. (10)
 (b) Write notes on: (i) Signal Generator (ii) Q-meter. (10)