# INDIAN MARITIME UNIVERSITY

(A CENTRAL UNIVERSITY, GOVT. OF INDIA)

**End Semester Examination December 2018**

**B. Tech. (Marine Engineering)**

**Semester - III**

**Electronics (UG11T2302)**

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Date: 29-12-2018 Max Marks: 100

Time: 3 Hrs. Pass Marks: 50

**PART – A** Marks:10X3=30

**(All questions are compulsory)**

1. (a) Make a T-*flip-flop* using *J-K flip-flop and show its* truth table?

   (b) What is *input offset* voltage related to OPAMP ?

   (c) What is Stack Pointer *in microprocessor 8085*?

   (d) Add two BCD number 1001 0101 + 0110 1000

   (e) Which of the following logic is fastest

   I. TTL
   II. ECL
   III. CMOS
   IV. LSI

   (f) What are *universal Gate?*

   (g) Why self-bias is more desirable than fixed bias for transistor biasing?

   (h) Discuss the advantages of SSB system in radio telephony.

   (i) What is Brakhausen criteria for sustained oscillation ?

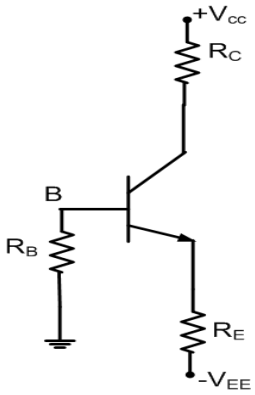
   (j) Describe and draw the **input** and **out put** characteristic of p-n-p transistor in Common- Emitter configuration.

**PART – B** **Marks:5X14=70**

**(Answer any 5 of the following)**

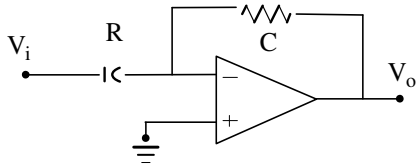
2. (a) Implement a *full Adder* with 4:1 multiplexer [7]
   (b) Briefly discuss the construction and working of ***4-bit shift register*** [7]

3. (a) The Si transistor of Fig has β=50(neglect leakage current). Vcc=18V, $V_{EE}$ = 4V, $R_E$= 200 Ω, $R_C$= 4 KΩ a) Find $R_B$ so that $I_{CQ}$ =2mA and also determine $V_{CEQ}$ for same $V_B$ [7]




(b) Explain with suitable circuit diagram *Bi-stable Multivibrator*. [7]

4. (a) Find the output voltage $V_o$ of the circuit shown below. [7]




(b) Explain with suitable circuit diagram operation of *Instrumentation Amplifier* [7]

5. (a) Draw and explain frequency demodulation circuit. [7]

(b) The rms value of a carrier voltage after amplitude modulation to a depth of 50 % by another sinusoidal voltage is 59 volts. Calculate the rms value of carrier voltage when amplitude modulated to a depth of 70 %. [7]

6.

(a) What are the advantages of a negative feedback and Draw and explain class A Amplifier. [7]

(b)A two stage RC coupled amplifier has a voltage gain of 50. The output resistance of the amplifier is 21 KΩ. Amplifier is now provided 75% negative voltage feedback in series with the input. Calculate Voltage gain and output resistance with feedback. [7]

7. (a) Draw an equivalent circuit diagram of SCR and also explain triggering method of SCR. [7]

(b) Explain briefly operation of power meter. [7]

8. (a) With a Suitable circuit diagram explain *TTL NAND gate* [7]

(b) Write an assembly level program for 8085 microprossor to add two number . [7]

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