INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

MAY / JUNE 2018 END SEMESTER EXAMINATION

B.Sc (Nautical Science)

Semester: III

Nautical Electronics Paper – II (UG21T2305)

Date: 11-07-2018 **Maximum Marks:**70

Time: **3 Hrs** **Pass Marks:**35

Part A (7 × 10 = 70 Marks)
Answer any seven of the following

1. (a) What do you understand by faithful amplification? What are conditions for faithful amplification? (5)

   (b) Describe base resistor transistor biasing circuit. (5)

2. (a) What do you mean by bias stabilization? What is the need for bias stabilization? (5)

   (b) In a transistor circuit, collector load is 4 kΩ whereas quiescent current (zerosignal collector current) is 1mA.What is the operating point if VCC = 10 V? What will be the operating point if RC = 5 kΩ? (5)

3. (a) Discuss the frequency response of an amplifier circuit. (5)

   (b) A three-stage amplifier has a first stage voltage gain of 100, second stagevoltage gain of 200 and third stage voltage gain of 400. Find the total voltage gain in db. (5)

4. (a) Discuss the advantage and disadvantage of RC coupled amplifier. (5)

   (b) Draw the d.c. and a.c. equivalent circuits of a transistor amplifier. (5)

5. (a) Draw and discuss RC phase shift oscillator. (5)

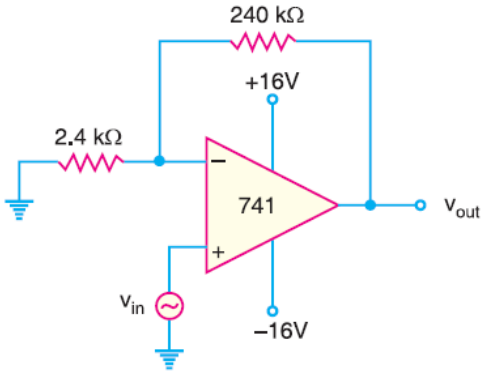
   (b) In the Wien bridge oscillator circuit R1 = R2 = 220 kΩ andC1 = C2 = 250 pF. Determine the frequency of oscillations. (5)

6. (a) An amplifier has a voltage gain of 500 without feedback. If a negative feedbackis applied, the gain is reduced to 100. Calculate the fraction of the output fed back. If, due to ageingof components, the gain without feedback falls by 20%, calculate the percentage fall in gain withfeedback. (5)

(b) Discuss the Principles of Negative Voltage Feedback in Amplifiers. (5)

7. (a) Sketch the pin diagram of IC 741 (opamp). (5)

(b) Calculate the output voltage from the noninverting amplifier circuit shown inFig. for an input of 120 μV. (5)



8. (a) Describe the operation of integrator circuit using opamp. (5)

(b) List the ideal characteristics of Operational Amplifier. (5)

9. (a) Discuss transistor as switch. (5)

(b) Write a short on emitter follower circuit. (5)