INDIAN MARITIME UNIVERSITY
(A Central University Government of India)
END SEMESTER EXAMINATIONS- DECEMBER 2018
DIPLOMA IN NAUTICAL SCIENCE
SEMESTER - I
APPLIED SCIENCE (UD11T4102)

Date: 27-12-2018 Max. Marks: 70
Time: 02 hours Pass Marks: 35

PART –A (Physics)

Note: 1.Answer any four out of five questions.All questions carry equal marks
2.Use of Non Programmable Scientific Calculator permitted.

1.a)Explain the term "Gyro inertia". (5 marks)

b)A homogenous solid sphere has a mass of 20 kg.its radius of gyration about a diameter is 10 cm.find its moment of inertia and angular momentum. (5 marks)

2.a)Describe the construction of a "liquid –in-glass thermometer". (5 marks)

b)Calculate the amount of heat required to raise the temperature of 50 g of copper from 10^0c to 60^0C.the specific heat capacity of copper is 0.39 j/g^{0}C. (5 marks)

3.a)Define the following terms.
i)Amplitude ii)frequency iii)time period. (5 marks)

b) Determine the following parameters for a simple pendulum at the mean surface of the earth:
Length of a 1 second pendulum.
Period of a 1m pendulum. (5 marks)

4.a)Explain with neat block diagram,how does a ship echo sounder work. (5 marks)

b)A loud symphonic passage produces an intensity level of 70 dB. A person speaking normally produces a sound level of 40 db. Compare their intensities. (5 marks)

5.a) Explain the term "Looming"(mirages on sea). (5 marks)

b) A ray of light is incident from glass on the interface separating it from air at an angle of 40^0 and is deviated through 15^0.calculate the critical angle for the glass-air interface surface. (5 marks)

PART-B (Electricity & Electronics)

Note: Answer any three out of given four questions.
All questions carry equal marks.

6.a) State ohms' law and give its limitations. (5 marks)

b) A platinum coil has a resistance of 3.146Ω at 40°C and 3.767Ω at 100°C.find the resistance at 0°C. (5 marks)

7.a) Explain with principle, neat diagram, construction and working of D.C generators. (5 marks)

b)A solenoid of length 1m and 0.05 m diameter has 500 turns.if a current of 2A passes through the coil.calculate the coefficient of self induction of the coil. (5 marks)

8.a) Define self and Mutual induction. (5 marks)

b) Explain Radar transmitters. (5 marks)

9.Write short notes on any two, with diagrams (if necessary)

a) Block diagram of radio receiver.
b) Yagi uda antenna.
c) Transducers. (2×5=10 marks)

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