Indian Maritime University

(A Central University, Govt of India)
B Sc (Nautical Science)
June 2018 End Semester Examinations
Semester-I
UG21T3103 – Nautical Physics

Duration:3 Hrs | Max Marks:70 Marks
Date: 07.07.2018 | Pass Marks:35 Marks

Part A

(Compulsory question – 10 marks)

1)

a. State and explain Newton's law of Gravitation (2)

b. What do you mean by Total Internal Reflection (2)

c. Explain why wheel house windows are required to be inclined? (2)

d. Give the importance of Reynolds's number? (2)

e. State Second law of thermodynamics? (2)

Part B

(Answer any five from the following questions)

5x12 = 60 Marks

2)

a. Explain the working of a refrigerator and give the equation for co-efficient of performance? (6)

b. Define relative humidity, dew point and fog and mist . (6)

3)

a. Explain with principle, diagram, the working of optical fibre. (6)

b. An object placed 48 cm from a lens produce a virtual image at a distance of 8cm infront of lens. Calculate the focal length of the lens. (6)

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4)

a. An automobile moving at 30 m/s is approaching a factory whistle that has a frequency of 500 Hz. If the speed of sound is 340 m/s, find the apparent frequency of the whistle as heard by the driver? (6)

b. What are the effects of different parameters (pressure, temperature humidity) on the velocity of sound. (6)

5)

a. Define mechanical advantage, velocity ratio and efficiency as applied to machines. Derive the relation between them (6)

b. What do you mean by Gyroscope? Explain its working (6)

6)

a. State and prove Bernoulli's equation for fluid flow. (6)

b. Explain the working of a hydraulic lift with a diagram. (6)

7)

a. Derive an expression for the excess pressure inside a spherical drop of radius 'r' (6)

b. A steel wire of length 4m and 2.4×10^{-7} m^2 in cross sectional area is stretched by a force of 36N. Calculate (i) Stress (ii) Strain (iii) increase in length (iv) Work done in stretching the wire. Given $Y=1.8 \times 10^{12}$ N/m^2. (6)

8)

a. Distinguish between stream line and turbulent flow in liquids? (6)

b. What is a LASER. On what Principle it works. Discuss the uses of LASER. (6)

9)

a. Write a note on magnetic elements of earth? (6)

b. What do you understand by ship magnetism? (6)

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