

INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)
END SEMESTER EXAMINATIONS- JUNE/JULY 2019
B. Sc. (Nautical Science)
SEMESTER-II
Nautical Physics – III (UG21T2205)

Date: 03-07-2019

Max Marks: 70

Time: 3 Hrs

Pass Marks: 35

Note: Answer any SEVEN from the following NINE questions.

All questions carry equal marks.

(7 x 10 =70)

1. a) Explain Dry and wet hygrometer. (5)
b) Explain relative and absolute humidity with reference to hygrometry. (5)
2. a) If a photo emissive surface has a threshold frequency 4.6×10^{14} Hz, calculate the energy of the photons in eV.
Given $h = 6.6 \times 10^{-34}$ Js. (5)
b) Define the following terms
i) vapour pressure ii) Saturated vapour pressure (5)
3. a) Explain optical fiber. Give its application in medical field. (5)
b) Explain principle of sextant with the help of neat block diagram. (5)
4. a) Explain construction and working of Periscope with the help of neat diagram. (5)
b) Differentiate Celestial Telescope and Terrestrial Telescope with following parameters i) Final image produced ii) lenses used iii) Length of telescope. (5)
5. a) State & comment on the different parameters on which velocity of sound in air will affect. (5)
b) A loud symphonic passage produces an intensity level of 70dB. A person speaking normally produces a sound level of 40 dB. Compare their intensities. (5)
6. a) Discuss characteristics of sound. (5)

- b) Two trains are travelling in opposite directions on parallel tracks at 100kmph each, cross each other. One of them is whistling a note of frequency 800 Hz. Find the apparent pitch as heard by the passenger in the other train. (i) Before they cross each other, (ii) After they cross each other. Velocity of sound is 340 m/s (5)
7. a) Explain with neat block diagram, the working of Echo sounder.(5)
b) State the Doppler Effect and give the formula of frequency when
(i) source and observer receding
(ii) both are moving to same direction with different speed. (5)
8. a) Explain the concept of entropy. (5)
b) Calculate the amount of heat given out when 2Kg of water cools from 60°C to 10°C. For water $C_p=4200 \text{ J/Kg } ^\circ \text{ C}$. (5)
9. a) State first and second law of thermodynamics. (5)
b) Define the following
i) Heat Engine ii) Refrigerator (5)
