Reg. No ..... Name **24U578**

UNDERGRADUATE END SEMESTER EXAMINATION - OCTOBER 2024

SEMESTER 5 : PHYSICS (OPEN COURSE)

COURSE : **19U5OCPHY1 : PHYSICS IN DAILY LIFE**

(For Regular 2022 Admission and Supplementary 2021/2020/2019 Admissions)

Time : Three Hours Max. Marks: 75

PART A

Answer any 10 (2 marks each)

1. Explain Doppler effect?
2. What are comets?
3. Define viscosity of a fluid. Mention its unit.
4. Distinguish between rarer medium and denser medium.
5. Define the following: i) 1 N and ii) 1 kgf
6. Write the name and relationship of two units of length smaller than a meter.
7. State and explain Newton's law of Gravitation.
8. What is meant by a galaxy? Name the galaxy in which the earth is situated?
9. State and explain Newton's first law of motion.
10. Name four defect of vision in human eye.
11. Write the equation for calculating electric power. Explain the terms used.
12. What do you understand by principle of reversibility of light? Hence show that refractive index n_{21} is reciprocal of n_{12}.

(2 x 10 = 20)

PART B

Answer any 7 (5 marks each)

13. Distinguish between Fluorescence and phosphorescence?
14. The velocity of sound in seawater is 1000 m/s. Find the wavelength in seawater of a sound wave whose frequency is 300 Hz.
15. An object is kept at a distance of 15 cm from a plane mirror. The mirror is moved 5 cm towards the object and simultaneously object is moved 2 cm away from the mirror. Find i) the distance between the new positions of the image and object? ii) distance between old position of the object and new position of the image?
16. A transformer connected to a 120-V alternating-current (ac) power line has 200 turns in its primary winding und 50 turns in its secondary winding. The secondary is connected to a 10 ohm light bulb. How much current is drawn from the 120-V power line?
17. A glass slab 2.5 cm thick is placed over a coin. If the refractive index of glass is 3/2, find the height through which coin is raised.
18. A motor car weighing 1 ton is moving at a speed of 10 m/s. The speed reduces to 5 m/s, 5 s after the brakes are applied. Calculate the value of the retarding force due to brakes.
19. An object of height 2 cm is placed at a distance of 20 cm in front of a concave mirror of focal length 12 cm. Find the position, size and nature of the image, by graphical construction.
20. A uniform solid sphere of radius 0.5 m and mass 15 kg rotates in the XY plane about an axis through its centre. Find its angular momenum when the angular velocity is 3 rad/s.

21. What is meant by a geostationary satellite? How it is different from geosynchronous satellites?

22. What constant force acting on a body of mass 20 kg will increase its velocity from 15 m/s to 45 m/s in one minute.

(5 x 7 = 35)

PART C

Answer any 2 (10 marks each)

23. State and explain i) surface tension ii) Bernoulli's theorem.

24. What is solar Eclipse? With the help of suitable diagrams, explain different types of Solar eclipses?

25. Discuss with a ray diagram, the phenomenon of dispersion of white light when pass through a prism. Also, derive an equation for refractive index of the material of an equilateral glass prism in terms of angle of the prism (A) and angle of minimum deviation (D).

26. State and explain Ohm's law. Also explain the working of a transformer.

(10 x 2 = 20)