

Reg. No. : .....

Code No. : 20449 E      Sub. Code : CAPH 11

B.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2023.

First/Third Semester

Physics — Allied

ALLIED PHYSICS — I

(For those who joined in July 2021-2022)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. Visible light has wavelength of
  - (a)  $5 \times 10^{-7}$  m
  - (b)  $3 \times 10^8$  m
  - (c)  $6 \times 10^3$  m
  - (d)  $4 \times 10^4$  m
2. The waves with phase difference  $180^\circ$  have resultant of amplitude
  - (a) one
  - (b) zero
  - (c) same as the single wave
  - (d) doubles the single wave

3. \_\_\_\_\_ is a measure of the strength of shaft in rotation.  
 (a) Torsional modulus (b) Sectional modulus  
 (c) Polar modulus (d) Torsional rigidity
4. The dimension of strain is \_\_\_\_\_.  
 (a)  $LT^{-2}$  (b)  $N/m^2$   
 (c) N (d) Dimensionless
5. What are the dimension of Surface Tension?  
 (a)  $M^1L^1T^{-2}$  (b)  $M^1L^0T^{-2}$   
 (c)  $M^{-1}L^2T^{-1}$  (d)  $M^{-1}L^2T^{-2}$
6. Which of these fluids has the highest viscosity?  
 (a) Water (b) Honey  
 (c) Blood (d) Air
7. The maximum acceleration of a particle moving with simple harmonic motion is \_\_\_\_\_.  
 (a)  $w$  (b)  $w \cdot \gamma$   
 (c)  $w^2 \cdot \gamma$  (d)  $w^2/\gamma$
8. What is the SI unit of frequency?  
 (a) Second (b) Watt  
 (c) Hertz (d) Joule
9. The mean free path of gas molecules depends on ( $d$  = molecular diameter)  
 (a)  $d$  (b)  $d^2$   
 (c)  $d^{-2}$  (d)  $d^{-1}$
10. Good absorber of heat is good radiator of heat also is \_\_\_\_\_.  
 (a) Stefan's law (b) Kirchhof's law  
 (c) Planks law (d) Wien's law

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write a short note on Hookes law.  
 Or  
 (b) Write a short note on Taisling Couple of a wire Torsion Pendulum.
12. (a) Write a short note on surface tension.  
 Or  
 (b) Explain about the coefficient of viscosity.
13. (a) Explain about the damped vibration of SHM.  
 Or  
 (b) Give a short note on Melde's String experiment.
14. (a) Write a short note on mean free path ( $\lambda$ ).  
 Or  
 (b) Explain about the Widemannan-Pranz law.
15. (a) Write a short note on conditions for interference.  
 Or  
 (b) Write a short note on polarization.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain an expression for Torsion wire of couple per unit.  
Or  
(b) Describe an experimental determination of rigidity modulus of a wire Torsion Pendulum.
17. (a) Explain an expression for excess of pressure inside a synclastic and anticlastic surface.  
Or  
(b) Explain about the Rate of Liquid.
18. (a) Explain about the Melde's String Experiment.  
Or  
(b) Explain about the SHM Free Vibrations of resonance.
19. (a) Explain an expression for Mean Free Path.  
Or  
(b) Explain about the Black body Radiation of energy spectrum.
20. (a) Explain types of Polarization.  
Or  
(b) Describe the thickness of thin wire by air wedge method.