s) **Reg. No. :**.....

Code No. : 33005 E Sub. Code : AAPH 11

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2020.

First Semester

 ${\rm Physics}-{\rm Allied}$

PHYSICS-I

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — $(10 \times 1 = 10 \text{ marks})$

Answer ALL questions.

Choose the correct answer.

1. The work done in twisting a wire is

- (a) $2C\theta^2$ (b) $\frac{1}{2}C\theta^2$
- (c) $\frac{1}{2}C\theta$ (d) None

(6 pages)

- 2. The unit of bending moment is
 - (a) N/m (b) Nm
 - (c) N/m^2 (d) None
- 3. The *SI* unit of surface tension is
 - (a) N/m (b) N/m^2
 - (c) N (d) None

4. Poiseuille's formula is given by

(a)
$$\frac{\pi \rho r^4}{8l\eta}$$
 (b) $\frac{\pi \rho r^2}{8l\eta}$

- (c) $\frac{2\pi \rho r}{4l\eta}$ (d) None
- 5. The distance between two successive mode is
 - (a) λ (b) $\lambda/2$
 - (c) $\lambda/4$ (d) λ^2
- 6. Simple pendulum is an example for
 - (a) Unharmonic (b) Simple harmonic
 - (c) Force (d) None

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- 7. According to Wideman–Franz law
- (a) $K = \sigma T$ (b) $KT = \sigma$ (c) $KT^2 = \sigma \lambda^2$ (d) None 8. The energy of one quant a is
 - (a) $E = h\gamma$ (b) $E = \frac{1}{2}mv^2$
 - (c) 1 (d) 0
- 9. In Fraunhofer diffraction, the shape of incident wave front
 - (a) Plane (b) Spherical
 - (c) Elliptical (d) None
- 10. The formula in plane transmission grating is
 - (a) $\cos\theta = m\lambda$ (b) $\sin\theta = nm\lambda$
 - (c) $\tan \theta = \mu$ (d) None

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PART B — $(5 \times 5 = 25 \text{ marks})$

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

Each answer should not exceed 250 words.

- 11. (a) Explain three modulli of elasticity. Or
 - (b) Derive an expression for bending moment of beam.
- 12. (a) Explain molecular theory of surface tension.

Or

- (b) Derive Stoke's formula for highly viscous liquid.
- 13. (a) Write down the characteristics of simple harmonic motion.

Or

- (b) Explain damped vibrations.
- 14. (a) Derive an expression for Co-efficient of viscousity on the basis of Kinetic theory.

Or

(b) Explain Widemann–Franz law and Lorentz number.

Page 4 Code No. : 33005 E [P.T.O.] 15. (a) Explain the working of Quanter wave plate.

Or

(b) Explain double refraction in detail.

PART C — $(5 \times 8 = 40 \text{ marks})$

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

Each answer should not exceed 600 words.

16. (a) Explain the three modulli and obtain the relation between them.

 \mathbf{Or}

- (b) Explain Torsional pendulum experiment in detail.
- 17. (a) Obtain an expression for excess pressure in a curved liquid surface.

 \mathbf{Or}

- (b) Determine Co-efficient of viscosity of liquid by poiseuille flow method.
- 18. (a) Explain free and forced vibration with their differential equations.

Or

(b) Find the frequency of tuning fork using Melde's string experiment.

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19. (a) Explain the Lee's dis method in detail.

 \mathbf{Or}

- (b) Explain the distribution of energy in black body spectum.
- 20. (a) Discuss the delimination of wave length using plane transmission grating.

Or

(b) Explain the defection of plane, elliptical and circularly polarised light.

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