Roll No._____ Annual 2018

Physics (New Scheme) 2018 **(INTER PART - I CLASS 11th)(III)** **Time : 20 Minutes**

Paper : I **(Academic Session 2017 -2019)** **Marks : 17**

SAH **Objective** **Code : 6475**

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number with marker or pen. Cutting or filling two or more circles will result in zero mark in that question.

i. 1 torr pressure is equal to:
(A) $130.5 Nm^{-2}$ (B) $133.3 Nm^{-2}$ (C) $100 Nm^{-2}$ (D) $760 Nm^{-2}$

ii. The speed of sound is greater in solid than gases due to their high:
(A) density (B) elasticity (C) temperature (D) oscillation

iii. By increasing mass of the object four times attached to a spring. Time period will become:
(A) same (B) twice (C) thrice (D) four times

iv. The wavelength of fundamental note in one end close pipe in term of length "l" of pipe is:
(A) $4l$ (B) $2l$ (C) l (D) $l/2$

v. Distance between two consecutive bright fringes in young's experiment is:
(A) $\frac{\lambda L}{2d}$ (B) $\frac{\lambda L}{d}$ (C) $\frac{d}{\lambda L}$ (D) $\frac{d\lambda}{L}$

vi. Longitudinal wave cannot be:
(A) reflected (B) refracted (C) diffracted (D) polarized

vii. Information carrying capacity of an optical fibre is called
(A) Immunity (B) Dispersion (C) Band width (D) Data

viii. Boltzman constant 'k' has same unit as
(A) temperature (B) energy (C) entropy (D) pressure

ix. Efficiency of a heat engine can be increased by
(A) increasing sink temperature (B) decreasing sink temperature
(C) decreasing source temperature (D) using ideal working substance

x. Solid angle is:
(A) one dimensional (B) two dimensional (C) three dimensional (D) four dimensional

xi. For total assessment of uncertainty in the final result obtained by multiplication we add:
(A) absolute uncertainty (B) fractional uncertainty (C) percentage uncertainty (D) errors

xii. For complete equilibrium:
(A) $\Sigma F = 0$ (B) $\Sigma \tau = 0$ (C) $\Sigma Fx = 0$ (D) $\Sigma F = 0$, $\Sigma \tau = 0$

xiii. If $\overline{A}.\overline{B} = \frac{1}{2} AB$, then angle between the vectors will be:
(A) 30° (B) 45° (C) 60° (D) 90°

xiv. A hose pipe ejects water at speed of $0.3 ms^{-1}$ through a hole of area $10 cm^2$, flow rate will be :
(A) $3 m^3 S^{-1}$ (B) $3\times10^{-4} m^3 S^{-1}$ (C) $30 m^3 S^{-1}$ (D) $0.03 m^3 S^{-1}$

xv. The tides give rise in sea due to gravitational pull of:
(A) Moon (B) Mars (C) Venus (D) Satum

xvi. How many closed orbiting satellites form the Global Positioning System?
(A) 3 (B) 12 (C) 24 (D) 22

xvii. The ratio of moment of inertia of a disc and sphere of same radius is:
(A) $\frac{2}{5}$ (B) 5/4 (C) $\frac{1}{2}$ (D) 5/2

SA-H

4. **Write short answers to any Six parts:** (6 x 2 = 12)

i. Could you obtain Newton's rings with transmitted light? If yes would the pattern be different from that obtained with reflected light?

ii. How would you manage to get more orders of spectra using a diffraction grating?

iii. Can visible light produce interference fringes? Explain it.

iv. Why would it be advantageous to use blue light with a compound microscope?

v. What are the two conditions for total internal reflection to take place?

vi. Is it possible to construct a heat engine that will not expel heat into the atmosphere?

vii. Why does the pressure of a gas in a car tyre increase when it is driven through some distance?

viii. Define entropy. Give its mathematical form and SI Unit.

ix. Can the mechanical energy be converted completely into heat energy? If so give an example.

Section - II

Note:- Attempt any three (3) questions: **(8 × 3 = 24)**

5. (a) Describe vector addition by rectangular components. First find the resultant of two vectors and then generalize for 'n' vectors. (1 + 2+1+1 =5)

(b) A bomber dropped a bomb at a height of 490 m, when its velocity along the horizontal was 300 Kmh^{-1}. At what distance from the point vertically below the bomber at the instant, the bomb was dropped. Did it strike the ground? 3

6. (a) What is geostationary orbit? Determine orbital radius for a geostationary satellite measured from the centre of the Earth. 5

(b) A car of mass 800 Kg travelling at $54 Kmh^{-1}$ is brought to rest in 60 m. Find the average retarding force on the car. 3

7. (a) Define terminal velocity. Derive its formula. 5

(b) 336 J of energy is required to melt 1 g of ice at $0^{\circ}C$. What is the change in entropy of 30 g of water at $0^{\circ}C$ as it is changed to ice at $0^{\circ}C$ by a refrigerator? 3

8. (a) What is Doppler's effect? Discuss its four cases. 5

(b) A 100 g body is hung on a spring elongate the spring by 4.0 Cm . When a certain object is hung on the spring and set vibrating, its period is 0.568s. What is the mass of the object? 3

9. (a) Explain the diffraction of X-ray by crystal. What are uses of diffraction of X-ray? 5

(b) An astronomical telescope having magnifying power of 5 consist of two thin lenses 24 cm apart. Find the focal length of lenses. 3

sics (New Scheme) (INTER PART -I – CLASS 11th) Roll No._____ Annual 2018

per : I (Academic Session 2017-2019) Time : 2 . 40 Hours

Marks : 68

SUBJECTIVE

Note:- Section I is compulsory. Attempt any 3 questions from Section II.

(Section – I)

2. **Write short answers to any Eight parts.** **(8 x 2 = 16)**

i. Why do we find it useful to have two units for the amount of substance kilogram and mole?

ii. Write down the dimensions of viscosity and angular velocity.

iii. How will you assess the total uncertainty in case of power factor? Give an example.

iv. Define radian and steradian with figures.

v. Define torque. Write down its S.I unit.

vi. $\vec{A}$ and $\vec{B}$ are two vectors $\vec{A} = 2\hat{i} + 5\hat{j}$, $\vec{B} = 3\hat{i} + 7\hat{k}$ then find $\vec{A} \times \vec{B}$

vii. A picture is suspended from a wall by two strings. Show by diagram the configuration of the strings for which the tension in strings will be minimum.

viii. What are inertial and non- inertial frames of references?

ix. Calculate the linear momentum of a ball of mass 100 gram which moves with 5 m/s along a straight line.

x. Differentiate between elastic and inelastic collision. Give examples.

xi. A person is standing near a fast moving train. Is there any danger that he may fall towards the train.

xii. Explain the working of a carburetor of a motor car using by Bernoulli's Principle.

3. **Write short answers to any Eight parts.** **(8 x 2 = 16)**

i. What is Salter's duck? Explain it.

ii. A girl drops a cup from a certain height, which breaks into pieces. What energy changes are involved?

iii. In which case is more work done? When a 50 kg bag of books is lifted through 50 cm or when 50 kg crate is pushed through 2m across the floor with a force of 50 N?

iv. Show that 1kwh = 3.6 MJ.

v. What is meant by angular momentum?

vi. Why does a diver change his body position before and after diving in the pool?

vii. Show that in S.H.M acceleration is zero when velocity is greatest and velocity is zero when the acceleration is greatest.

viii. How resonance plays an important role in microwave oven?

ix. Define simple harmonic oscillator and driven harmonic oscillator.

x. What is slinky spring?

xi. What do you mean by red shift in application of Doppler effect?

xii. Differentiate between longitudinal and transverse waves.

(Turn over)