Model Paper Physics Objective

Intermediate Part – I (11^{th} Class) Examination Session 2015-2017 and onward

Total marks: 17 Paper Code________ Time Allowed: 20 minutes

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. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

Q.1	QUESTIONS	(A)	(B)	(C)	(D)
1	The unit of Pressure in base units is	$Kg\,m^{-1}\,Sec^{-2}$	$Kg\,m\,Sec^{2}$	Kg m Sec^{-2}	$Kg\,m^{-1}\,Sec^{-1}$
2	The complete Equilibrium of a body implies that	$\sum F = 0$	$\sum Fx = 0$ $\sum Fy = 0$	$\sum F = o$ $\sum \tau = 0$	$\sum \tau = 0$
3	At highest point, the vertical component of velocity of Projectile becomes	Maximum	Zero	Minimum	$V_i\,Cos^{o}$
4	Impulse has the same unit as that of	Force	Energy	Mass	Linear Momentum
5	The Tidal Energy is due to gravitational Pull of the	Sun	Moon	Earth	Mars
6	The rotational K.E. of a disc is	$\frac{1}{2}mv^2$	$\frac{1}{4}mv^2$	$\frac{1}{6}mv^2$	$\frac{1}{8}mv^2$
7	Torque per unit Moment of Inertia is Equivalent to	Angular Velocity	Angular Acceleration	Inertia	Radius of Gyration
8	Escape velocity on surface of earth is 11.2 km/Sec^{-1}. The escape velocity on the Surface of another planet of same mass as that of earth but of 1/4times the radius of earth is	5.6km sec^{-1}	11.2km sec^{-1}	22.4km sec^{-1}	44.8km sec^{-1}
9	The SI unit of flow rate of fluid is	$m^3\,sec^{-1}$	$m^2\,sec^{-1}$	$m^2\,sec^{-2}$	$M^3\,sec^{-3}$
10	For a spring mass system arranged horizontally, the instantaneous displacement is	$x = x_0 \sin wt$	$x = x_0 \cos wt$	$x = x_0\,Sin^2\,wt$	$x = x_0 \cos^2 wt$
11	In the time required for the tuning fork to make one complete vibration, the wave in air will travel a distance equal to	$\lambda/4$	$\lambda/2$	λ	2λ
12	Velocity of sound is independent of	Temperature	Density	Pressure	Medium
13	Two tuning forks of frequencies 240Hz and 243Hz respectively are sounded together, the no. of beats produced per second is	Zero	'2'	'3'	'4'
14	In young's Double slit experiment, the position of Bright fringes are given by Formula,	$Y_m = m\frac{\lambda L}{d}$	$Y_m = m\frac{\lambda d}{L}$	$Y_m = m\frac{Ld}{\lambda}$	$Y_m = \frac{m\lambda}{Ld}$
15	Final image produced by the compound Microscope is	Real and inverted	Real and erect	Virtual and erect	Virtual and inverted
16	Carnot cycle consists of	Two steps	Three steps	Four steps	Five steps
17	The Internal energy of a piece of lead when beaten by a hammer will	Increase	Decrease	Remain constant	First increase then decrease

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Model Paper Physics Subjective

Intermediate Part – I (11^{th} Class) Examination Session 2015-2017 and onward

Total marks: 68 **Time: 2:40 hours**

SECTION ---------------- II

2. Write answers of any EIGHT questions. (8 x 2 = 16)

(i) Define dimension. Check the correctness of the equation $v=f\lambda$ by the principle of Homogeneity of dimensions.
(ii) Briefly explain the two drawbacks to use the period of simple pendulum as a time standard.
(iii) Assess the total uncertainty in the final result of a timing experiment with the help of an example.
(iv) Determine the dimensions of pressure and density.
(v) Under what condition would a vector have components that are equal in magnitude.
(vi) Justify the statement "A body cannot rotate about its centre of gravity under the action of its own weight".
(vii) If $\vec{A}.\vec{B} = 0$, Can it be concluded that $\vec{A}$ *and* $\vec{B}$ are perpendicular to each other? Support your answer with a proof.
(viii) Why fog droplets appear to be suspended in air?
(ix) Discuss the sign of acceleration due to gravity for a cricket ball thrown upward, for its upward and downward motion.
(x) Can the velocity of an object reverse the direction when acceleration is constant? Justify with an example.
(xi) It is advisable to fasten the seat belts during a fast drive. Why is it?
(xii) Explain how would a bouncing ball behave in each of an elastic and inelastic collision with floor of room.

3. Write answers of any EIGHT questions. (8 x 2 = 16)

(i) When a rocket enters the atmosphere, why does its nose cone become very hot? Where does this heat energy come from?
(ii) State the work energy principle. Express it in equation.
(iii) While calculating the Absolute Gravitational potential energy, why is the distance between infinity and surface of earth is divided into very small steps.
(iv) What is meant by moment of Inertia? Give its significance.
(v) How is artificial gravity created in an Artificial satellites.
(vi) Centripetal force and centrifugal reaction are equal in magnitude but opposite in direction. Why these forces do not balance each other.
(vii) What happens to the period of simple pendulum if
(a) its length is doubled
(b) its suspended mass is doubled.
(viii) Show that in SHM, the acceleration is zero when velocity is greatest and the velocity is zero when the acceleration is greatest?
(ix) Why can we not realize an Ideal simple pendulum.
(x) What features do longitudinal waves have in common with transverse waves.
(xi) Why does sound travel faster in solids than in gases?
(xii) Justify the statement "Velocity of sound in a gas is independent of pressure of the gas"

4. Write answers of any SIX questions. (6 x 2 = 12)

(i) Define coherent sources of light. How two light beams can be made coherent.
(ii) How is the distance between interference fringes is affected by the separation between the slits of Young's double shit experiment?
(iii) How would you distinguish between unpolarized light and plane polarized light.
(iv) Name and explain any two of major components of a fiber optic communication system.
(v) How the resolving power of a compound microscope can be increased.
(vi) What happens to the temperature of the room, when an air conditioner is left running on a table in the middle of the room.
(vii) What is meant by tripple point of water. What is the value of Absolute temperature of tripple point of water.
(viii) Can the efficiency of a carnot engine be 100%? Justify your answer with proof.
(ix) Normal Human body temperature is $98.6\ ^0F$. Convert it into C^0 and K.

P.T.O.

SECTION II (Essay Type)

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

5. (a) Define Rectangular components of a vector. How two vectors can be added by Rectangular component method. 1+4

(b) A ball is thrown with a speed of 30 m sec^{-1} in a direction 30^{o} above the horizontal. Determine the height to which it rises. 3

6.(a) What are geostationary orbits. Derive an expression for orbital radius of a Geostationary orbit 1+4

(b) How large a force is required to accelerate an electron ($m=9.1\times 10^{-31}\,kg$) from rest to a speed of $2x10^{7}$ $msec^{-1}$ through a distance of 5.0 cm. 3

7. (a) What is the limitation of Newton's formula for speed of sound in air. How did Laplace correct it. 1+4

(b) A simple pendulum is 50cm long. What will be its frequency of vibration at a place where g=9.8m sec^{-2} 3

8.(a) Explain the principle, construction and Magnifying power of a compound microscope with the help of a ray diagram . 1+2+2

(b) A light is incident normally on a grating which has 2500 lines/cm. compute the wavelength of a spectral line for which the deviation in 2^{nd} order is 15^{o} . 3

9.(a) Explain the carnot cycle and calculate the efficiency of a carnot heat engine. 2+3 = 5

(b) Water flows through a hose whose internal diameter is 1cm at a speed of 1m sec^{-1}. What should be the diameter of the nozzle if the water is to emerge at 21m sec^{-1}. 3