BWP-G12-11-19

Physics	(A)	L.K.No. 1110	Paper Code No. 6472
Paper I	(Objective Type)	Inter -A- 2019	(New Pattern)
Time :	20 Minutes	Inter (Part I)	(Group 2nd)
Marks :	17	Session (2015 -17) to (2018 - 20)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	Which one of the following is not a unit of energy : (A) Kilowatt (B) Erg (C) Joule (D) Kilowatt hour
(2)	How many significant zeros are there in the amount 0.00501 : (A) 1 (B) 2 (C) 3 (D) 4
(3)	Magnitude of Resultant Vector of 6 N and 8 N which are perpendicular to each other is : (A) 14 N (B) 10 N (C) 20 N (D) 2 N
(4)	If a Force of 5 N is applied parallel to Moment Arm of 5 m, then Torque is equal to : (A) 25 Nm (B) 5 Nm (C) 10 Nm (D) Zero Nm
(5)	Area under velocity - time graph represents : (A) Force (B) Displacement (C) Distance (D) Acceleration
(6)	Consumption of Energy by a 60 Watt Electric Bulb in 2 Seconds is : (A) 120 J (B) 60 J (C) 30 J (D) 0.5 J
(7)	The correct S.I. Unit of Angular Momentum is : (A) Kgs m^{-2} (B) Kg ms^{-1} (C) Kg m^2s^{-1} (D) Kg m^2s^{-2}
(8)	If External Torque on a body is zero, then which of these quantities is constant : (A) Force (B) Linear Momentum (C) Linear Velocity (D) Angular Momentum
(9)	A 10 meter high tank is full of water. A hole appears at its middle. The speed of efflux will be : (A) 5 ms^{-1} (B) 10 ms^{-1} (C) 100 ms^{-1} (D) 5.11 ms^{-1}
(10)	The S.I. Unit of Flow Rate of a Fluid is : (A) m^2s^{-1} (B) ms^{-1} (C) m^3s^{-1} (D) m^3s^{-2}
(11)	The distance covered by a body in one complete vibration is 20 cm, what is the amplitude of the vibration : (A) 10 cm (B) 80 cm (C) 5 cm (D) 20 cm
(12)	Newton calculated speed of sound in air using the process : (A) Adiabatic (B) Isobaric (C) Isochoric (D) Isothermal
(13)	In a stretched string , if speed of the wave is doubled, the tension in string will increase by : (A) 2 (B) 4 (C) 6 (D) 8
(14)	The locus of all points in the same phase of vibration is : (A) Wavefront (B) Wavelength (C) Crest (D) Trough
(15)	When light ray travels from one medium to another, the characteristic which does not change is : (A) Velocity (B) Wavelength (C) Amplitude (D) Frequency
(16)	The Average Kinetic Energy of Gas is zero at : (A) 0°C (B) -273°C (C) 100°C (D) 100 K
(17)	At constant temperature, if pressure is halved, then its volume : (A) Constant (B) Halved (C) Doubled (D) Four Times

B

BWP-G2-11-19

Roll No.	1110 - 254000	Session (2015 –17) to (2018 – 20)	Inter (Part – I) / (Group 2nd)
Physics (Subjective)	Inter – A -2019	Time 2 : 40 Hours Marks : 68	(New Pattern)

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II .Write the Same Question Number and its Part Number given in the Question Paper

Make Diagram where necessary. | **Part - I** | 22 x 2 = 44

Q.No.2
(i) The period of a Pendulum cannot be used as a Time Standard why?
(ii) What is the difference between Kilogram and Mole?
(iii) Explain Cartesian Coordinate System.
(iv) Can a body rotate about its centre of gravity under the action of its weight? Explain.
(v) If two perpendicular vectors have same magnitude, find the angle between their sum and difference?
(vi) An object has 2 Joule potential energy. Explain what does it mean?
(vii) Explain the situations in which work is positive, negative or zero.
(viii) Derive Venturi Relation.
(ix) How a Dynamic Lift is produced in an Aeroplane?
(x) Does the Acceleration of a Simple Harmonic Oscillator remain constant during its motion? Explain.
(xi) What should be the natural period of Simple Pendulum whose length is 90 cm?
(xii) Explain the Tunning of Radio by Resonance.

Q.No.3
(i) Define Longitudinal Waves. Give an example.
(ii) Give the effect of Variation of Pressure on the speed of sound.
(iii) Explain the terms : (i) Crest (ii) Trough
(iv) Is it possible for two identical waves travelling in the same direction along a string to give rise to a stationary wave?
(v) Show that Orbital Angular Momentum $L_o = mvr$
(vi) What is meant by Centripetal Force and why it must be furnished to an object if the object is to follow a circular path?
(vii) Prove that $v = rw$
(viii) Define Angular Acceleration. Also give its formula.
(ix) Derive formula for the time of Flight of a Projectile.
(x) Show that range of a projectile is maximum at an angle of projection of 45°.
(xi) Explain the circumstances in which the velocity $\vec{v}$ and acceleration $\vec{a}$ of a car are : (i) Perpendicular (ii) Parallel
(xii) Can the velocity of an object reverse direction when acceleration is constant? If so give an example.

Q.No.4
(i) How does one can obtain a plane wave?
(ii) Can visible light produce interference fringes? Explain.
(iii) Define Ray of Light and Beam of Light.
(iv) Why would it be advantageous to use blue light with compound microscope?
(v) How a Convex Lens is used as a Magnifier?
(vi) Define Thermodynamics.
(vii) Explain with example that heat can be added to a system without heating.
(viii) Can the Mechanical Energy be converted completely into Heat Energy? If so give an example.
(ix) Specific Heat of a Gas at constant pressure is greater than specific heat at constant volume. Explain.

Part - II

Q.No.5 (a) Define First Law of Thermodynamics and discuss it by giving appropriate examples. (5)
(b) Show that the famous " Einstein Equation $E = mc^2$ " is dimensionally consistent. Calculate equivalence energy of one kilogram. (3)

Q.No.6 (a) Define Rectangular Components of a vector. How two vectors can be added by rectangular components method? (5)
(b) A ball is thrown horizontally from a height of 10 m with velocity of 21 m/s . How far off it hit the ground and with what velocity? (3)

Q.No.7 (a) What is Escape Velocity? Derive an expression for it and calculate its value on the surface of the earth. (5)
(b) Two tuning forks exhibit beats at a beat frequency of 3 Hz . The frequency of One Fork is 256 Hz. Its frequency is then lowered slightly by adding a bit of wax to one of its prong. The two forks then exhibit a beat frequency of 1 Hz. Determine the frequency of the second tuning fork. (3)

Q.No.8 (a) Prove the law of conservation of energy in vibrating mass – spring system. (5)
(b) An electric fan rotating at 3 rev s^{-1} is switched off. It comes to rest in 18. 0 s. Assuming deceleration to be uniform, find its value. How many revolutions did it turn before coming to rest? (3)

Q.No.9 (a) Describe the diffraction of x – rays by crystals , hence derive Bragg's Equation. (5)
(b) A compound microscope has lenses of focal lengths 1 . 0 cm and 3 . 0 cm. An object is placed 1 . 2 cm from the object lens. If a virtual image is formed 25 cm from the eye , calculate the separation of the lenses and the magnification of the instrument. (3)