Rubrics : SSC 1st ANNUAL EXAMINATION 2024
Subject: PHYSICS-I (B)   Final: 28-03-2024

Q No/ Part No	Criteria	Level 1 (Marks)	Level 2 (Marks)	Level 3 (Marks)	Level 4 (Marks)	Level 5 (Marks)	Level 6 (Marks)
2 (i)	Definition of base quantities	Correct definition (01)	Partially correct answer (0.5)	Wrong Answer (0)			
	Any four base quantities along with units and symbols	Any four correct response (02)	Any three correct response (1.5)	Any two correct response (01)	Any one correct response (0.5)	Wrong Answer (0)	
OR 2 (i)	How does heat transfer occur through the windows and vents of the room? Explain briefly.	Correct explaining with correct reason (03)	Partially correct response (02)	Some relevant information (01)	Wrong Answer (0)		
2 (ii)	Converting 300 micrometer into millimeters	Correctly converting 300 micrometers into 0.3 mm (1.5)	Partially correct answer (01)	Some relevant steps (0.5)	Wrong Answer (0)		
	Converting 300 micrometer into kilometers	Correctly converting 300 micrometers into 3×10^{-7} km (1.5)	Partially correct answer (01)	Some relevant mathematical steps (0.5)	Wrong Answer (0)		
OR 2 (ii)	Prove that -40 °C= -40°F.	Correctly showing that -40 °C= -40°F by using formula. $T°F = 1.8\,T°C + 32$ (03)	Partially correct answer (02)	Some relevant mathematical steps (01)	Wrong Answer (0)		
2 (iii)	Definition of rotatory motion and its examples	Correct definition with at least one correct example (1.5)	Only correct definition (01)	Only correct example or some relevant information (0.5)	Wrong Answer (0)		

	Definition of circular motion and its examples	Correct definition with at least one correct example (1.5)	Only correct definition (01)	Only correct example or some relevant information (0.5)	Wrong Answer (0)		
OR 2(iii)	Explaining the changes expected in weather if the barometer shows increase in atmospheric pressure gradually.	Correctly explaining that increase in atmospheric pressure may results in dry weather gradually large increase in pressure give a long spell of pleasant weather etc. (1.5)	Partially correct Answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
	Explaining the changes expected in weather if the barometer shows increase in atmospheric pressure suddenly	Correctly explaining that increase in atmospheric pressure may results in dry weather, suddenly large increase in pressure give a poor or bad weather etc. (1.5)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
2 (iv)	Explain how the helmet protects the motorcyclists by using formula F= $\frac{\Delta P}{\Delta t}$	Correct response that helmet increases the collision time and that decrease the impact force according to given formula F= $\frac{\Delta P}{\Delta t}$ (03)	Partially correct answer (02)	Some relevant information (01)	Wrong Answer (0)		
OR 2 (iv)	Prove that 1KWh =3.6MJ	Correctly prove 1KWh =1000 x 3600 J =3.6x10^6 J =3.6MJ (03)	Partially correct answer (02)	Any one correct step (01)	Wrong Answer (0)		
2 (v)	State first condition of equilibrium and its mathematical form	Correct statement of first condition of equilibrium and its correct mathematical form (1.5)	Only correct statement of first condition of equilibrium (01)	Only correct mathematical form of first condition of equilibrium (0.5)	Wrong Answer (0)		
	State second condition of equilibrium and its mathematical form	Correct statement of second condition of equilibrium and its correct mathematical form (1.5)	Only correct statement of second condition of equilibrium (01)	Only correct mathematical form of second condition of equilibrium (0.5)	Wrong Answer (0)		
OR 2 (v)	Calculating the value of "g" at the height of 2000 km above the surface of Earth	Correctly calculating the value of "g" by using formula g$_h$ = $\frac{gRe}{(Re + h)^2}$ OR	Partially correct answer (02)	Some relevant mathematical steps (01)	Wrong Answer (0)		

		$g_h = \dfrac{GMe}{(Re + h)^2}$ $=5.671$ ms^{-2} (03)					
2 (vi)	A screw gauge has smallest division on main scale 0.5mm and circular scale has 100 divisions. What will be the pitch of screw gauge?	Correctly finding the pitch of screw gauge (1.5)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
	A screw gauge has smallest division on main scale 0.5mm and circular scale has 100 divisions. What will be the least count of screw gauge?	Correctly finding the least count of screw gauge by using formula L.C= the smallest division on the main scale/ total number of circular division (1.5)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
OR 2 (vi)	A force acting on a body making an angle of 30° with x-axis. The vertical component of force is 25N.Find the force	Correctly finding the force which is F=50N by using correct formula $F_Y = F \sin\theta$ (03)	Partially correct answer (02)	Some relevant mathematical steps (01)	Wrong Answer (0)		
2 (vii)	Calculating mass of Earth by using law of gravitation	Correctly deriving the formula of mass of earth by using law of gravitation with correct value of mass of earth which is 6x10^{24} kg (03)	Partially correct answer (02)	Some relevant information (01)	Wrong Answer (0)		
OR 2(vii)	Definition of stable equilibrium with example	Correct definition of stable equilibrium and correct example (1.5)	Only correct definition of stable equilibrium (01)	Only correct example or some relevant information (0.5)	Wrong Answer (0)		
	Definition of unstable equilibrium with example	Correct definition of unstable equilibrium and correct example (1.5)	Only correct definition of unstable equilibrium (01)	Only correct example or some relevant information (0.5)	Wrong Answer (0)		
2(viii)	Calculation of energy from 20 g of Uranium	Correct calculation of energy using Einstein's mass energy equation 1.8 x 10^{15} J (03)	At least two correct steps (02)	At least one correct step (01)	Some relevant information (0.5)	Wrong Answer (0)	
OR 2(viii)	Why is the outer edge of the road kept higher on circular turn?	Correctly reasoning the outer edge of the road kept higher on circular turn by using concept of centripetal force (03)	Partially correct response (02)	Some relevant information (01)	Wrong Answer (0)		

2(ix)	Statement of Hooke's law	Correct statement of Hooke's law : The strain of the material is directly proportional to the applied stress within the elastic limit of that material. (1.5)	Partially correct response (01)	Some relevant information (0.5)	Wrong Answer (0)	
	Definition of elastic limit	Correct definition of elastic limit: The maximum stress that can be applied to it without causing plastic deformation (1.5)	Partially correct response (01)	Some relevant information (0.5)	Wrong Answer (0)	
OR 2(ix)	Definition of positive acceleration and draw its graph	Correct definition of positive acceleration and draw its correct speed-time graph (1.5)	Only correct labeled speed-time graph of positive acceleration (01)	Only correct definition or some relevant information (0.5)	Wrong Answer (0)	
	Definition of negative acceleration and draw its graph	Correct definition of negative acceleration and draw its correct speed-time graph (1.5)	Only correct labeled speed-time graph of negative acceleration (01)	Only correct definition or some relevant information (0.5)	Wrong Answer (0)	
2 (x)	Briefly explain that gravitational forces consistent with newton's 3rd law of motion	Correctly relating the law of Gravitation with the Newton 3rd law of motion i-e any two objects in the universe attract each other with forces which are equal in magnitude and opposite in direction (03)	Partially correct response (02)	Some relevant information (01)	Wrong Answer (0)	
OR 2(x)	Which instrument is more precise vernier calliper or screw gauge?	Correct name of instrument which is more precise i.e screw gauge (01)	Some relevant information (0.5)	Wrong Answer (0)		
	Screw gauge gives more precise measurement. Give scientific reason	Correct scientific reason that screw gauge gives more precise measurement as compare to vernier calipers (02)	Partially correct response (01)	Some relevant information (0.5)	Wrong Answer (0)	

2(xi)	What is definition the radiations?	Correctly defining the radiation i-e the emission of energy as electromagnetic waves (01)	Partially correct response (0.5)	Wrong Answer (0)			
	Enlist the factors on which radiations emitted from a body depend.	Correctly mentioning any two factors on which radiations emitted from a body depend. (02)	Correctly mentioning any one factor on which radiations emitted from a body depend. (01)	Some relevant information (0.5)	Wrong Answer (0)		
OR 2(xi)	What is definition of torque?	Correctly defining the torque. (01)	Partially correct response (0.5)	Wrong Answer (0)			
	On which factors the torque depends? Explain briefly	Correctly explaining the torque by using factors i-e magnitude of force and moment arm (02)	Partially correct response (01)	Some relevant information (0.5)	Wrong Answer (0)		
Q.3	Graph of 2nd equation of motion .	Correct labeled graph of speed-time graph.(01)	Partially correct response (0.5)	Wrong Answer (0)			
	Brief description of 2nd equation of motion	Correct description (01)	Partially correct response (0.5)	Wrong Answer (0)			
	Derive $S = vit + \frac{1}{2} at^2$ by using speed time graph for uniformly accelerated body	Correct derivation of $S = vit + \frac{1}{2} at^2$ involving five mathematical steps. (03)	Correct derivation of $S = vit + \frac{1}{2} at^2$ involving three or four mathematical steps. (02)	Correct derivation of $S = vit + \frac{1}{2} at^2$ involving two mathematical steps. (01)	Some relevant information (0.5)	Wrong Answer (0)	
OR Q.3	What is meant by rate of flow of heat through conductor	Correct definition rate of flow of heat through conductor (01)	Partially correct response (0.5)	Wrong Answer (0)			
	On what factors rate of flow of heat depends	Correctly naming the three factors rate of flow of heat depends. (02)	Correctly naming any two factors rate of flow of heat depends. (01)	Correctly naming any one factor rate of flow of heat depends. (0.5)	Wrong Answer (0)		
	Deriving the formula of rate of flow of heat	Correct derivation of rate of flow of heat (02)	Partially correct response (01)	Any relevant mathematical steps (0.5)	Wrong Answer (0)		

Q.4	What is definition of kinetic energy?	Correct definition of K.E (01)	Partially correct response (0.5)	Wrong Answer (0)		
	What is definition of potential energy?	Correct definition of P.E (01)	Partially correct response (0.5)	Wrong Answer (0)		
	Prove that K.E $=\frac{1}{2}mv^2$	Correctly proving K.E $=\frac{1}{2}mv^2$ with at least three mathematical steps (03)	Correctly proving K.E $=\frac{1}{2}mv^2$ with at least two mathematical steps (02)	Correctly proving K.E $=\frac{1}{2}mv^2$ with at least one mathematical steps (01)	Some relevant information (0.5)	Wrong Answer (0)
OR Q.4	Explain real expansion of liquid	Correctly explaining the real expansion of liquid (1.5)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)	
	Explain apparent expansion of liquid	Correctly explaining the apparent expansion of liquid with correct diagram (1.5)	Correctly explaining the apparent expansion of liquid without correct diagram (01)	Some relevant information (0.5)	Wrong Answer (0)	
	Derivation or explaining the equation of thermal expansion in liquid	Correct derivation or correctly explaining the equation of thermal expansion in liquid (02)	Partially correct derivation of equation (01)	Some relevant information (0.5)	Wrong Answer (0)	
Q.5	Description of liquid pressure exert on the wall of cylinder	Correct brief description with figure (01)	Some relevant information or only figure (0.5)	Wrong Answer (0)		
	Derive the formula of liquid pressure	Correctly deriving the formula of liquid pressure which is P = ρgh at least three mathematical steps ρ = density of the liquid h = depth of the cylinder (04)	Correctly deriving the formula of liquid pressure which is P = ρgh at least two mathematical steps ρ = density of the liquid h = depth of the cylinder (03)	Correctly deriving the formula of liquid pressure which is P = ρgh at least any one mathematical step ρ = density of the liquid h = depth of the cylinder (02)	Some relevant information (01)	Wrong Answer (0)
OR Q.5	Explain Newton's 2ⁿᵈ law of motion.	Correct statement and correct explanation or correct derivation of Newton's 2ⁿᵈ law of motion. (02)	Partially correct derivation or explanation of 2ⁿᵈ law of motion. (01)	Some relevant information (0.5)	Wrong Answer (0)	
	Derive unit of force from Newton's 2ⁿᵈ law of motion	Correct derivation of unit of force from Newton's 2ⁿᵈ law of motion by using formula F =ma (03)	Correct unit of force without deriving (02)	Some relevant information (01)	Wrong Answer (0)	

Q.6	How much heat energy is required to change 0.5 kg of ice at -10 $^{\circ}$C to 0 $^{\circ}$C for ice?	Correctly finding heat by using formula $Q_1 = mc_{ice}\,\Delta T$ $Q_1 = 10500J$ (02)	Partially correct response (01)	Some relevant information (0.5)	Wrong Answer (0)		
	How much heat energy is required to change 0.5 kg of ice at 0 $^{\circ}$C to 0 $^{\circ}$C for water?	Correctly finding heat by using formula $Q_2 = mL_f$ $Q_2 = 168000J$ (01)	Some relevant information (0.5)	Wrong Answer (0)			
	How much heat energy is required to change 0.5 kg of water at 0 $^{\circ}$C to 10 $^{\circ}$C for water?	Correctly finding heat by using formula $Q_3 = mc_{water}\,\Delta T$ $Q_3 = 21000J$ (01)	Some relevant information (0.5)	Wrong Answer (0)			
	Total heat energy	$Q = Q_1 + Q_2 + Q_3$ $Q=199500$ J (01)	Some relevant information (0.5)	Wrong Answer (0)			
OR Q.6	A car slows down from 100 km/h with a uniform retardation of 2 ms^{-2}. how long it will take to retain a speed of 20 km/h.	Extracted correct data (01)	Partially correct response (0.5)	Wrong Answer (0)			
		Correct calculation of time in given question at least using three mathematical steps t=11.1s (04)	Correct calculation of the time in given question at least using two mathematical steps (03)	Correct calculation of the time in given question at least using any one mathematical step (02)	Only correct answer with unit (01)	Some relevant information (0.5)	Wrong Answer (0)

Note: **All the markers must know the solutions of all the question items of the question paper before starting marking.**

Q No/ Part No	Criteria	LEVEL 1 (Marks)	LEVEL 2 (Marks)	LEVEL 3 (Marks)	LEVEL 4 (Marks)	LEVEL 5 (Marks)	LEVEL 6 (Marks)
2 (i)	What is meant by limitation of measuring instruments?	Correct definition (01)	Partially correct answer (0.5)	Wrong Answer (0)			
	Discuss the limitation of Vernier calipers	Correctly describing any two limitations of vernier calipers (02)	Correctly describing any one limitation of vernier calipers (01)	Wrong Answer(0)			
OR 2 (i)	Definition of moment of force (torque)	Correct definition (01)	Partially correct answer (0.5)	Wrong Answer(0)			
	Factors affecting moment of force	Correctly describing two factors i.e.. Magnitude of force, moment arm (02)	Correctly describing any one factor i.e. Magnitude of force, moment arm (01)	Any relevant information (0.5)	Wrong Answer(0)		
2(ii)	Which instrument is more precise vernier calliper or screw gauge?	Correct name of instrument which is more precise i.e screw gauge (01)	Some relevant information (0.5)	Wrong Answer (0)			
	Screw gauge gives more precise measurement. Give scientific reason	Correct scientific reason that screw gauge gives more precise measurement as compare to vernier calipers (02)	Partially correct response (01)	Some relevant information (0.5)	Wrong Answer (0)		
OR 2(ii)	State first condition of equilibrium and its mathematical form	Correct statement of first condition of equilibrium and its correct mathematical form (1.5)	Only correct statement of first condition of equilibrium (01)	Only correct mathematical form (0.5)	Wrong Answer (0)		
	State second condition of equilibrium and its mathematical form	Correct statement of second condition of equilibrium and its correct mathematical form (1.5)	Only correct statement of second condition of equilibrium (01)	Only correct mathematical form (0.5)	Wrong Answer (0)		

2 (iii)	(a) Expressing 4×10^{-5} m using suitable prefix	Correct conversion 0.4 micrometre (01)	Partially correct answer (0.5)	Wrong Answer (0)		
	(b) Expressing 4.132×10^{16} m using suitable prefix	Correct conversion 41.32peta metre (01)	Partially correct answer (0.5)	Wrong Answer (0)		
	(c) Expressing 572×10^{-8} m using suitable prefix	Correct conversion 5.72 microsecond (01)	Partially correct answer (0.5)	Wrong Answer (0)		
OR 2 (iii)	Definition of rotatory motion and its examples	Correct definition with at least one correct example (1.5)	Only correct definition (01)	Only correct example or some relevant information (0.5)	Wrong Answer (0)	
	Definition of circular motion and its examples	Correct definition with at least one correct example (1.5)	Only correct definition (01)	Only correct example or some relevant information (0.5)	Wrong Answer (0)	
2 (iv)	Rolling friction is smaller than sliding friction	Correctly explaining that in rolling frictional force helps to move the tyre while in sliding, friction tries to stop the body from moving. (03)	Correctly explaining the concept of rolling friction or sliding friction (02)	Some correct relevant information (01)	Wrong Answer (0)	
OR 2 (iv)	Explaining the reason to keep outer edge of the road higher than its inner edge	Correctly explaining that one of the components of the vehicle's weight will provide necessary centripetal force with the help of figure (03)	Partially correct answer (02)	Some correct relevant information (01)	Wrong Answer (0)	
2 (v)	Finding final velocity of a car	Correct calculation having correct answer with correct units vf = 63.24 m/s (03)	At least two correct steps and correct answer (02)	At least one correct step and correct answer (01)	Some relevant mathematical step (0.5)	Wrong Answer (0)
OR 2 (v)	Calculating the value of "g" at the height of 1500 km above the surface of Earth	Correctly calculating the value of "g" by using formula $g_h = \dfrac{gRe}{(Re + h)^2}$ OR $g_h = \dfrac{GMe}{(Re + h)^2}$	At least two correct steps and correct answer (02)	At least one correct step and correct answer (01)	Some relevant mathematical step (0.5)	Wrong Answer (0)

		$g_h = 6.4$ ms^{-2} (03)				
2(vi)	Calculation of gravitational force between two masses	Correct calculation having correct answer with correct units $F=2\times10^{20}$ N (03)	At least two correct steps and correct answer (02)	At least one correct step and correct answer (01)	Some relevant mathematical step (0.5)	Wrong Answer (0)
OR 2(vi)	Explaining of a car moving towards North is having acceleration in South	Correctly explaining that car moving towards North with decreasing velocity, having negative acceleration (deceleration), whose direction is opposite to velocity of a car i.e. it is towards south (03)	Partially correct answer (02)	Some relevant information (01)	Wrong Answer (0)	
2 (vii)	Calculation of energy from 40g of Uranium	Correct calculation of energy using Einstein's mass energy equation $E=3.6\times10^{15}$ J (03)	At least two correct steps (02)	At least one correct step (01)	Some relevant information (0.5)	Wrong Answer (0)
OR 2 (vii)	Explaining that energy of a system cannot be 100%	Correctly explaining that energy of the system cannot be 100% due to energy dissipation from the system (03)	Partially correct answer (02)	Some relevant information (01)	Wrong Answer (0)	
2(viii)	Can a body be in equilibrium under the action of single force?	Correct response which is No (01)	Wrong Answer (0)			
	Explaining whether a body be in equilibrium under the action of a single force	Correctly explaining that a body cannot be in equilibrium under the action of a single force with reason e.g. due to sum of forces will not be zero, first condition of equilibrium is not satisfied or it will have acceleration etc (02)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)	
OR 2 (viii)	Explaining that why mercury is considered most suitable thermometric material.	Correctly writing any three properties of mercury as thermometric material e.g. it does not stick to glass, easily visible, uniform linear expansion, low specific heat capacity etc. (03)	Correctly writing any two properties of mercury as thermometric material mentioned in level-1 (02)	Correctly writing any one property of mercury as thermometric material mentioned in level-1 (01)	Some relevant information (0.5)	Wrong Answer (0)

2(ix)	Explaining the changes expected in weather if the barometer shows increase in atmospheric pressure gradually.	Correctly explaining that increase in atmospheric pressure may results in dry weather gradually large increase in pressure give a long spell of pleasant weather etc. (1.5)	Partially correct answer(01)	Some relevant information (0.5)	Wrong Answer (0)		
	Explaining the changes expected in weather if the barometer shows increase in atmospheric pressure suddenly	Correctly explaining that increase in atmospheric pressure may results in dry weather, suddenly large increase in pressure give a poor or bad weather etc. (1.5)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
OR 2 (ix)	Explaining the reason why birds fluff their feathers in winters.	Correctly explaining that birds fluff their wings, trap the air, air as insulator, this will keep them warm or save them from cold (03)	Partially correct answer (02)	Some relevant information (01)	Wrong Answer (0)		
2 (x)	Explaining the terms a. heat b. temperature c. internal energy	a. Correctly defining the heat as form of energy which transfers from hot to cold bodies or any other correct explanation (01)	Partially correct answer (0.5)	Wrong Answer (0)			
		b. Correctly defining the temperature as it is measure of how hot or cold a body is or any other correct explanation (01)	Partially correct answer (0.5)	Wrong Answer (0)			
		c. correctly defining internal energy as sum of all forms of energies in a substance or any other correct explanation (01)	Partially correct answer (0.5)	Wrong Answer (0)			

OR 2 (x)	Explaining that metals are good conductor of heat	Correct explaining that metals of good conductor heat with reason that metals have free electrons etc (03)	Partially correct answer (02)	Some relevant information (01)	Wrong Answer (0)		
2 (xi)	Explaining the conduction of heat	Correctly defining conduction of heat e.g. the transfer of heat from hot body to cold body due to collisions of closely packed molecules/ atoms etc (01)	Partially correct answer (0.5)	Wrong Answer (0)			
	Explaining that gases are poor conductor of heat	Correct explanation e.g. molecules in gases are far from each other as compared to solids, can not vibrate and hence cannot conduct (02)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
OR 2(xi)	Which material is more elastic steel or rubber?	Correct response which is steel (01)	Wrong Answer (0)				
	Giving reason to find which is more elastic steel or rubber	Correctly explaining that steel is more elastic than rubber with reason e.g steel has high value of elastic constant K or steel requires large force/stress for small (elongation/ strain etc. (02)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
Q.3	Definition of resultant force	Correct definition of resultant force (01)	Partially correct answer (0.5)	Wrong Answer (0)			
	Explain resultant force by using head to tail rule with diagram	Correctly explaining the resultant force by using at least three steps with correct diagram (04)	Correctly explaining the resultant force by using at least two steps with correct diagram (03)	Correctly explaining the resultant force by using at least one step with correct diagram (02)	Some relevant information (01)	Wrong Answer (0)	
OR Q.3	Definition of thermal expansion in solids	Correct definition (01)	Partially correct answer (0.5)	Wrong Answer (0)			
	Derivation of formula of linear thermal expansion in solids	Correct derivation with at least four mathematical steps, description and figure (04)	Correct derivation with at least three mathematical steps, description and figure (03)	Correct derivation with at least two mathematical steps, description and figure (02)	Correct derivation with at least one mathematical step, description and figure (01)	Wrong Answer (0)	

Q.4	Definition of force and definition of momentum	Correct definition of force and correct definition of momentum (02)	Only one any correct definition (01)	Some relevant information (0.5)	Wrong Answer (0)		
	Derivation of force in term of momentum or prove that $F=\dfrac{\Delta P}{\Delta t}$	Correct derivation at least involving three steps (03)	Correct derivation at least involving two steps (02)	Correct derivation at least involving one step (01)	Some relevant information (0.5)	Wrong Answer (0)	
OR Q.4	Define orbital velocity	Correct definition of orbital velocity (01)	Partially correct answer (0.5)	Wrong Answer (0)			
	Derivation of formula of orbital velocity	Correct derivation involving at least four mathematical steps (02)	Correct derivation involving at least three mathematical steps (1.5)	Correct derivation involving at least two mathematical steps (01)	Some relevant information (0.5)	Wrong Answer (0)	
	Calculation of orbital velocity close to the Earth	Correct calculation and answer with unit (02)	Correct calculation without answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
Q.5	Statement of Archimedes principle	Correct statement (01)	Partially correct answer (0.5)	Wrong Answer (0)			
	Calculation of density of an object	Correct derivation with description (04)	Partially correct answer (03)	Some correct mathematical steps (02)	Some relevant information (01)	Wrong Answer (0)	
OR Q.5	Only figure of Atwood machine.	Correct labeled figure of Atwood machine (01)	Partially correct answer (0.5)	Wrong Answer (0)			
	Derivation for acceleration in a string by using Atwood machine	Correct derivation for acceleration in a string by using Atwood machine at least involving three mathematical steps. (02)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
	Derivation for tension in a string by using Atwood machine	Correct derivation for tension in a string by using Atwood machine at least involving three mathematical steps (02)	Partially correct answer (01)	Some relevant information (0.5)	Wrong Answer (0)		
Q.6	Calculation of maximum height of ball throwing upward	Correct calculation and correct answer of maximum height of ball throwing upward at least involving three mathematical steps h=7.34m (2.5)	Correct calculation and correct answer of maximum height of ball throwing upward at least involving two mathematical steps	Correct calculation and correct answer of maximum height of ball throwing upward at least involving one mathematical step	Some relevant information (0.5)	Wrong Answer (0)	

			h=7.34m (02)	h=7.34m (01)			
	Calculation of potential energy of a ball throwing upward at maximum height	Correct calculation and correct answer of potential energy of ball throwing upward at maximum height at least involving three mathematical steps P.E=360 J (2.5)	Correct calculation and correct answer of potential energy of ball throwing upward at maximum height at least involving two mathematical steps P.E=360 J (02)	Correct calculation and correct answer of potential energy of ball throwing upward at maximum height at least involving one mathematical step P.E=360 J (01)	Some relevant information (0.5)	Wrong Answer (0)	
OR Q.6	Graph of 3rd equation of motion .	Correct labeled graph of speed-time graph.(01)	Partially correct response (0.5)	Wrong Answer (0)			
	Brief description of 3rd equation of motion	Correct description (01)	Partially correct response (0.5)	Wrong Answer (0)			
	Derive 3rd equation of motion by using speed time graph	Correct derivation of 3rd equation of motion by using speed time graph at least involving five mathematical steps . (03)	Correct derivation of 3rd equation of motion by using speed time graph at least involving four mathematical steps. (02)	Correct derivation of 3rd equation of motion by using speed time graph at least one step. (01)	Partially correct answer (0.5)	Wrong Answer (0)	

Note: All the markers must know the solutions of all the question items of the question paper before starting marking.