



Federal Board HSSC-I Examination

Physics Model Question Paper

(Curriculum 2022-2023)

Section - A (Marks 17)

Time Allowed: 25 minutes

Section – A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

ROLL NUMBER					

Version No.			

0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

Candidate Sign. _____

Invigilator Sign. _____

Q1. Fill the relevant bubble against each question according to curriculum. Each part carries one mark.

S #	Question	(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)
1.	Which of the following quantities are dimensionally similar?	Torque and work	Stress and spring constant	Angle and length	Strain and pressure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	Maximum work is obtained by the process called:	Isochoric	Isothermal	Isobaric	Adiabatic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	Projectile motion is two-dimensional motion under constant acceleration due to	Air resistance	Gravity	Horizontal distance	Velocity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	A turtle travel 45cm in 20 minutes, its average velocity will be:	2.25cm/h	90cm/h	135cm/h	15cm/h	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	A stationary wave is formed by waves of frequency 512Hz. The speed of the wave is 65m/s, the distance between two consecutive antinodes is:	0.126m	0.06m	0.03m	0.024	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	A wire is stretched to double of its original length, its strain is	0.5	1	zero	2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	Cyclotron frequency of a charged particle moving in a magnetic field B is independent of:	Magnetic flux density	Charge on a particle	Velocity of particle	Mass of particle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	The best instrument for accurate measurement of emf of a cell is:	Voltmeter	Potentiometer	Ammeter	Ohmmeter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9.	The percentage uncertainty in mass and velocity of an object is 2% and 3% respectively. Which of the following is the maximum uncertainty in the measurement of its kinetic energy?	5%	8%	1%	7%	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
10.	Theory of relativity was formulated by.	Isaac Newton	Rutherford	Plank	Albert Einstein	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
11.	The radius at two ends of a pipe is in the ratio of 2:3, then the speed of liquid at the two ends is in the ratio of:	2:3	3:2	4:9	9:4	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
12.	Lepton number for muon particle is:	-1	+1	+1/2	0	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
13.	Which of the following moving particle is not deflected by magnetic field?	Neutron	Proton	Electron	Positron	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
14.	The force that acts on the body but it does no work is called:	Frictional force	Gravitational force	Centripetal force	Elastic force	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
15.	The region around a charge in which a test charge can feel an electric force is called	Electric intensity	Electric Potential	Electric Field	Electric Energy	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
16.	Moment of inertia of a spinning body about its axis does not depend on the:	Angular velocity of body	Mass of body	Orientation of the axis	Distribution of the mass around axis	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
17.	When $F_x = 3 \text{ N}$ and $F = 5 \text{ N}$ then $F_y =$	6N	8N	2N	4N	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>



Federal Board HSSC-I Examination

Physics Model Question Paper

(Curriculum 2022-23)

Time allowed: 2.45 hour

Total Marks Sections B and C: 68

Note: Answer all parts from Section 'B' and all questions from Section 'C' on the **E-sheet**. Write your answers on the allotted/given spaces.

SECTION – B (Marks 42)

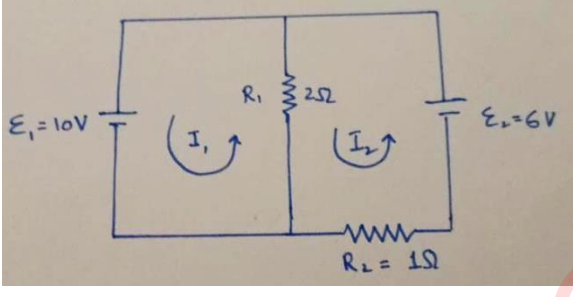
Q. 2 Answers the following questions briefly.

(14x3 = 42)

(i)	An equation is dimensionally correct. Does it mean that equation is necessary correct?	03	OR	Find cross product of two unit vectors at 0° and 90° .	03
(ii)	Define crystalline and amorphous solid.	03	OR	What are the differences between gluons and photons.	03
(iii)	Write the characteristics of scalar product.	03	OR	Define the principle used in seismometer.	03
(iv)	Differentiate between conservative and non-conservative forces.	03	OR	How a steady flow is different from turbulent flow?	03
(v)	What is effect of radius of cross section of conductor on its resistance?	03	OR	Radius of sphere is measured with a screw gauge and is substituted in the formulae of its surface area ($A=4\pi r^2$) and volume ($V=4/3\pi r^3$). Which of the two results will be more accurate?	03
(vi)	Explain the stress strain curve for ductile material.	03	OR	Describe the limitation of first law of thermodynamics.	03
(vii)	Find the angle of projection of a projectile for which the maximum height and corresponding range are equal?	03	OR	An ideal liquid is flowing through a pipe of variable diameter as shown in figure. Where is pressure high (at position A or at B). Justify your answer. <div style="text-align: center;"> </div>	03
(viii)	By using concept of dot product, how can you describe that magnetic flux is scalar product of magnetic flux density (B) and vector area (A)?	03	OR	Is there any transfer of energy through a medium when stationary waves are produced in it? Explain.	03
(ix)	Two tuning forks of frequencies 456 Hz and 452 Hz are sounded together. How many beats are produced over a period of 10 second?	03	OR	A 40 kg mass is supported by 5 m long aluminium wire ($Y_A=7\times 10^{10}$ Pa). To have same elongation in a copper wire of the same length under the same weight, find the diameter of copper wire. ($Y_C=12\times 10^{10}$ Pa)	03
(x)	Why does the resistance of LDR decrease with increase in intensity of light on it?	03	OR	Define (a) radian (b) angular acceleration	03
(xi)	If 280 J of work is done in carrying a charge from a place where potential is -12V to another place where potential is V volt. Calculate the value of V.	03	OR	Write the characteristics of an ideal fluid.	03
(xii)	Two spheres A and B are of the same masses but the radius of A is greater than that of B. Which one will require more torque applied on it to bring into rotation about their axes of rotation?	03	OR	Hydrogen has three isotopes. How can you use magnetic field to separate them?	03
(xiii)	Define constructive and destructive interference.	03	OR	State the process in which the internal energy of the system remains constant?	03
(xiv)	How can you polarize ordinary light using polarizers?	03	OR	Why does smoke rise faster in a chimney on a windy day?	03

SECTION – C (Marks 26)

Note: Attempt all questions. Marks of each question are given along with each question.

<p>Q.3</p>	<p>Explain elastic collision in one dimension and prove that for two bodies colliding elastically, relative speed of approach before collision is equal to relative speed of separation after collision.</p>	<p>02+ 05</p>	<p>OR</p>	<p>Explain Carnot cycle. Derive the relation for the efficiency of Carnot engine.</p>	<p>04+ 03</p>
<p>Q.4</p>	<p>State law of conservation of angular momentum. Show that $\Delta L/\Delta t = 0$ and angular momentum L is conserved for an isolated system.</p>	<p>01+ 03+ 02</p>	<p>OR</p>	<p>Show that electric field intensity is equal to negative of potential gradient. Prove that Volt/meter = Newton / Coulomb</p>	<p>04 + 02</p>
<p>Q.5</p>	<p>What is meant by quark? Explain the quark family of particle.</p>	<p>02+ 05</p>	<p>OR</p>	<p>What is special theory of relativity? Describe the following consequences of special theory of relativity A: Mass variation B: Length contraction C: Time dilation</p>	<p>01+ 02+ 02+ 02</p>
<p>Q.6</p>	<p>Find current flowing through each resistor, using Kirchoff's law in the given circuit.</p> 	<p>06</p>	<p>OR</p>	<p>In an experiment a 3kg water rocket is launched from ground. The rocket total energy at the top of its flight is 2352J. a. What was the rocket launching speed? b. What height did the rocket reach? c. What is the kinetic energy and potential energy of the rocket after 2.5s of its launch?</p>	<p>02+ 02+ 02</p>