



PHYSICS SSC-I

Inclusive Scheme of Studies 2024 (1200 Marks)

SECTION – A (Marks 12)

Time allowed: 15 Minutes

Candidate Sign. _____

Invigilator Sign. _____

Answer Sheet No. _____

Version No.				
1	2	0	4	1

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

ROLL NUMBER						

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

Deleting/overwriting is not allowed.
Do not use lead pencil.

Fill the relevant bubble against each question according to curriculum:

Question	A	B	C	D	A	B	C	D
1. Which of the following is a derived quantity?	Mass	Speed	Length	Temperature	☐	☐	☐	☐
2. The SI unit of energy is:	Joule	Pascal	Watt	Newton	☐	☐	☐	☐
3. The movement of a pendulum is an example of:	Linear motion	Rotatory motion	Vibratory motion	Circular motion	☐	☐	☐	☐
4. According to Newton's 3 rd law, when someone pushes a concrete wall, the wall:	Does nothing	Moves backward	Pushes back	Pulls forward	☐	☐	☐	☐
5. The branch of physics that studies atomic nuclei and their reactions is known as:	Nuclear Physics	Quantum Mechanics	Thermal Physics	Biophysics	☐	☐	☐	☐
6. A spring extends 3 cm when a 6 N force is applied. What is its spring constant?	18 N/m	200 N/m	50 N/m	2 N/m	☐	☐	☐	☐
7. Which statement best describes a magnetic field?	It is visible in air	It acts only at long distances	It only exists inside metals	It surrounds a magnet	☐	☐	☐	☐
8. A hypothesis is best described as:	A proven law	A testable prediction	A mathematical rule	A universal fact	☐	☐	☐	☐
9. Why does a heavy object resist change in its motion more than a light object?	It has greater inertia	It moves faster	It has more friction	It has more energy	☐	☐	☐	☐
10. A body of mass 4 kg has a kinetic energy of 200 J. What is its speed?	5 m/s	10 m/s	20 m/s	40 m/s	☐	☐	☐	☐
11. Which formula correctly relates force and momentum?	$F = mvt$	$F = \frac{m}{vt}$	$F = \frac{mt}{v}$	$F = \frac{mv}{t}$	☐	☐	☐	☐
12. A temporary magnet is usually made of:	Rubber	Copper	Soft iron	Plastic	☐	☐	☐	☐

—1SA-I 26004-(D)—

• $F = kn$ • $KE = \frac{1}{2}mv^2$ • $p = mv$



PHYSICS SSC-I

Inclusive Scheme of Studies 2024 (1200 Marks)

24

Time allowed: 2:45 Hours

Total Marks Sections B and C: 48

SECTION – B (Marks 30)

Q.2 Attempt the following parts.

(10 x 3 =30)

(Use of graph paper is not necessary. Candidates can make their own grid on answer book if required)

(i)	Briefly describe the following branches of physics: a. Astronomy b. Particle physics c. Geophysics	1x3	OR	A car travels different distances in different time intervals as shown: Determine. a. Total distance b. Total time c. Average speed	1x3
(ii)	How does an electromagnet improve the working of the electric bell? Describe briefly.	03	OR	How a rapid rise or fall in the liquid column of a barometer help to predict weather changes? Explain briefly.	03
(iii)	A digital balance gives slightly different readings each time same stone is placed on it: a. Identify the error b. How can this error be fixed?	1+2	OR	How the rise of liquid in a drinking straw or dropper justifies that the atmosphere exerts pressure? Explain briefly.	03
(iv)	What is efficiency? Write the formula for percentage efficiency.	2+1	OR	What is meant by velocity? Justify that speed is a scalar quantity while velocity is a vector quantity.	1+2
(v)	Name any three fundamental forces of nature. Briefly describe each force in one sentence.	1x3	OR	Differentiate between precision and accuracy.	03
(vi)	What is average orbital speed? Why increasing the orbital radius increases the total distance traveled in one orbit?	1+2	OR	What is meant by the internal energy of an object? Why heating always increases the internal energy of a substance?	1+2
(vii)	Why areas with high pressure generally have clear skies, while areas with low pressure often experience cloudy or rainy weather? Explain briefly.	1.5 +1.5	OR	State Newton's Third law of motion. Give at least three daily life examples.	1.5 +1.5
(viii)	Compare paramagnetic and dia magnetic materials.	1x3	OR	What is meant by base and derived quantities? Give one example for each.	1.5 +1.5
(ix)	A 2 kg object changes its velocity from 3 ms^{-1} to 7 ms^{-1} in a short time. Calculate the impulse applied on the object.	03	OR	Why soft magnetic materials are preferred for magnetic shielding in laboratories and electrical equipment? Explain briefly.	03
(x)	Why is mercury preferred as thermometric material? Give three reasons.	1x3	OR	What is pressure? Why a sharp knife cuts better than a blunt knife? Explain briefly.	1+2

SECTION – C (Marks 18)

Note: Attempt the following questions.

(3x6=18)

(Use of graph paper is not necessary. Candidates can make their own grid on answer book if required)

Q.3	A car starts from rest, moves with constant speed, then accelerates, and finally comes to rest. a. Draw distance–time graph. Showing all four stages. b. How the gradient of each section represents the car's speed?	4+2	OR	A player kicks a football of mass 450 g vertically upward at a speed of 22 ms^{-1} . a. Neglecting air resistance. How high it would reach? b. If due to air friction ball rises to only 20 m, what is the work done against resistance?	3+3
Q.4	a. What is friction? b. How friction in machine parts leads to energy dissipation as heat? c. Explain two methods to reduce friction.	2+2 +2	OR	Discuss in detail any two applications of permanent magnets.	3+3
Q.5	What is centripetal force? Give its mathematical form. Determine the centripetal force on a 10 kg ball moving in 1.5 m radius circle with a speed of 25 ms^{-1} .	1+1 +4	OR	State Pascal's law. How it applies to hydraulic car lift? Explain and show mathematically. Make a sketch.	2+2 +1 +1

— 1SA-I 26004 (D) —

$$\begin{aligned}
 & \bullet K.E = \frac{1}{2}mv^2 & \bullet F = \frac{\Delta p}{\Delta t} & \bullet \frac{F_1}{A_1} = \frac{F_2}{A_2} & \bullet m_1u_1 + m_2u_2 = m_1v_1 + m_2v_2 & \bullet P = \rho gh \\
 & \bullet p = mv & \bullet g = 10 \text{ ms}^{-2} & & & \\
 & \bullet v_f = v_i + at & \bullet 2aS = v_f^2 - v_i^2 & & &
 \end{aligned}$$