

Version No.			

ROLL NUMBER					

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Answer Sheet No. \_\_\_\_\_

Sign. of Candidate \_\_\_\_\_

Sign. of Invigilator \_\_\_\_\_

### PHYSICS SSC–I (3<sup>rd</sup> Set)

#### SECTION – A (Marks 12)

Time allowed: 15 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.**

**Q.1 Fill the relevant bubble for each part. All parts carry one mark.**

- (1) Which one of the following instrument is most suitable for measuring thickness of the physics book?
- A. Meter rule         B. Vernier calipers     
 C. Measuring tape         D. Screw gauge
- (2) Acceleration of bodies falling freely is:
- A. Different for different heights     
 B. Different for different masses     
 C. Same for all bodies     
 D. Different for different materials
- (3) The coaster cars move around the loop, the track provides:
- A. Applied force         B. Normal force     
 C. Centripetal force         D. Frictional force
- (4) A body has a weight of 20N. How much force is required to move it vertically upward with an acceleration of  $2\text{ms}^{-2}$ ?
- A. 20 N         B. 22 N     
 C. 24 N         D. 26 N
- (5) The angle between two rectangular components of a vector is:
- A.  $30^\circ$          B.  $45^\circ$      
 C.  $60^\circ$          D.  $90^\circ$
- (6) It is easy to open a door by pulling or pushing at:
- A. Axis point         B. Middle of door     
 C. Corners of the door         D. Handle of the door
- (7) The value of universal gravitational constant is:
- A.  $6.4 \times 10^6 \text{Nm}^2\text{kg}^{-2}$          B.  $6 \times 10^{24} \text{Nm}^2\text{kg}^{-2}$      
 C.  $6.67 \times 10^{-11} \text{Nm}^2\text{kg}^{-2}$          D.  $10 \text{Nm}^2\text{kg}^{-2}$

- (8) The work done in lifting an object of mass 10kg through height of 1m is:  
A. 0J  B. 10J   
C. 100J  D. 1000J
- (9) Barometer is used to measure:  
A. Weight  B. Density   
C. Atmospheric pressure  D. Volume
- (10) Sum of kinetic and potential energies associated with all particles of an object is called:  
A. Heat  B. Temperature   
C. Internal energy  D. Mechanical energy
- (11) The temperature of an object is 60°C. Its temperature in Fahrenheit is:  
A. 120°F  B. 130°F   
C. 140°F  D. 150°F
- (12) The rate of emission of radiation from certain object depends on:  
A. Internal energy  B. Heat   
C. Surface area  D. Latent heat
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Federal Board SSC-I Examination  
Physics Model Question Paper  
(Curriculum 2006)

Time allowed: 2.45 hours

Total Marks: 53

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Note: Answer any eleven parts from Section 'B' and attempt any two questions from Section 'C' on the separately provided answer book. Write your answers neatly and legibly.

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**SECTION – B (Marks 33)**

**Q.2** Attempt any **ELEVEN** parts from the following. All parts carry equal marks.

(11 × 3 = 33)

- i. How measuring cylinder can be used to measure volume of an irregular object?
- ii. What is zero error? Differentiate between positive and negative zero error in case of Vernier caliper.
- iii. A boy throws a ball vertically up. It returns the ground after 10 seconds. Find the maximum height reached by the ball.
- iv. Can a body moving with certain velocity in the direction of east have acceleration in the direction of west?
- v. In terms of Newton's 3<sup>rd</sup> law of motion, discuss action and reaction forces in the following examples:  
(a) Book kept on table. (b) Motion of rocket (c) Pushing a shopping cart.
- vi. How a banked road makes driving safe?
- vii. Why vehicles are made heavy at the bottom?
- viii. Define gravitational field and gravitational field strength.
- ix. Briefly describe working principle of see-saw.
- x. Briefly describe producing of electrical energy from fossil fuels, using block diagram.
- xi. Explain the use of Hydrometer to measure the density of a car battery acid.
- xii. The weight of a metal spoon in air is 0.38 N. Its weight in water is 0.32 N. Find its density.
- xiii. What is anomalous expansion of water?
- xiv. Briefly explain convection in seawater to support marine life.
- xv. Why is the cutting edge of the knife made very thin?

**SECTION – C (Marks 20)**

**Note:** Attempt any **TWO** questions. All questions carry equal marks.

(2 × 10 = 20)

- Q.3**
- a. Write detailed note on significant figures. (6)
  - b. Calculate the value of g, the acceleration due to gravity at an altitude of 100 km. The mass of Earth is  $6.0 \times 10^{24}$  Kg. The radius of Earth is 6400 km. (4)
- Q.4**
- a. What is kinetic energy. Derive its mathematical relation ( $K.E = \frac{1}{2} mv^2$ ) (6)
  - b. Find the volume of a brass cube at 100°C, whose side is 10cm at 0 (coefficient of linear thermal expansion of brass =  $1.9 \times 10^{-5} k^{-1}$ ). (4)
- Q.5**
- a. Define friction. How friction opposes motion. Enlist two disadvantages of it? (1+3+2)
  - b. How various surfaces can be compared by a Leslie cube? (4)

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**PHYSICS SSC-I (3<sup>rd</sup> Set)**  
**Student Learning Outcomes Alignment Chart**  
(Curriculum 2006)

**SECTION – A**

**Q.1**

- (1) Describe the working of vernier callipers and screw gauge for measuring length.
- (2) Solve problems related to freely falling bodies using  $10 \text{ ms}^{-2}$  as the acceleration due to gravity
- (3) Identify the use of centripetal force
- (4) Solve problem using  $F = ma$ , and  $w = mg$ .
- (5) Describe how a force is resolved into its perpendicular components.
- (6) Define moment of force or torque as moment = force x perpendicular distance from pivot to the line of action of force.
- (7) Solve problems using Newton's law of gravitation.
- (8) Calculate work done using equation Work = force x distance moved in the direction of force
- (9) Describe how the height of a liquid column may be used to measure the atmospheric pressure
- (10) Define heat (as the energy transferred resulting from the temperature difference between two objects).
- (11) Convert the temperature from one scale to another (Fahrenheit, Celsius and Kelvin scales).
- (12) Describe the process of radiation from all objects.

**SECTION – B**

**Q.2**

- i. Determine volume of an irregular shaped object using a measuring cylinder.
- ii. Measure length and diameter of a cylinder and calculate the volume with Vernier calipers
- iii. Solve problems related to freely falling bodies using  $10 \text{ ms}^{-2}$  as the acceleration due to gravity.
- iv. Solve problems related to uniformly accelerated motion using appropriate equations.
- v. State Newton's laws of motion.
- vi. Identify the use of centripetal force in (i) safe driving by banking roads (ii) washing machine dryer (iii) cream separator.
- vii. Define equilibrium and classify its types by quoting examples from everyday life.
- viii. Explain gravitational field as an example of field of force.
- ix. Describe the working principle of see-saw
- x. Describe the process of electricity generation by drawing a block diagram of the process from fossil fuel input to electricity output.
- xi. Explain the use of Hydrometer to measure the density of a car battery acid.
- xii. Determine the density of an object using Archimedes principle.
- xiii. Explain the thermal expansion of liquids (real and apparent expansion).

- xiv. Explain convection in seawater to support marine life.
- xv. Explain how pressure varies with force and area in the context of everyday examples.

### SECTION – C

- Q.3**
  - a. Describe the need using significant figures for recording and stating results in the laboratory.
  - b. Solve problems using Newton's law of gravitation.
- Q.4**
  - a. Define energy, kinetic energy and potential energy. State unit of energy, prove that Kinetic Energy =  $\frac{1}{2} mv^2$
  - b. Describe qualitatively the thermal expansion of solids (linear and volumetric expansion).
- Q.5**
  - a. Explain the effect of friction on the motion of a vehicle.
  - b. Investigate the absorption of radiation by a black surface and silvery surfaces using Leslie cube.

## PHYSICS SSC-I (3<sup>rd</sup> Set)

### TABLE OF SPECIFICATION

Topics	Unit-1	Unit-2	Unit-3	Unit-4	Unit-5	Unit-6	Unit-7	Unit-8	Unit-9	Total marks	Percentage
Knowledge Based	1(1)(1) 2 ii(3) 3 a(6)		5 a(6)	1(5)(1)	1(7)(1) 2 viii(3)	4 a(2)		1(10)(1)		24	27.6%
Understanding based	2 i(3)	1 (2)(1) 2 iii(3) 2 iv(3)	1(4)(1) 2 v(3) 2 vi(3)	2 vii(3) 2 ix(3)		1(8)(1) 2 x(3) 4 a(4)	2 xiii(3) 2 xi(3) 2 xv(3)		1(12)(1) 2xiv(3)	44	50.6%
Application Based			1(3)(1)	1(6)(1)	3 b(4)		1(9)(1) 2 xii(3)	4 b(4) 1(11)(1)	5 b(4)	19	21.8%
Total marks for each Unit	13	7	14	8	8	10	13	6	8	87	100%

**KEY:**

1-1(1)

Question No-Part No. (Allocated Marks)

**Note:** (i) The policy of FBISE for knowledge based questions, understanding based questions and application based questions is approximately as follows:

- a) 30% knowledge based.
- b) 50% understanding based.
- c) 20% application based.

(ii) The total marks specified for each unit/content in the table of specification is only related to this model question paper.

(iii) The level of difficulty of the paper is approximately as follows:

- a) 40% easy
- b) 40% moderate
- c) 20% difficult