

Version No.			

ROLL NUMBER						



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

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

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

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

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

**PHYSICS SSC-I**  
**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 handedover 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. 10 N	B. 20 N
C. 2.040 N	D. 4.1 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  $60^{\circ}\text{C}$ . Its temperature in Fahrenheit is:  
A.  $120^{\circ}\text{F}$   
B.  $130^{\circ}\text{F}$   
C.  $140^{\circ}\text{F}$   
D.  $150^{\circ}\text{F}$
- (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 all parts from Section 'B' and all questions from Section 'C' on the **E-sheet**.  
Write your answers on the allotted/given spaces.

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**SECTION – B (Marks 33)**

**Q.2** Attempt all parts from the following. All parts carry equal marks. (11x 3 = 33)

i. Differentiate between base physical quantities and derived physical quantities.

**OR**

A girl is pulling a baby cart through 35 m applying a force of 150 N. Find the work done by the girl.

ii. Sketch a speed time graph showing uniform acceleration and how can distance be calculated from this graph?

**OR**

A boy throws a ball vertically up. It returns the ground after 10 seconds. Find the maximum height reached by the ball.

iii. Worn out tyres of vehicles are not safe to use on wet roads. Why?

**OR**

What will happen to a person sitting inside a bus when the bus takes a turns to the left side suddenly?

iv. Define Torque. Write its formula and SI unit.

**OR**

Drawing a block diagram of the process of electricity generation from fossil fuel.

v. At what altitude the value of 'g' would become one ninth than its value at the surface of Earth?

**OR**

The gravitational force between two similar iron balls kept at 100cm apart is 0.006673N. Find the mass of each ball?

vi. Define SI units of work and power.

**OR**

Define the term 'Least Count'? What is the least count of vernier calipers?

vii. State Hook's Law and write its mathematical form.

**OR**

Express the following quantities using suitable prefixes.

(a) 3000 g      (b)  $572 \times 10^{-8}$  s

viii. Explain the use of Hydrometer to measure the density of a car battery acid.

**OR**

Submarines are designed to move over and under the sea. Explain briefly?

ix. Why is the cutting edge of the knife made very thin?

**OR**

With what force an apple weighting 2 N attracts the Earth?

x. Describe latent heat of fusion and latent heat of vaporization.

**OR**

Write the factors affecting the transfer of heat through solid conductors.

xi. Briefly explain convection in seawater to support marine life.

**OR**

What do you understand by the term thermal energy?

### **SECTION – C (Marks 20)**

**Note: Attempt all questions. Marks of each question are given within brackets.(4x5 = 20)**

**Q.3** Derive second equation of motion using speed – time graph for a uniformly accelerated body. (2+3=5)

**OR**

Define the law of conservation of momentum. Using the law of conservation of momentum derive an expression for recoil velocity of the gun after firing. (2+3=5)

**Q.4** Define resolution of a force. How can a force making an angle  $\theta$  with  $x$ -axis, be resolved into its perpendicular components? (1+2+2=5)

**OR**

State Newton's law of gravitation. Calculate mass of Earth using this law. (1+3+1=5)

**Q.5** Hydraulic press is also known as force multiplier. Explain with the help of Pascal's law? (5)

**OR**

Define linear thermal expansion of solids. Derive a mathematical relation for it. How coefficient of linear thermal expansion is related with coefficient of volumetric thermal expansion? (1+1+3=5)

**Q.6** Name the states of equilibrium? Define each state and explain it by giving at least one example for each state? (1+2+2=5)

**OR**

What is rate of flow of heat through a conductor? On what factors does it depend? Derive its formula. (1+2+2=5)

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**PHYSICS SSC-I**  
**Student Learning Outcomes Alignment Chart**  
(Curriculum 2006)  
**SECTION – A**

**Q.1 Choose the correct answer A/B/C/D by filling the relevant bubble for each question.**

- (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 Attempt all parts from the following. All parts carry equal marks. (11×3=33)**

- i. State SI base units, derived units and supplementary units for various measurements.

**OR**

Calculate work done using equation Work = force x distance moved in the direction of force

- ii. Interpret displacement-time and velocity time graphs of objects moving along the same straight line.

**OR**

Solve problems related to freely falling bodies using  $10 \text{ ms}^{-2}$  as the acceleration due to gravity.

- iii. Explain the effect of friction on the motion of a vehicle in the context of tyre surface, road conditions including skidding, braking force.

**OR**

State Newton's laws of motion.

- iv. Define moment of force or torque as moment = force x perpendicular distance from pivot to the line of action of force.

**OR**

Describe the process of electricity generation by drawing a block diagram of the process from fossil fuel input to electricity output.

- v. Explain that value of 'g' decreases with altitude from the surface of earth.

**OR**

Solve problems using Newton's law of gravitation.

- vi. Define work and its SI units. AND Define the units of power 'watt' in SI and its conversion with horse power.

**OR**

Identify and explain the limitation of measuring instruments such as metre rule, vernier callipers and screw gauge.

- vii. State Hooke's law and explain elastic limit.

**OR**

Interconvert the prefixes and their symbols to indicate multiple and sub-multiple for both base and derived units.

- viii. Determine the density of an object using Archimedes principle.

**OR**

State principle of floatation.

- ix. Explain how pressure varies with force and area in the context of everyday examples.

**OR**

Explain that the gravitational forces are consistent with Newton's third law.

- x. Describe heat of fusion and heat of vaporization (as energy transfer without a change of temperature for change of state).

**OR**

State the factors affecting the transfer of heat through solid conductors and hence, define the term "Thermal Conductivity".

- xi. State some examples of heat transfer by convection in everyday life.

**OR**

Recall that thermal energy is transferred from a region of higher temperature to a region of lower temperature.

### **SECTION – C**

**Attempt all questions from the following. All parts carry equal marks (4x5=20)**

- Q.3** Derive equations of motion for a body moving with a uniform acceleration in a straight line using graph.

**OR**

- State the law of conservation of momentum.
- Determine the velocity after collision of two objects using the law of conservation of momentum

- Q.4** Describe how a force is resolved into its perpendicular components.

**OR**

Calculate the mass of earth by using law of gravitation.

- Q.5** Apply and demonstrate the use with examples of Pascal's law.

**OR**

Describe qualitatively the thermal expansion of solids (linear and volumetric expansion).

- Q.6** Describe the states of equilibrium and classify them with common examples.

**OR**

State the factors affecting the transfer of heat through solid conductors and hence, define the term "Thermal Conductivity".

# PHYSICS SSC-I

## 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 vi(3)OR		1(3)(1)	1(5)(1) 6(5)	1(7)(1) 4 (5)OR	2 vi(3)	1(9)(1) 2 vii(3)	1(10)(1) 2 x(3)	2 x(3)OR	31	26 %
Understanding based	2 i(3)	1 (2)(1) 3 (5)	2 iii(3) 2 iii(3)OR 3 (5)OR	2 iv(3) 4 (5)	2 ix(3)OR	2 iv(3)OR	2 viii(3) 2 viii(3)O R 2 ix(3)	5 (5)OR	1(12)(1) 2 xi(3) 2 xi(3)OR 6(5)OR	60	51 %
Application Based	2 vii(3)OR	2 ii(3) 2 ii(3)OR	1(4)(1)	1(6)(1)	2 v(3) 2 v(3)OR	1(8)(1) 2 i(3)OR	5 (5)	1(11)(1)		27	23 %
Total marks for each Unit	10	12	13	15	15	10	18	10	15	118	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

Section A: 12

Section B: 22x3= 66

Section C: 40

Total = 118