Version No.			

ROLL NUMBER						

Answer Sheet No._____

Sign. of Candidate _____

Sign. of Invigilator _____

PHYSICS SSC–I (2nd 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 instrument you will use to find the diameter of a thin wire:
   A. Manometer ◯ B. Micrometer Screw gauge ◯
   C. Vernier callipers ◯ D. Interferometer ◯

2. Pick the **INCORRECT** prefix:
   A. $1ms = 10^{-3}s$ ◯ B. $1dm = 10^{-1}m$ ◯
   C. $1cm = 10^{-2}m$ ◯ D. $I\mu m = 10^{6}m$ ◯

3. If velocity of a body is increasing then its acceleration is:
   A. Positive ◯ B. Negative ◯
   C. Zero ◯ D. Infinite ◯

4. Height of Geostationary satellite from the surface of Earth is about:
   A. 43,200km ◯ B. 42,300km ◯
   C. 34,200km ◯ D. 44,300km ◯

5. Force of friction acts:
   A. in the direction of motion ◯
   B. perpendicular to the direction of motion ◯
   C. against the direction of motion ◯
   D. at an acute angle to the direction of motion ◯

6. The power needed to lift a mass of 10 kg to a height of 1m in a time of 25sec is:
   A. 50W ◯ B. 20W ◯
   C. 200W ◯ D. 100W ◯

7. Which property of a body can **NOT** change if a force is applied to it?
   A. mass ◯ B. size ◯
   C. shape ◯ D. velocity ◯

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8. Identify the renewable source of energy:

A. fossil fuel energy ◯ B. nuclear energy ◯

C. wind energy ◯ D. electrical energy ◯

9. The centre of gravity of a square shaped body lies at the:

A. point of intersection of diagonals ◯

B. its upper face ◯

C. edge of square ◯

D. its base ◯

10. If two forces of magnitude 3N and 4N are acting on a body perpendicularly then the magnitude of their resultant is:

A. 7N ◯ B. 5N ◯

C. 1N ◯ D. 3N ◯

11. The weight of an object in air is 10N and its weight in water is 6N. What will be the upthrust acting on it?

A. 16N ◯ B. 10N ◯

C. 4N ◯ D. 60N ◯

12. The unit of specific heat capacity is:

A. Jkg^{-1} ◯ B. $Jkg^{-1}K^{-1}$ ◯

C. $Jkg^{-1}K$ ◯ D. $JkgK^{-1}$ ◯

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Federal Board SSC-I Examination
Physics Model Question Paper
(Curriculum 2006)

Time allowed: 2.45 hours | Total Marks: 53

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.

SECTION – B (Marks 33)

Q.2 Attempt any **ELEVEN** parts from the following. All parts carry equal marks. (11 × 3 = 33)

i. Write down any three rules to determine the significant figures in any measurement?
ii. How circular and rotatory motions are different from each other? (any three)
iii. Worn out tyres of vehicles are not safe to use on wet roads. Why?
iv. How much centripetal force is needed to make a body of mass 0.5kg to move in a circle of radius 50cm with a speed of $5ms^{-1}$?
v. A boy completes a circular track of radius 20 meters in 3 minutes. Find his average speed.
vi. Couple produces rotation in the steering wheels. How?
vii. The gravitational force between two similar iron balls kept at 100cm apart is 0.006673N. Find the mass of each sphere?
viii. Explain why hot gases rise?
ix. If a single force acts on a body, it cannot be in equilibrium under this single force. Why?
x. What is meant by the efficiency of a system? How can you find efficiency of a system?
xi. A nail can penetrate a hard surface easily compared to wide bolt. Why?
xii. What is the effect of large specific heat capacity of water in our everyday life?
xiii. Submarines are designed to move over and under the sea. Explain briefly?
xiv. How double glazed windows help to keep room cool when it is hot outside?
xv. Steam causes severe burns than boiling water. Why?

SECTION – C (Marks 20)

Note: Attempt any **TWO** questions. All questions carry equal marks. **(2 × 10 = 20)**

Q.3 a. What is law of conservation of momentum? Determine the recoil velocity of the gun when a bullet is fired from it. **(6)**
b. A car moves with uniform velocity of $20ms^{-1}$ for 3s. It comes to rest in next 5s with uniform deceleration. Find the total distance travelled by car? **(4)**

Q.4 a. Hydraulic press is also known as force multiplier. Explain with the help of Pascal's law? **(6)**
b. Define stress, strain and Young's modulus. **(4)**

Q.5 a. Define linear thermal expansion of solids. Derive the relation for it. How coefficient of linear and coefficient of volumetric thermal expansions are related. **(6)**
b. At what altitude the value of 'g' would become one ninth than at the surface of Earth. **(4)**

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PHYSICS SSC-I (2nd Set)

Student Learning Outcomes Alignment Chart

(Curriculum 2006)

SECTION – A

Q.1

1. Identify and explain the limitation of measuring instruments such as metre rule, vernier calliper and screw gauge. (Measure the thickness of a metal strip or a wire using a screw gauge.)
2. Interconvert the prefixes and their symbols to indicate multiple and sub-multiple for both base and derived units.
3. Determine and interpret the slope of distance-time and speed-time graph.
4. Discuss the importance of Newton's law of gravitation in understanding the motion of satellites.
5. Explain the effect of friction on the motion of a vehicle in the context of tyre surface, road conditions including skidding, braking force.
6. Solve problems using mathematical relations learnt in unit 6.
7. Explain the concept of force by practical examples of daily life.
8. Differentiate energy sources as non-renewable and renewable energy sources with examples of each.
9. Define the centre of mass and centre of gravity of a body.
10. Determine the magnitude and direction of a force from its perpendicular components.
11. Investigate the relationship between applied force and extension using Helical spring by plotting a graph and determine the value of spring constant.
12. Define the terms heat capacity and specific heat capacity.

SECTION – B

Q.2

i. Describe the need using significant figures for recording and stating results in the laboratory.
ii. Identify different types of motion i.e; translatory, (linear, random, and circular); rotatory and vibratory motions and distinguish among them.
iii. Explain the effect of friction on the motion of a vehicle in the context of tyre surface, road conditions including skidding, braking force.
iv. Calculate centripetal force on a body moving in a circle using mv2 /r.
v. Solve problems related to uniformly accelerated motion using appropriate equations.
vi. Define couple as a pair of forces tending to produce rotation.
vii. Solve problems using Newton's law of gravitation.
viii. Explain the convection currents in fluids due to difference in density.
ix. Define equilibrium and classify its types by quoting examples from everyday life.
x. Define efficiency of a working system and calculate the efficiency of an energy conversion using the formula

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efficiency = energy converted into the required form / total energy input

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

xii. Describe how the height of a liquid column may be used to measure the atmospheric pressure.

xiii. Describe one everyday effect of relatively large specific heat of water

xiv. State the upthrust exerted by a liquid on a body. • state principle of floatation.

xv. Explain insulation reduces energy transfer by conduction.

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

SECTION – C

Q.3 a. State the law of conversation of momentum. Determine the velocity after collision of two objects using the law of conversation of momentum.

b. Solve the problem related to uniformly accelerated motion using appropriate equations.

Q.4 a. State that Hydraulic Press, Hydraulic car lift and Hydraulic brakes operate on the principle that the fluid pressure is transmitted equally in all direction.

b. Define the terms Stress, Strain and Young's modulus.
• state Hooke's law and explain elastic limit.

Q.5 a. Describe qualitatively the thermal expansion of solids (linear and volumetric expansion).

b. Explain that value of 'g' decreases with altitude from the surface of Earth.

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PHYSICS SSC-I (2nd 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	1-2(1) 2-i(3)		2-iv(3)	1-9(1)	1-4(1) 2-vii(3)	1-8(1) 2-x(3)	4-b(4)	1-12(1) 5-a(6)		27	31%
Understanding based	1-1(1)	1-3(1) 2-ii,v(6) 3-b(4)	1-5(1) 1-7(1) 2-iii(3) 3-a(6)	2-vi, ix(6)	5-b(4)	1-6(1)	2-xi(3)	2-xv(3)	2-viii(3)	43	49.4%
Application Based				1-10(1)			1-11(1) 2-xiii(3) 4-a(6)	2-xii(3)	2-xiv(3)	17	19.5%
Total marks for each Unit	5	11	14	8	8	5	17	13	6	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

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