PHYSICS SSC–II
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)   In vacuum, all electromagnetic waves have the same:
   A.   Speed ◯   B.   Amplitude ◯
   C.   Frequency ◯   D.   Wavelength ◯

(2)   The relationship between speed, frequency and wavelength of a wave is known as:
   A.   Wave equation ◯   B.   Frequency equation ◯
   C.   SHM equation ◯   D.   Wavelength equation ◯

(3)   Which of the following forms of wave is "sound"?
   A.   Electrical ◯   B.   Longitudinal ◯
   C.   Transverse ◯   D.   Magnetic ◯

(4)   If a ray of light in a glass is incident on an air surface at an angle greater than the critical angle, the ray will:
   A.   Refract only ◯   B.   Reflect only ◯
   C.   Partially reflect & refract ◯   D.   Diffract only ◯

(5)   According to Coulomb's law, if distance between charges increases, the force of attraction:
   A.   Will be increased ◯   B.   Will be decreased ◯
   C.   Will be unchanged ◯   D.   Will become repulsion ◯

(6)   When we apply more voltage to an ohmic conductor, we get:
   A.   More resistance ◯   B.   More flow of current ◯
   C.   Decrease in power ◯   D   Less flow of current ◯

(7)   Electromagnetism is the study of:
   A.   Magnetic effect of current ◯   B.   Flow of protons ◯
   C.   Flow of electrons ◯   D.   Flow of neutrons ◯

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(8)   Logic gates are used in:
    A.   LDRs   ○   B.   DC circuits   ○
    C.   Analogue circuits ○   D.   House safety   ○

(9)   Which one of the following is the most suitable means of reliable continuous communication between an orbiting satellite and Earth?
    A.   Microwaves   ○   B.   Radio waves   ○
    C.   Sound waves   ○   D.   Any light wave ○

(10)   Which one of the following particles has the greatest penetrating power?
    A.   α- Particle   ○   B.   β- Particle   ○
    C.   γ- Particle   ○   D.   Proton   ○

(11)   What is the voltage across a 6 Ω resistor when 3A of current passes through it?
    A.   2 V   ○   B.   9 V   ○
    C.   18 V   ○   D.   36 V   ○

(12)   If the turn ratio of a step-up transformer is 10. It means:
    A. $I_s = 10\ I_p$ ○   B. $N_s = \frac{N_P}{10}$ ○
    C. $N_s = 10\ N_p$ ○   D. $V_p = 10V_s$ ○

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Federal Board SSC-II 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.   A pendulum of length 1m and period 2.01s is placed at the top of Mount Everest
        having an altitude of 8849m. Calculate the value of 'g' at that point.

  ii.   If the concave mirror produces a real image of an object, will the image be
        necessarily inverted?

  iii. Is the restoring force on a mass attached to spring in SHM ever zero? If so, where?

  iv.   How can a body be negatively charged by electrostatic induction?

  v.   Does increasing the frequency of wave also increases its wavelength? If not, how
        are these quantities related?

  vi.   Will two wires carrying current in the same direction repel or attract each other?
        Give reason.

  vii. Write down differences between conductors and insulators.

  viii. How is an ammeter connected with a device to measure current? Support your
        answer with reason.

  ix.   What do you understand by digital and analogue quantities?

  x.   Why are some elements radioactive but some are not?

  xi.   How electronic mail is preferred over traditional communication?

  xii. Explain whether the atomic number can increase during nuclear decay. Support
        your answer with an example.

  xiii. Why is an electron beam deflected when passes through a magnetic field?

  xiv. How can we find the direction of magnetic field of a current carrying conductor?

  xv.   Describe electrostatic painting of cars.

SECTION – C (Marks 20)

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

Q.3   a.   With the help of electroscope, how can you achieve the following: **(3x2=6)**
              i.   The detection of charge on a body.
              ii.   Determining the nature of charge.

iii. Investigating whether the body under test is conductor or insulator.
b. An object is placed at a distance of 20cm in front of a convex mirror forms an image 10cm behind the mirror. What is its focal length? **(4)**

Q.4 a. Discuss the main features of parallel combination of resistors. **(6)**
b. What are the basic Logic Gates? Give symbols and truth tables of any two.

(4)

Q.5 a. Explain the working of transformer in connection with mutual induction. Describe types of transformer. **(6)**
b. Lead-210 has half-life of 22.3 years. How much of the 80 mg of lead will be left after 66.9 years? **(4)**

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PHYSICS SSC-II
MODEL QUESTION PAPER SLOs
(Curriculum 2006)

SECTION – A

Q.1 Choose the correct answer A/B/C/D by filling the relevant bubble for each question.
(1)   distinguish between mechanical and electromagnetic waves.
(2)   Derive equation $v = f\lambda$.
(3)   Describe the longitudinal nature of sound waves (as a series of compressions and rarefactions).
(4)   State the conditions for total internal reflection.
(5)   State and explain Coulomb's law.
(6)   Describe Ohm's law and its limitations.
(7)   Explain by describing an experiment that an electric current in a conductor produces a magnetic field around it.
(8)   Describe the simple uses of logic gates.
(9)   Explain briefly the transmission of
   a.   electric signals through wires
   b.   radiowaves through air
   c.   light signals through optical fibres
(10) State, for radioactive emissions:
   a.   their nature
   b.   their relative ionizing effects
   c.   their relative penetrating abilities.
(11) Describe Ohm's law and its limitations.
(12) Identify that a transformer works on the principle of mutual induction between two coils.

SECTION-B

Q.2   Attempt any ELEVEN parts from the following. All parts carry equal marks.   (11×3=33)
i.   Solve problems by using the formula $T = 2\pi \sqrt{l/g}$ for simple pendulum.
ii.   Solve problems of image location by spherical mirrors by using mirror formula.
iii. Explain SHM with different examples.
iv.   Describe experiments to show electrostatic charging by induction.
v.   Derive equation $v = f\lambda$.
vi.   Explain by describing an experiment that an electric current in a conductor produces a magnetic field around it.
vii. Distinguish between conductors and insulators.
viii. Describe the use of electrical measuring devices like galvanometer, ammeter and voltmeter (construction and working principles not required).
ix.   Differentiate between analogue and digital electronics.
x.   Explain that an element may change into another element when radioactivity occurs.
xi.   Compare the advantages of high technology communication devices with the traditional system through internet search.
xii. Represent changes in the composition of the nucleus by symbolic equations when alpha or beta particles are emitted.
xiii. Describe the effect of magnetic field on an electron beam.

xiv.   Explain by describing an experiment that an electric current in a conductor produces a magnetic field around it.

xv.   Describe the use of electrostatic charging.

SECTION-C

Q.3   a.   Describe the construction and working principle of electroscope.
     b.   Solve problems of image location by spherical mirrors by using mirror formula

Q.4   a.   Construct simple series (single path) and parallel circuits (multiple paths).
     b.   Identify and draw the symbols for the logic gates (NOT, OR, AND, NOR and NAND).

Q.5   a.   Identify that a transformer works on the principle of mutual induction between two coils.
     b.   Explain the meaning of half life of a radioactive material.

Result.pk

PHYSICS SSC-II
TABLE OF SPECIFICATION

Assessment Objectives	Unit 10:	Unit 11:	Unit 12:	Unit 13:	Unit 14:	Unit 15:	Unit 16:	Unit 17:	Unit 18:	Total marks	Percentage
Knowledge based	Q 1 (1): 1 Q 1 (2): 1	Q 1(3): 1			Q 2 (vii): 3 Q 4(a): 6	Q1(7): 1 Q2(xiv): 3	Q4(b): 4 Q2(ix): 3	Q1(9): 1	Q1(10): 1	25	28.7%
Understanding based	Q2(i): 3 Q2(iii): 3	Q 2 (v): 3	Q1(4): 1 Q2(ii): 3 Q3(b): 4	Q 1 (5): 1 Q 3 (a): 6	Q 1(11): 1	Q2(vi): 3 Q5 (a): 6	Q 1(8): 1 Q2(xiii): 3		Q2(x): 3 Q5(b): 4	45	51.7%
Application based				Q 2(iv): 3	Q 1(6): 1 Q 2(viii): 3	Q 1(12): 1 Q2(xv): 3		Q 2 (xi): 3	Q2(xii): 3	17	19.5%
Total marks	8	4	8	10	14	17	11	4	11	87	100%

KEY:

1 (1): 1
Question No (Part No.): Allocated Marks