Version No.			

ROLL NUMBER						

Answer Sheet No._____

Sign. of Candidate _____

Sign. of Invigilator _____

PHYSICS SSC–II (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. A plastic rod is rubbed with a dry cloth. The rod becomes positively charged because it has:

A.	gained electrons	◯	B.	gained neutrons	◯
C.	lost electrons	◯	D.	lost neutrons	◯

2. The part of oscilloscope which controls the number of electrons is:

A.	Electron gun	◯	B.	Grid	◯
C.	Deflecting plates	◯	D.	Fluorescent screen	◯

(3) The instrument which stores charges is:

A.	Electroscope	◯	B.	Capacitor	◯
C.	Resistor	◯	D.	Inductor	◯

(4) The count rate falls to a very low reading by placing a paper between radioactive source and detector. Which type of radiation is emitted by the source?

A.	α- Ray	◯	B.	β-Ray	◯
C.	ϒ-Ray	◯	D.	X-rays	◯

(5) If a radioactive element has half life of 1 day. What fraction of the substance will be left at the end of 2nd day?

A.	1/2	◯	B.	1/4	◯
C.	1/6	◯	D.	1/8	◯

(6) If an object is placed between ‘F’ and ‘2F’ in front of convex lens then image formed is:

A.	real, inverted and diminished	◯
B.	virtual, inverted and diminished	◯
C.	virtual, inverted and magnified	◯
D	real, inverted and magnified	◯

(7) Velocity of sound waves in vacuum is:

A. 332 ms^{-1} ◯ B. 228 ms^{-1} ◯

C. 140 ms^{-1} ◯ D. Zero ms^{-1} ◯

(8) The frequency of microwaves used in microwave oven is 2400 MHz. The wave length of these waves will be:

A. 0.125 m ◯ B. 8.0 m ◯

C. 125 m ◯ D. 7200 m ◯

(9) The part of the DC motor which reverses the direction of current through coil after every half cycle:

A. Armature ◯ B. Commutator ◯

C. Carbon brushes ◯ D. Slip rings ◯

(10) A ball is dropped from a certain height onto the floor, and keeps bouncing. Its motion will be:

A. Rectilinear ◯ B. Random ◯

C. Simple harmonic ◯ D. Rotatory ◯

(11) 2 Ω and 3 Ω are connected in parallel, its equivalent resistance will be:

A. 4 Ω ◯ B. 1.2 Ω ◯

C. 2.5 Ω ◯ D. 5 Ω ◯

(12) Electric Generator works on the principle of:

A. Ohm's law ◯ B. Lenz's law ◯

C. Coulomb's law ◯ D. Faraday's law ◯

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

Time allowed: 2.45 hours Total Marks: 53

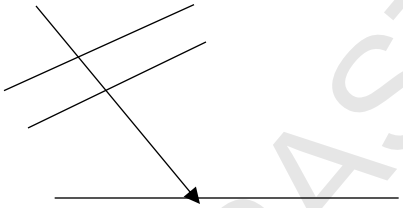
Note: Answer any eleven parts from Section 'B' and attempt any two questions from Section 'C' on the separately provided answer book. Write your answers neatly and legibly.

SECTION – B (Marks 33)

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

i. Figure shows water waves approaching barrier of ripple tank. Draw reflected water waves. If wave has wavelength of 36 cm and speed of 1.2 ms^{-1}, calculate the frequency of waves.

Direction of wave



ii. Differentiate between transverse and longitudinal waves. (Any two)

iii. β-particles ionize the air they pass through less strongly than the same number of α-particles. Suggest why this is so. Why ionization power of β-particles is less than α-particles?

iv. Sound produced on sun is not heard on earth, why?

v. An electric kettle is rated as 2.5 kW, 230 V. Determine a suitable current rating of the fuse to put in the three-pin plug. Choose from 1A, 5 A, 13 A, 30 A and briefly explain.

vi. If pitch of sound is decreased in air. What is the effect on wavelength and wave velocity?

vii. Differentiate between 'AND' gate and 'OR' gate. (Any three)

viii. An object of size 3 cm is placed at a distance of 15 cm from a convex lens. Focal length of lens is 10 cm. Find the position, nature and size of image.

ix. What spectacles will be used by a person suffering from far sightedness? Draw diagram to show correction of this problem.

x. How fine electron beam will be obtained by electron gun?

xi. Which one is more reliable to store data: floppy disc or hard disc? Briefly explain.

xii. Describe one situation from everyday life in which static electricity is dangerous and precautions taken to ensure that charges are discharged safely.

xiii. State Joule's Law. Write its formula.

xiv. Sketch V-I characteristics graphs for
   a. A metallic conductor
   b. A filament lamp
   c. A thermistor

xv. Why force is experienced by a current carrying conductor placed in a magnetic field?

SECTION – C (Marks 20)

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

Q.3 a. Explain nuclear fission reaction in detail. **(6)**

b. The force of repulsion between two identical positive charges is 80 N, when charges are 0.5 m apart. Find the value of each charge. **(4)**

Q.4 a. Define intensity of sound waves. Derive formula to find intensity level of unknown sound. **(1+5)**

b. Find the length of second's pendulum and its frequency. **(4)**

Q.5 a. What is total internal reflection? Describe the use of this phenomenon in optical fibers and endoscopy. **(2+5)**

b. A transformer is used to produce an output of 6V from 220V main supply. Primary coil of the transformer has 2000 turns. Calculate the number of turns in the secondary coil. **(3)**

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PHYSICS SSC-II (2nd Set)

Student Learning Outcomes Alignment Chart
(Curriculum 2006)

SECTION – A

Q.1

1. Describe simple experiments to show the production and detection of electric charge.
2. Describe the basic principle of CRO and make a list of its uses.
3. Describe the construction and working principle of electroscope
4. State, for radioactive emissions: their relative penetrating abilities
5. Explain the meaning of half-life of a radioactive material.
6. Describe the use of a single lens as a magnifying glass and in a camera,
7. Sound waves require a material medium for their propagation.
8. Solve problems by applying the relation $v = f\lambda$.
9. Relate the turning effect on a coil to the action of a D.C. motor.
10. State the conditions necessary for an object to oscillate with SHM.
11. Calculate the equivalent resistance of a number of resistances connected in series and also in parallel.
12. Describe a simple form of A.C. generator.

SECTION-B

Q.2

i. Describe properties of waves such as reflection, refraction and diffraction with the help of ripple tank.
ii. Identify transverse and longitudinal waves in mechanical media.
iii. State, for radioactive emissions: their nature, their relative ionizing effects
iv. Sound waves require a material medium for their propagation.
v. Explain the use of safety measures in household electricity, (fuse, circuit breaker)
vi. Describe the effect of change in amplitude on loudness and the effect of change in frequency on pitch of sound.
vii. State the action of the logic gates in truth table form.
viii. Solve problems of image location by lenses using lens formula.
ix. Describe the correction of short-sight and long-sight.
x. Describe the simple construction and use of electron gun as a source of electron beam.
xi. Describe the use of information storage devices such as hard discs, floppy, compact discs and flash drive.
xii. Describe one situation in which static electricity is dangerous and the precautions taken to ensure that static electricity is discharged safely.
xiii. Describe how energy is dissipated in a resistance and explain Joule's law.
xiv. Sketch and interpret the *V-I* characteristics graph for a metallic conductor, a filament lamp and a thermistor.
xv. Describe that a force acts on a current carrying conductor placed in a magnetic field as long as the conductor is not parallel to the magnetic field.

SECTION-C

Q.3 a. Describe briefly the processes of fission.
b. Solve problems on electrostatic charges by using Coulomb's law.

Q.4 a. Describe what is meant by intensity level and give its unit.
b. Solve problems by using the formula $T = 2\pi\sqrt{l/g}$.

Q.5 a. Describe how total internal reflection is used in light propagation through optical fibres.
b. List the use of transformer (step-up and step-down) for various purposes in your home.

PHYSICS SSC-II (2nd Set)

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	2-ii(3)	4-a(6)	2-ix(3) 5-a(2)	1-3(1)	2-xiii(3)		1-2(1) 2-vii(3)		3-a(3)	25	28.7%
Understanding based	1-10(1) 2-i(3)	1-7(1) 2-iv(3) 2-vi(3)	1-6(1) 2-viii(3) 5-a(5)	1-1(1)	2-v(3) 2-xiv(3)	1-9(1) 2-xv(3)	2-x(3)	2-xi(3)	1-4(1) 1-5(1) 2-iii(3) 3-a(3)	45	51.7%
Application based	1-8(1) 4-b(4)			2-xii(3) 3-b(4)	1-11(1)	1-12(1) 5-b(3)				17	19.5%
Total marks	12	13	14	9	10	8	7	3	11	87	100%

KEY:

2-ii(3)

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