

Version No.			

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

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

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

**PHYSICS SSC-II (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) The resistance of a material increases with temperature. It is a:  
 A. Metal  B. Semiconductor   
 C. Insulator  D. Non metal
- (2) Alpha rays passing through gas produce:  
 A. Evaporation  B. Excitation   
 C. Ionization  D. Radiation
- (3) Output of this circuit is same as \_\_\_\_\_ Gate.



- A. AND  B. NAND   
 C. OR  D. NOR
- (4) Which one of the following is **NOT** a data storing device?  
 A. Hard disc  B. Flash drive   
 C. Floppy disc  D. Processor
- (5) A cloth is used to rub an uncharged plastic rod. Why does the plastic rod becomes negatively charged and cloth becomes positively charged?  
 A. The rod gains electrons and cloth gains positive charge   
 B. The rod gains electrons and cloth loses electrons   
 C. The rod loses electrons and cloth gains electrons   
 D. The rod loses electrons and cloth loses positive charge

- (6) Which one of the following optical device produce small sized image?  
A. Microscope  B. Camera   
C. Periscope  D. Slide projector
- (7) If a positively charged conducting sphere is connected to Earth through a wire. What happens?  
A. Electrons flow from Earth to sphere   
B. Electrons flow from sphere to Earth   
C. Positive charges flow from sphere to Earth   
D. Positive charges flow from Earth to sphere
- (8) Thumb in the Fleming left hand rule indicates the direction of:  
A. Magnetic field  B. Force on conductor   
C. Current  D. Voltage
- (9) The current in a circuit is 0.40 A. Charge that passes a point in the circuit in a period of 15 s will be \_\_\_\_\_.  
A. 2 Coulombs  B. 4 Coulombs   
C. 6 Coulombs  D. 8 Coulombs
- (10) In damping process, amplitude of oscillations \_\_\_\_\_.  
A. Remains constant   
B. Gradually increases   
C. Progressively reduces   
D. Becomes infinite
- (11) Time period of vibrating spring is 2.0 s, its frequency will be:  
A. 0.1Hz  B. 0.5 Hz   
C. 0.2Hz  D. 1.0Hz
- (12) \_\_\_\_\_ is used to locate underwater depths.  
A. Echo   
B. Ultrasounds   
C. Electromagnetic waves   
D. Water Waves
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Federal Board SSC-II Examination  
Physics Model Question Paper  
(Curriculum 2006)

Time allowed: 2.45 hours

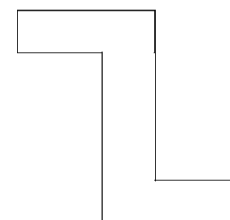
Total Marks: 53

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.

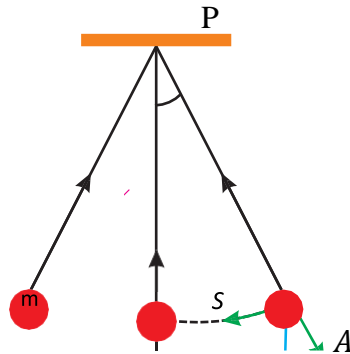
**SECTION – B (Marks 33)**

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

- i. How electroscopes can be used to identify conductor and insulator?
- ii. Describe three uses of capacitors in various electric appliances.
- iii. What changes occur in the nuclei of radioactive element if:
  - a.  $\alpha$ -Ray is emitted
  - b.  $\beta$ -Ray is emitted
  - c.  $\gamma$ -Ray is emitted
- iv. Discuss two main services that internet is providing us?
- v. What happens when a narrow beam of electrons is passed through:
  - a. a uniform electric field
  - b. a uniform magnetic field.
- vi. Which type of lens can be used to burn an object from sun light? Show with the help of ray diagram.
- vii. Figure shows a device used to view the objects that are behind a wall.
  - a. Complete ray diagram using proper positions of two prisms.
  - b. What is the name of this device?
- viii. How does Lenz's law relate with the conservation of energy?
- ix. You have two resistors of  $10\ \Omega$  each, arrange them in circuit to get an equivalent resistance of
  - a.  $20\ \Omega$
  - b.  $5\ \Omega$
- x. What is the effect of the resistance of metal conductor with decrease in temperature?
- xi. Differentiate AC Generator and DC Motor. (Any three)
- xii. Plane waves in ripple tank undergo refraction when they move from deep to shallow water. What changes occur in
  - a. Speed of waves
  - b. Frequency of waves
  - c. Wavelength of waves
- xiii. How knowledge of the properties of sound waves is applied in buildings with respect to acoustics?
- xiv. Considering a CRO, explain:
  - a. Why grid is given negative potential?



- b. Why the filament is heated?  
 c. Why the anode potential is kept positive with respect to the cathode potential?
- xv. A simple pendulum is displaced from mean position as shown in figure.
- a. Draw forces acting on it at point A.  
 b. Which force is providing restoring force?  
 c. What will be the velocity of bob at point A?



### SECTION – C (Marks 20)

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

- Q.3** a. What is compound microscope. Describe it by drawing Ray Diagram and write formula for its magnification. (1+4+1)  
 b. A sound wave has frequency of 2 kHz and wavelength 35 cm. How long will it take to travel 1.5 km? (4)

- Q.4** a. What are radioisotopes? Describe uses of radioisotopes in medicine and industry. (two each) (2+2+2)  
 b. An electric bulb is marked with 220 V, 50 W. Find the resistance of the filament of the bulb. If the bulb is used 5 hours daily, find the energy in kilowatt-hour consumed by the bulb in one month (30 days). (4)

- Q.5** a. Waves transfer energy not matter. Justify this statement with the help of a simple experiment. Also discuss the factors by which rate of energy transfer can be increased. (3+2)  
 b. Two identical capacitors of 100  $\mu\text{F}$  are connected in series with 20 V battery and potential drop. Calculate the charge stored on each capacitor. (5)

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

**SECTION – A**

**Q.1**

- (1) Describe the factors affecting the resistance of a metallic conductor.
- (2) State, for radioactive emissions:
  - their nature
  - their relative ionizing effects
  - their relative penetrating abilities
- (3) State the action of the logic gates in truth table form.
- (4) Describe the use of information storage devices such as audio cassettes, video cassettes, hard discs, floppy, compact discs and flash drive
- (5) Describe simple experiments to show the production and detection of electric charge.
- (6) Describe the use of a single lens as a magnifying glass and in a camera, projector and photographic enlarger and draw ray diagrams to show how each forms an image
- (7) State that there are positive and negative charges.
- (8) 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.
- (9) Describe the concept of conventional current.
- (10) Understand that damping progressively reduces the amplitude of oscillation.
- (11) Solve problems by applying the relation  $f = 1/T$  and  $v = f\lambda$
- (12) Describe how ultrasound techniques are used in medical and industry.

**SECTION-B**

**Q.2**

- i. Describe the construction and working principle of electroscope
- ii. List the use of capacitors in various electrical appliances.
- iii. Describe that the three types of radiation are  $\alpha$ ,  $\beta$  &  $\gamma$ . Explain that an element may change into another element when radioactivity occurs
- iv. Access the risks and benefits to society and the environment of introducing ICT (e.g. effects on personal privacy, criminal activities, health and transfer of information
- v. -Describe the effect of electric field on an electron beam.  
-Describe the effect of magnetic field on an electron beam.
- vi. Describe how light is refracted through lenses.
- vii. Describe the passage of light through a glass prism.
- viii. Explain that the direction of an induced e.m.f opposes the change causing it and relate this phenomenon to conservation of energy.
- ix. Calculate the equivalent resistance of a number of resistances connected in series and also, in parallel.
- x. Describe the factors affecting the resistance of a metallic conductor.
- xi. Describe a simple form of A.C. generator, relate the turning effect on a coil to the action of a D.C. motor.
- xii. Describe properties of waves such as reflection, refraction and diffraction with the help of ripple tank.

- xiii. Describe the importance of acoustic protection.
- xiv. Describe the basic principle of CRO
- xv. Draw forces acting on a displaced pendulum.

### SECTION-C

- Q.3**
  - a. Draw ray diagram of compound microscope and mention its magnifying power.
  - b. Solve problems based on mathematical relations learnt in this unit.
- Q.4**
  - a. Describe what are radioisotopes. What makes them useful for various applications?
  - b. Apply the equation  $E=I.Vt$  to solve numerical problem.
- Q.5**
  - a. Describe that waves are means of energy transfer without transfer of matter.
  - b. Apply the formula for the effective capacitance of a number of capacitors connected in series and in parallel to solve related problems.

**PHYSICS SSC-II (3<sup>rd</sup> Set)**  
**TABLE OF SPECIFICATION**

Assessment Objectives	Unit 10: waves	Unit 11: sound	Unit 12: optics	Unit 13: electrostatics	Unit 14: electricity	Unit 15: electromagnetism	Unit 16: electronic	Unit 17: ICT	Unit 18: Atomic physics	Total marks	Percentage
Knowledge based	Q1(10)1 Q5(a)5	Q1(12)1	Q3(a)6	Q2(2)3		Q1(8)1		Q1(4)1	Q1(2)1 Q4(a)6	25	28.7%
Understanding based	Q2(12)3 Q2(15)3	Q2(13)3	Q1(6)1 Q2(6)3 Q2(7)3	Q1(5)1 Q1(7)1 Q2(1)3	Q1(1)1	Q2(10)3 Q2(8)3 Q2(11)3	Q2(5)3 Q1(3)1 Q2(14)3	Q2(4)3	Q2(3)3	44	50.6%
Application based	Q1(11)1	Q3(b)4		Q5(b)5	Q1(9)1 Q2(9)3 Q4(b)4					18	20.7%
<b>Total marks</b>	13	8	13	13	9	10	7	4	10	87	100%

**KEY:**

Q1(10)1

Question No. (Part No.) Allocated Marks

**Note:** (i) The policy of F.B.I.S.E 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