

BOARD OF SECONDARY EDUCATION, KARACHI

Secondary School Certificate (S.S.C.) Annual Examination

Class X (Science Group)	Physics	2021	English Medium
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Max. Marks: 85 | Time: 2 Hours

SECTION "A" — MULTIPLE CHOICE QUESTIONS (MCQs) Marks: 44

NOTE: (i) Attempt all the Questions. (ii) Write only the answer against the proper number of the question and its part according to question paper. (iii) Each question carries 2 Marks

1. Choose the correct Answer from the options given below for each question:

(i)	The center of gravity of a uniform rod is at the: ☆ end of rod ☆ centre of rod ☆ edge of rod ☆ none of these
(ii)	If $\bar{F}_x = 3N$ and $\bar{F}_y = 4N$, then value of $\bar{F}$ will be: ☆ 1 ☆ 5 ☆ 3 ☆ 7
(iii)	Time period is the reciprocal of: ☆ Frequency ☆ Amplitude ☆ Vibration ☆ None of these
(iv)	An object appears in lighter in water because of one of the properties of water: ☆ Elasticity ☆ Surface tension ☆ Viscosity ☆ Buoyancy
(v)	The speed of light in air is: ☆ 3×10^8 m/s ☆ 3×10^6 m/s ☆ 3×10^{10} m/s ☆ 1.86×10^8 m/s
(vi)	Which of the following is more penetrating? ☆ α – rays ☆ β – rays ☆ γ – rays ☆ none of these
(vii)	One radian is equal to: ☆ 5.73° ☆ 57.3° ☆ 53.7° ☆ 573°
(viii)	Radius of curvature of a concave mirror is 20 cm, its focal length will be: ☆ 20 cm ☆ 15cm ☆ 10 cm ☆ 5cm
(ix)	The only scalar quantity is: ☆ Displacement ☆ Work ☆ Force ☆ Velocity
(x)	If the speed of a body is doubled, its kinetic energy becomes: ☆ Half ☆ Twice ☆ Three Times ☆ Four Times
(xi)	The radiation that produces the sensation of heat is called: ☆ Invisible Light ☆ Ultraviolet Rays ☆ Infrared Rays ☆ Visible Light
(xii)	According to Quantum Theory of light photon are: ☆ Waves ☆ Electromagnetic Waves ☆ Energy Packets ☆ Particles
(xiii)	The relation between electric current and the magnetic field was discovered by: ☆ Newton ☆ Fleming ☆ Faraday ☆ Oersted
(xiv)	If the mass of a body is 5 kg, its weight will be: ☆ 4.9 N ☆ 49N ☆ 9.8N ☆ 0.49N
(xv)	Archimedes principle is applied to determine: ☆ Specific Heat ☆ Specific Gravity ☆ Mass ☆ None of these
(xvi)	The formula of volume of sphere is: ☆ $\pi r^2 l$ ☆ $\pi r^3 l$ ☆ $\frac{4}{3} \pi r^3$ ☆ $\frac{3}{4} \pi r^3$
(xvii)	Magnetic lines of force can easily pass through: ☆ Iron ☆ Air ☆ Water ☆ Wood
(xviii)	If $q = 6\text{cm}$ and $p = 3\text{cm}$ then the magnification of the lens is: ☆ 0.5 ☆ 2 ☆ 4 ☆ 8
(xix)	The unit of capacity of a capacitor is known as: ☆ Coulomb ☆ Volt ☆ Farad ☆ Ohm
(xx)	The branch of science deals with interaction of matter and energy is called: ☆ Astronomy ☆ Chemistry ☆ Physics ☆ Biology
(xxi)	The specific heat of water is: ☆ $4200 \text{ J kg}^{-1} \text{K}^{-1}$ ☆ $2100 \text{ J kg}^{-1} \text{K}^{-1}$ ☆ $500 \text{ J kg}^{-1} \text{K}^{-1}$ ☆ $1000 \text{ J kg}^{-1} \text{K}^{-1}$
(xxii)	The produce N-Type crystals germanium is doped with a substance that is: ☆ Divalent ☆ Trivalent ☆ Tetravalent ☆ Pentavalent

SECTION "B" (Short Answer Question) Marks: 24 — Part "A"

NOTE: Answer any **THREE (3)** questions from this part. All questions carry equal marks. (Marks: 12)

2.	Define equilibrium and state two conditions of equilibrium.	
3.	Define power. Prove that power is the product of force ($\bar{F}$) and velocity ($\bar{V}$)	
4.	Write any four importance of Physics in daily life.	

5.	State the following Laws: (i) Pascal's Law (iii) Newton's Second Law of Motion	(ii) Hook's Law (iv) Laws of reflection	
6.	Write two points of differences between each of the following: (i) P-Type and N-Type substances	(ii) Fission and Fusion Reactions	

Part "B"

NOTE: Answer any **THREE (3)** questions from this part. All questions carry equal marks. (Marks: 12)

7.	A force of 45 N acts on a stationary body for 4 seconds and the body acquires a velocity of 36m/s. Calculate the mass of the body.	
8.	The focal length of a concave mirror is 15cm. Where should an object be placed so as to get its real image whose magnification is 3 times	
9.	The time taken by an electron to complete one rotation about its nucleus is 0.5×10^{-18} second. Convert it into minutes and hours.	
10.	Find the time period of a simple pendulum whose length is 144cm ($g = 9.8 \text{ m/s}^2$)	
11.	Calculate the amount of current passing through an electric heater if it takes 1800 C of charge to heat a room in 3 minutes.	

SECTION "C" — Descriptive-Answer Questions (Marks: 17)

NOTE: Answer any **Two** Questions from this Section. All Questions carry equal marks.

12.	State Newton's Universal Law of Gravitation and derive the equation for the mass of the earth and calculate its value.	
13.	Define co-efficient of volumetric expansion and prove that $\beta = 3\alpha$.	
14.	Define acceleration. Derive the equation of motion $2aS = v_f^2 - v_i^2$	
15.	What do you mean by resolution of vector Define resultant vector and describe the procedure to resolve a vector into its horizontal and vertical components.	

Notes on this reproduction

- Typeset by Tayarri from the printed question paper; no answer key is reproduced. The source sheet is pre-ticked by the publisher, so options are given unmarked.
- Source sheet is a guide reprint: no board monogram and no paper code are printed.
- This paper has a different shape from 2023-2025.** It runs 85 marks over 2 hours: 22 MCQs at 2 marks each (44), a Section B split into Part A and Part B of 12 marks each, and a Section C of 17 marks answering any two of four. The later papers are 60 marks over 3 hours with 12 one-mark MCQs.
- No section prints per-question marks — each states only that questions carry equal marks — so the marks column is left empty.
- MCQ (v) is printed with its first option pushed onto the stem line and the other three on the line below, so the four do not read in a clean row. The order used here follows the Urdu-medium sheet, which sets all four in a normal 2×2 grid.
- Board spellings kept verbatim: "The radiation hat produces" (that), "The produce N-Type crystals" (To produce), "importance of Physics is daily life" (in), "the equation off motion" (of), and "describe the producer" (procedure).