

BOARD OF SECONDARY EDUCATION, KARACHI

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

Class X (Science Group)	Physics	2023	English Medium
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Max. Marks: 60 | Time: 3 Hours

SECTION "A" — MULTIPLE CHOICE QUESTIONS (MCQs) Marks: 12

NOTE: (i) Attempt all the Questions of this Section. (ii) Do not copy down the part questions. Write only the answer against the proper number of the Question and its part according to the question Paper. (iii) Each question carries 1 Marks

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

1.	These type of waves cannot travel through a vacuum: ☆ Sound waves ☆ Infrared waves ☆ Microwaves ☆ X-rays
2.	The main source of energy in the stars is: ☆ chemical reaction ☆ nuclear fission ☆ nuclear fusion ☆ Mechanical energy
3.	The turns ratio of a transformer is 10, it means: ☆ $I_S = 10I_P$ ☆ $N_P = 10 N_S$ ☆ $N_S = 10N_P$ ☆ $V_S = V_P$
4.	The Boolean expression of an AND gate is: ☆ $A.B$ ☆ $A + B$ ☆ $A \times B$ ☆ None of these
5.	Branch of Physics which deals with the charges at rest is called: ☆ Electricity ☆ Electrostatic ☆ Quantum ☆ Magnetism
6.	ICT stands for: ☆ Interacting Computer Theories ☆ Integrated Circular Technology ☆ Intensive Computer Techniques ☆ Information and Communications Technology
7.	$\frac{V^2}{R}$ is the formula to find: ☆ current ☆ power ☆ energy ☆ charge
8.	The presences of dielectric between the plates of capacitors the capacitance of capacitor: ☆ remain constant ☆ decreases ☆ increases ☆ remain unchanged
9.	The focal length of convex lens is 20cm. The power of lens is: ☆ 4 diopter ☆ 5 diopter ☆ 10 diopter ☆ none of these
10.	The colour that least deviated by a prism is: ☆ yellow ☆ green ☆ red ☆ violet
11.	Oscillations are damped due to the presence of: ☆ Linear motion ☆ Restoring force ☆ Fractional force ☆ Mechanical force
12.	Consider isotope ${}_{92}\text{U}^{235}$ of Uranium. The number of neutrons in it is: ☆ 92 ☆ 143 ☆ 145 ☆ 235

SECTION "B" (Short Answer Question) Marks: 24**NOTE:** Answer any **EIGHT** questions from this section. All questions carry equal marks.

2.	Write down three characteristics of electromagnetic waves.	
3.	Write one use of each of the following devices: (i) RADAR (ii) SONAR (iii) LIDAR	
4.	Define wave length and derive formula $\lambda = V \times T$	
5.	Explain with diagram, How to change the magnetic field which causes induced <i>emf</i> in a circuit.	
6.	Define thermionic emission. How emission take place in tungsten filament?	
7.	State the heat dissipation law and derive the equation: $H = I^2 R t$	
8.	The wave moving in the pond have a water length 1.6m, and frequency of 0.80Hz. Calculate the speed of these water wave	
9.	Calculate the speed of sound in air at 30°C. Given that speed of sound at 0°C is 331ms ⁻¹ .	
10.	 convex mirror used for rear view on a automobile has a radius of cu.....ture 4.00m. If a bus is located at 5.00 m from the mirror. Find the image position and nature.	
11.	Two point charges $q_1 = 5\mu\text{C}$ and $q_2 = 3\mu\text{C}$ are placed at a distance of 5cm. What will be the Coulomb's force between them?	
12.	Ruby laser emits the beam of red light having a wavelength 694.3 nm. Calculate its frequency.	
13.	A transformer is needed to convert a main supply 220V supply into a 12V supply. If there are 2200 turns on the primary coil, then find the turns on the secondary coil.	

SECTION "C" (Detailed - Answer Question) (24)**NOTE:** Attempt any **FOUR** questions from this Section. Each question cries (Six) 6 marks.

14.	What are short sightedness and long sightedness? How can these defects be corrected with the help of ray diagrams?	
15.	Write Geiger and Morsden α – <i>scattering</i> experiment and its results in detail.	
16.	What is information technology? Also describe five components of computer based on information system.	
17.	State Coulomb's law and derive the equation: $F = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r^2}$	
18.	Define fission and fusion reactions, with their equations, Explain fission chain reaction with the help of diagram.	
19.	With the help of circuit diagram derive the formula for equivalent resistance of parallel combination of circuit. Also write three advantages of series combination.	

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.
- Section B prints no per-question marks — it states only that questions carry equal marks — so that column is left empty for Section B.
- Section B question 10 has two runs of characters missing on the source sheet, where the ink has dropped out: the article before “convex mirror”, and the middle of what is plainly “curvature”. Both are marked rather than filled in.
- Board spellings kept verbatim: “Fractional force” (frictional), “Morsden” (Marsden), “The presences of dielectric”, and “Each question cries (Six) 6 marks” in the Section C note.
- Only an English-medium printing of this paper was available. If you supply the Urdu-medium sheet it will be published as a separate file.