

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, PESHAWAR

Higher Secondary School Certificate (H.S.S.C.) Examination

PHYSICS · Inter Part-I (Class XI)

Ref: PR XI (01) 21 · Physics (New) ·
Fresh/Reappear

Annual Examination 2021

Total time: 3 hours

SECTION - A (Objective) — Model Paper

Time: 20 minutes · Marks: 18

Each question has four options. Choose the correct option. (The printed instructions for this section are in Urdu; given here in English.)

1	Which of the given is least sub multiple? (A) Micro (B) Pico (C) Femto (D) Giga
2	One horse power is equal to (A) 764 watts (B) 756 watts (C) 746 watts (D) 784 watts
3	The no of significant digit in the number 0.000234 is (A) 3 (B) 4 (C) 7 (D) 2
4	The magnitude of the Resultant of two forces is F. The magnitude of each force is also F. The angle b/w the forces must be (A) 30° (B) 60° (C) 45° (D) 120°
5	$(\hat{i} \times \hat{j}) \times \hat{k} = \dots\dots$ (A) $\hat{i}$ (B) $\hat{j}$ (C) $\hat{k}$ (D) 0
6	If $a \cdot b = 1$, $a = 2$ and $b = 2$ then the angle b/w the two vectors is (A) 45° (B) 30° (C) 75° (D) 60°
7	If $A \cdot B = 0$ then A and B vectors are (A) Perpendicular (B) Parallel (C) Normal (D) None of these
8	A force of 3N and 4N acts on a body at the same time. Which of the given forces cannot be the resultant? (A) 3.5N (B) 0.3N (C) 4N (D) 5N
9	The power output of a lamp is 6 watt. How much energy does the lamp give out in 1 minute? (A) 360J (B) 12J (C) 120J (D) 720J
10	When an electron revolves around the nucleus in a circular path, the centripetal force is provided by (A) Gravitational force (B) Tension (C) Columbic force (D) Frictional force
11	The range of projectile is same for the two angles which are mutually (A) Orthogonal (B) Supplementary (C) Complementary (D) None of these
12	The work done by the body will be negative if the angle b/w force and displacement is (A) 0° (B) Less than 90° (C) Greater than 90° (D) 90°
13	The horizontal component of velocity of a body at highest point during projectile motion will be (A) Maximum (B) Minimum (C) Zero (D) Remain constant
14	If a body is moving in a circle of radius r. Then the angle b/w radius and tangential velocity is (A) 30° (B) 45° (C) 90° (D) 0°
15	A truck takes 80 seconds to travel the first 80m, and another 10 sec to travel a further 70m. What is the average speed? (A) 0.004 m/s (B) 1.6 m/s (C) 4 m/s (D) 5 m/s
16	Which of the given has the same dimensions? (A) Inertia & torque (B) Impulse & momentum (C) Stress and strain (D) Both A & B
17	Maximum work can be done in the process called (A) Isothermal (B) Adiabatic (C) Isobaric (D) Isochoric
18	The triple point of water is (A) 273.16 C (B) 273.16 K (C) 372 K (D) 0 C

Note: Time allowed for Section-B and Section-C is 2 Hours and 40 minutes.

Section - B

Marks: 40

Q-II Attempt any TEN parts. Each part carries FOUR marks.

1. Differentiate between precision and accuracy.
2. What are the practical examples of resonance?
3. Define torque with proper examples.

4. Write the necessary conditions of interference of waves.
5. Define elastic and inelastic collisions and give examples.
6. What is the Huygen's principle of light?
7. A soap bubble looks black when it bursts, why?
8. Derive relation for escape velocity.
9. Write the first and 2nd law of thermodynamics.
10. Define and explain Newton's 2nd law in terms of angular momentum.
11. How equation of continuity is based on the law of conservation of mass?
12. Explain work energy principle.
13. Derive the Stoke's Law for an ideal fluid.

Section - C

Marks: 27

Note: Attempt any THREE questions. All questions carry equal marks.

- Q-III (a) What is heat engine? Derive relation for the efficiency of a heat engine. (5)
- (b) Calculate the change in entropy when 10 kg of water is heated from 90 °C to 100 °C. (specific heat of water is 4180 J mole⁻¹ K⁻¹). (4)
- Q-IV (a) Explain the experimental arrangement for the Young's double slits experiment for the interference of light. (5)
- What are the important relations derived from this experiment about interference of light?
- (b) The speed of sound in air at 0 °C is 332 ms⁻¹. What will be the speed of sound at 22 °C. (4)
- Q-V (a) Find a relation for the terminal velocity of a spherical object falling in a resistive fluid. (4)
- (b) Find the amplitude, frequency and time period of an object oscillating at the end of a spring, if the equation for its position at any instant (t) is given by: $x = 0.25 \cos\left(\frac{\pi}{8}t\right)$. Find also the displacement of the object after 2.0 s. (5)
- Q-VI (a) Find relation for the absolute P.E for a particle of mass m in the earth gravitational field. (5)
- (b) A string 1 m long is used to whirl a 100 g stone in a horizontal circle at a speed of 2 m/s. Find the tension in the string. (4)

Notes on this transcription

1. **Check before publishing:** the objective sheet supplied for 2021 is headed "**Model Paper** · Physics Paper – XI", with no year, not the board's 2021 answer sheet. It was printed next to the 2021 subjective in the same guide (booklet pages P-533 and P-534), so it is included here and labelled "Model Paper" in its section heading. If you would rather publish the genuine 2021 Section A only, send that sheet and this half will be replaced.
2. The model-paper options are printed unshaded; no answer key is included.
3. Q-III(b) gives the specific heat of water in J mole⁻¹ K⁻¹; with a mass in kg the unit should be J kg⁻¹ K⁻¹. Kept as printed. Q.8 of Section A prints "0.3N", which is not a possible resultant of 3 N and 4 N.
4. Board spellings kept verbatim: "Columbic", "Huygen's", "Stoke's Law for an ideal fluid". The 3-hour total time is not printed; it is the standard total (20 min + 2 h 40 min).