

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 (SE) 20 · Physics (New) · Reappear

Supplementary Examination 2020

Total time: 3 hours

SECTION - A (Objective)

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	GPS is a system of satellites. (A) 12 (B) 24 (C) 36 (D) 48
2	Equation of continuity is based on the law of conservation of (A) Energy (B) Mass (C) Momentum (D) Charge
3	The unit of spring constant (K) is (A) Nm^{-1} (B) Nm^{-2} (C) Js^{-1} (D) Kgms^{-2}
4	The distance between adjacent node and antinode is equal to (A) 2λ (B) $\frac{\lambda}{4}$ (C) 4λ (D) $\frac{\lambda}{2}$
5	At resonance, the amplitude of vibration becomes very large when damping is (A) Zero (B) Large (C) Medium (D) Small
6	The speed of sound in a gas is independent of its (A) Pressure (B) Density (C) Temperature (D) Moisture
7	Michelson interferometer is used for the measurement of (A) Frequency (B) Amplitude (C) Wavelength (D) Wave front
8	The work done in the isochoric process is (A) Zero (B) Constant (C) Variable (D) $P\Delta V$
9	The latent heat of fusion of ice is (A) 36000 J Kg^{-1} (B) 336000 J Kg^{-1} (C) 3600 J Kg^{-1} (D) 36.92 J Kg^{-1}
10	The dimension of acceleration is (A) $[\text{LT}^2]$ (B) $[\text{LT}^{-2}]$ (C) $[\text{LT}^{-1}]$ (D) $[\text{MT}^{-1}]$
11	The surface area of a closed sphere of radius 'r' is (A) 4π (B) $\frac{4}{3}\pi r^3$ (C) $2\pi r$ (D) $4\pi r^2$
12	The expression for escape velocity is given by (A) $2gR^2$ (B) $\sqrt{2gR}$ (C) $\frac{gR^2}{2}$ (D) $2gR$
13	Torque has a zero value, if the angle between r and F is (A) 0° (B) 30° (C) 45° (D) 90°
14	What does not change when force is applied on a body? (A) Velocity (B) Mass (C) Position (D) Acceleration
15	Change in momentum is called (A) Pressure (B) Torque (C) Force (D) Impulse
16	If $\theta < 90^\circ$, work done will be (A) Positive (B) Negative (C) Zero (D) None of these
17	If the speed of moving car is doubled, its K.E becomes (A) One fourth (B) Four times (C) Twice (D) Half
18	The moment of inertia of a sphere of radius 'r' is (A) mr^2 (B) $\frac{1}{12}mr^2$ (C) $\frac{2}{5}mr^2$ (D) $\frac{1}{2}mr^2$

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.

- Define dimension of a physical quantity. What are its advantages?
- When an arrow is shot from its bow it has K.E. From where does it get the K.E?
- Briefly discuss vector product of two vectors. What is its physical significance?
- Define impulse and show that how it is equal to change in momentum.

5. Briefly elaborate the concept of the Geo-stationary orbits (GEO).
6. Define power. Show that it is the dot product of force of velocity.
7. Differentiate between streamline flow and turbulent flow.
8. Write a note on viscous Drag and Stokes law?
9. Explain why in SHM, the acceleration is zero when the velocity is greatest?
10. Write four important applications of Doppler's effect.
11. Differentiate between Echo and reverberation.
12. Can we apply Huygen's principle to radar waves? Give reason.
13. Can a room be cooled by leaving the door of an electric refrigerator open? Yes or No. Give reason.

Section - C

Marks: 27

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

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| Q-III (a) Define rectangular components of a vector. Explain how vectors are added by rectangular components method? | (1+4) |
| (b) Discuss Adiabatic Compression in Carnot Cycle. | (4) |
| Q-IV (a) Discuss the equation of continuity for an ideal fluid and derive mathematical expression for it. | (1+4) |
| (b) Velocity of water in 6 inch diameter pipe is 16 m s^{-1} . Calculate the velocity in a 2 inch diameter pipe which connects with it. Both pipes flow at full. | (4) |
| Q-V (a) What is speed of sound? Explain Newton's formula for the speed of sound in air. | (1+4) |
| (b) A mass at the end of spring describes SHM with $T = 0.40 \text{ s}$. Find out $\bar{a}$ when the displacement is 0.04 m . | (4) |
| Q-VI (a) Define projectile motion. Derive expression for time of flight and horizontal range of different angles. | (5) |
| (b) The engine of a JF-17 Thunder Fighter develops a thrust of 3000 N . What horsepower does it at a velocity of 600 m s^{-1} ? | (4) |

Notes on this transcription

1. The source answer sheet arrived with bubbles already ticked by the publisher; options are transcribed unmarked. No answer key is included.
2. This is the 2020 supplementary/reappear sitting (sheet marked "PR XI (SE) 20 · Reappear").
3. Board spellings kept verbatim: "Differentiate", "Huygen's", "dot product of force of velocity", "What horsepower does it". The 3-hour total time is not printed; it is the standard total (20 min + 2 h 40 min).