

INTERMEDIATE PART-I (11th CLASS)**PHYSICS PAPER-I GROUP-I (NEW SCHEME) (SESSION 2015-2017)**

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book, as given in the question paper.**SECTION-I****2. Attempt any eight parts.****8 × 2 = 16**

- (i) How you can find uncertainty in a timing experiment?
- (ii) Check the correctness of relation $v = r\omega$
- (iii) The period of simple pendulum is measured by a stop watch. What type of errors are possible in the time period?
- (iv) Why do we find it useful to have two units for the amount of substance the kilogram and the mole?
- (v) Define position vector and explain it briefly.
- (vi) Is it possible to add a vector quantity to a scalar quantity? Explain.
- (vii) Name three different conditions that could make $\vec{A}_1 \times \vec{A}_2 = 0$
- (viii) Which will be more effective in knocking a bear down?
(i) A rubber bullet or a lead bullet of same momentum, why?
- (ix) What is a Ballistic Missile and Ballistic Trajectory?
- (x) Explain the circumstance in which the velocity v and acceleration of a car are
(i) parallel (ii) perpendicular to one another
- (xi) A man wishes to take a long jump. At what angle he should jump? Explain.
- (xii) A Chimney works best when it is tall. Why?

3. Attempt any eight parts.**8 × 2 = 16**

- (i) Calculate the work done in Kilo Joules in lifting a mass of 10 kg (at a steady velocity) through a vertical height of 10 m.
- (ii) Define escape velocity and write only the formula of escape velocity.
- (iii) A boy drops a glass from a certain height which breaks into pieces. What energy changes are involved?
- (iv) What is meant by Angular Momentum? State only Law of Conservation of Angular Momentum.
- (v) Why does a diver change his body positions before and after diving in the pool?
- (vi) What is the difference between Real and Apparent weight?
- (vii) What happens to the period of simple pendulum if its length is doubled?
- (viii) Describe some common phenomena in which resonance plays an important role.
- (ix) Define free and Forced Oscillations.
- (x) Explain the term Crest and Node.
- (xi) Explain why sound travels faster in warm air than in cold air.
- (xii) Define Transverse and Longitudinal Waves. Also give examples.

4. Attempt any six parts.**6 × 2 = 12**

- (i) What is a Diffraction Grating and Grating Element?
- (ii) What is Optical Rotation or Optical Activity?
- (iii) How would you distinguish between un-polarized and plane-polarized light?

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- (iv) What is Optical Resolution and Resolving Power?
- (v) Draw the ray diagram of astronomical telescope when it is in normal adjustment.
- (vi) Why spark plug is not needed in a diesel engine?
- (vii) Specific heat of a gas at constant pressure is greater than that at constant volume. Why?
- (viii) Write down two statements of 2nd Law of Thermodynamics.
- (ix) What is an Adiabatic Process? Draw a graph between pressure and volume of an adiabatic process and give name of this graph.

SECTION-II

NOTE: - Attempt any three questions.

- 5.(a) Describe Vector Addition by using their rectangular components. Derive the relation for the magnitude and direction of the resultant incase of two vectors and n-vectors. 2 + 1 + 1 + 1 = 5
- (b) A 100 g golf ball is moving to the right with a velocity $20ms^{-1}$. It makes a head on collision with an 8 kg steel, ball initially at rest. Find the velocities of balls after collision. 3
- 6.(a) What is a Geostationary Satellite? Derive an expression for Orbital Radius of the path of Geostationary Satellite. 5
- (b) $100m^3$ of water is pumped from a reservoir into a tank, 10m higher than the reservoir, in twenty minutes. Find the power delivered by the pump if density of water is $1000 Kg m^{-3}$. 3
- 7.(a) Define molar specific heat at constant Volume and Molar specific heat at constant pressure. Prove that $C_p - C_v = R$. 5
- (b) Water flows through a hose, whose internal diameter is 1cm at a speed of $1ms^{-1}$. What should be the diameter of the nozzle if the water is to emerge at $21ms^{-1}$? 3
- 8.(a) Describe the transverse stationary waves in a stretched string. Show that the frequencies of stretched string are quantized. 5
- (b) A simple pendulum is 50 cm long. What will be its frequency of vibration at a place where $g = 9.8ms^{-2}$? 3
- 9.(a) What is Astronomical Telescope? Derive relation for its Magnifying Power. 5
- (b) In a double slit experiment, the second order maximum occurs at $\theta = 0.25^\circ$. The wavelength is $650nm$. Determine the slit separation. 3

PHYSICS PAPER-I GROUP-I (NEW SCHEME) (SESSION 2015-2017)

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) _____ is a derived unit.
 (A) Newton (B) Ampere (C) Candela (D) Kelvin
- (2) If $|\vec{A} \times \vec{B}| = |\vec{A} \cdot \vec{B}|$ then angle between the vectors \vec{A} and \vec{B} is:-
 (A) 0° (B) 90° (C) 45° (D) 180°
- (3) A ball is dropped from rest position from a high tower. The distance covered by it in 2 seconds during freely falling is:- (A) 9.8 m (B) 4.9 m (C) 19.6 m (D) 39.2 m
- (4) The maximum horizontal range of a projectile is given by:-
 (A) $\frac{Vi^2}{g}$ (B) $\frac{Vi^2}{2g}$ (C) $\frac{2Vi}{g}$ (D) $\frac{2Vi^2}{g}$
- (5) Watt - m^{-2} is the unit of :-
 (A) Energy (B) Intensity (C) Power (D) Work
- (6) The angular speed of a flywheel making 120 revolutions per minute is:-
 (A) $2\pi \text{ rad s}^{-1}$ (B) 120 rad s^{-1} (C) $\pi \text{ rad s}^{-1}$ (D) $4\pi \text{ rad s}^{-1}$
- (7) When a body moves in a circle, the angle between linear velocity and angular velocity is:-
 (A) 0° (B) 90° (C) 45° (D) 180°
- (8) The ratio of rotational K.E. of a hoop to its translational K.E. is:-
 (A) 1 : 2 (B) 2 : 1 (C) 1 : 1 (D) 1 : 4
- (9) A 2 metre high tank is full of water. If a hole appears at its middle, then the speed of efflux is:-
 (A) 4.4 ms^{-1} (B) 10 ms^{-1} (C) 6.2 ms^{-1} (D) 20 ms^{-1}
- (10) A spring has a spring constant K . If it is cut in two equal parts, the spring constant of each part will be
 (A) K (B) $2K$ (C) $\frac{K}{2}$ (D) $4K$
- (11) The speed of stars and galaxies can be calculated by:-
 (A) Compton Effect (B) Stefan's Law (C) Doppler's Effect (D) Pascal's Law
- (12) A string of length ℓ fixed at both ends is vibrating in two segments, the wavelength of wave is:-
 (A) $\frac{\ell}{2}$ (B) ℓ (C) 2ℓ (D) 3ℓ
- (13) Stationary waves are generated on a string of length ℓ . If tension is increased, frequency of vibration will:- (A) Decrease (B) Unchanged (C) Half (D) Increase
- (14) Sodium Chloride in a flame gives:-
 (A) Green light (B) Blue light (C) White light (D) Yellow light
- (15) If an object lies at focus point F in front of a convex lens, its image is formed at:-
 (A) $2F$ (B) F (C) $3F$ (D) Infinity
- (16) The process in which temperature of the system remains constant is:-
 (A) Isobaric (B) Isothermal (C) Isochoric (D) Adiabatic
- (17) The efficiency of a Carnot Heat Engine is 100% if temperature of sink T_2 is:-
 (A) $0^\circ C$ (B) $0 K$ (C) $0^\circ F$ (D) $100 K$

INTERMEDIATE PART-I (11th CLASS)**PHYSICS PAPER-I GROUP-II (NEW SCHEME) (SESSION 2015-2017)**

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

**NOTE: - Write same question number and its part number on answer book,
as given in the question paper.**

SECTION-I**2. Attempt any eight parts.****8 × 2 = 16**

- (i) What is the difference between Base Units and Derived Units?
- (ii) Explain Scientific Notation.
- (iii) What is the difference between Absolute uncertainty and Percentage uncertainty?
- (iv) What are the dimensions and units of gravitational constant "G" in the formula $F = G \frac{m_1 m_2}{r^2}$?
- (v) Why a null vector can not be added to zero? Explain.
- (vi) Explain how many minimum number of Geo-stationary satellites are required for global coverage of T.V transmission?
- (vii) What do you know about Right Hand Rule? Also state it.
- (viii) Motion with constant velocity is a special case of motion with constant acceleration. Is this statement true? Discuss.
- (ix) When a bullet is fired from a rifle. Why does the rifle move backward? Discuss it with reference to momentum.
- (x) What is Impulse? Show that impulse and momentum have same units.
- (xi) At highest point in the path of a projectile its speed is minimum, why? Explain it.
- (xii) How the swing is produced in a fast moving cricket ball in air? Explain.

3. Attempt any eight parts.**8 × 2 = 16**

- (i) What sort of energy is in the following? (a) compressed spring (b) water in a high dam
- (ii) A girl drops a cup from a certain height, which breaks into pieces. What energy changes are involved?
- (iii) What is Conservative Field? Give two statements.
- (iv) Differentiate between Tangential Velocity and the Angular Velocity, How these are related with each other?
- (v) Write down at least four uses of Geostationary Satellites.
- (vi) Define Positive and Negative Angular Acceleration. Give examples for each.
- (vii) Differentiate between Instantaneous displacement and amplitude in SHM.
- (viii) In an Oscillating mass spring system if mass is doubled, how its time period will change?
- (ix) What is a path difference? What should be the path difference for constructive and destructive interference?
- (x) As a result of a distant explosion, an observer senses a ground tremor first and then hears the explosion. Explain the time difference.
- (xi) What is the value of frequency and wavelength of waves produced in microwave oven, how it works?
- (xii) Define Mechanical waves and Electromagnetic waves. Give examples of each.

4. Attempt any six parts.

 $6 \times 2 = 12$

- (i) What is meant by Wavefront? Give its types.
- (ii) Describe Selective Absorption Method for obtaining plane polarized light.
- (iii) How would you manage to get more orders of spectra using a diffraction grating?
- (iv) What is a Collimator? Why it is named so?
- (v) What is the difference between Multimode step index and Multimode graded index fibre?
- (vi) Write down Postulates of Kinetic Theory of Gases.
- (vii) What is an Isothermal Process? How it is expressed on a PV – diagram?
- (viii) State Carnot Theorem.
- (ix) What is 2nd Law of Thermodynamics in terms of Entropy?

SECTION-II**NOTE: - Attempt any three questions.**

- 5.(a) Define Scalar Product of two vectors. Also write the characteristics of Scalar Product. 5
- (b) A ball is thrown with a speed of 30 ms^{-1} in a direction 30° above the horizon. Determine the height to which it rises, the time of flight and the horizontal range. 3
- 6.(a) What is a Conservative Force? Show that Gravitational force is a conservative force. 5
- (b) The earth rotates on its axis once a day. Suppose by some process, the earth contracts so that its radius is only half as large as at present. How fast will it be rotating then? 3
- 7.(a) State Bernoulli's equation and apply this equation to derive Torricelli's theorem and Venturi Relation. $1 + 2 + 2 = 5$
- (b) What is the average translational Kinetic Energy of molecules in a gas at temperature 27°C ? (The value of "K" Boltzman constant is $1.38 \times 10^{-23} \text{ JK}^{-1}$) 3
- 8.(a) How the speed of Sound was calculated by Newton and it was corrected by Laplace? 5
- (b) Find the amplitude, frequency and period of an object vibrating at the end of a spring' if the equation for its position as a function of time t is given as:-

$$x = 0.25 \text{ Cos} \left(\frac{\pi}{8} \right) t$$
 3
- 9.(a) Calculate the magnification of simple microscope by using rays diagram. 5
- (b) Light of wavelength 450 nm is incident on a diffraction grating on which 5000 lines/cm have been ruled. How many orders of spectra can be observed on either side of the direct beam? 3

PHYSICS PAPER-I GROUP-II (NEW SCHEME) (SESSION 2015-2017)

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Q.No.1

- (1) $Kgm^{-1}s^{-2}$ is the unit of:- (A) Force (B) Work (C) Pressure (D) Momentum
- (2) When a force of 100 N is acting on an object along x - axis then its vertical component will be:-
(A) 50 N (B) 25 N (C) 10 N (D) 0 N
- (3) A body covers a distance of 10 m in 1 sec with a constant velocity of $10ms^{-1}$.
Acceleration produced by the body is:- (A) Zero ms^{-2} (B) $2ms^{-2}$ (C) $5ms^{-2}$ (D) $10ms^{-2}$
- (4) When velocity time graph is a straight line parallel to time axis then:-
(A) Velocity is zero (B) Acceleration is constant (C) Acceleration is zero (D) Velocity is variable
- (5) The numerical value of solar constant is given by:-
(A) $1kWm^{-2}$ (B) $1.4kWm^{-2}$ (C) $1.67kWm^{-2}$ (D) $2kWm^{-2}$
- (6) In rotational motion the analogous of mass is:-
(A) Angular momentum (B) Inertia (C) Moment of inertia (D) Force
- (7) A 60 kg man in an elevator is moving up ward with an acceleration of $9.8ms^{-2}$.
The apparent weight of the man:-
(A) Increases (B) Decreases (C) Remains constant (D) Becomes zero
- (8) The ratio between the escape velocity and orbital velocity is:-
(A) $\sqrt{2} : 1$ (B) $\sqrt{2} : 2$ (C) $1 : \sqrt{2}$ (D) 1 : 1
- (9) The dimensions of volume flow rate of fluid are:-
(A) $[LT^{-1}]$ (B) $[L^2T^{-2}]$ (C) $[L^3T^{-1}]$ (D) $[L^2T^{-2}]$
- (10) When one - fourth of the cycle of a vibrating body is completed then the phase change in it is:-
(A) $\frac{\pi}{4}$ radian (B) $\frac{\pi}{2}$ radian (C) $\frac{3\pi}{2}$ radian (D) π radian
- (11) Beats are produced due to:-
(A) Diffraction of sound waves
(B) Superposition of sound waves (C) Polarization of waves (D) Bernoulli's effect
- (12) If 20 waves passes through the medium in 2 sec with a speed of $10ms^{-1}$ then the wavelength is:-
(A) 200 m (B) 2 m (C) 1 m (D) 0.5 m
- (13) The state of human blood flow can be found by using:- (A) Newton's formula of speed of sound
(B) Interference of sound (C) Phenomena of beats (D) Doppler's effect of sound
- (14) The fringe spacing in a double slit experiment can be increased by decreasing:-
(A) Wavelength of light (B) Width of slits
(C) Slit separation (D) Distance between the slits and the screen
- (15) The formula $\alpha_{min} = 1.22 \frac{\lambda}{D}$ for resolving power of lens was given by:-
(A) Newton (B) Michelson (C) Young (D) Rayleigh
- (16) The increase in thermal pollution of environment means:- (A) Increase in the entropy
(B) Decrease in the entropy (C) Entropy remains constant (D) Entropy becomes zero
- (17) A gas performs 10 J of work while expanding adiabatically. The change in its internal energy is:-
(A) 10 J (B) -10 J (C) 100 J (D) -200 J

**BOARD OF INTERMEDIATE AND SECONDARY EDUCATION,
MULTAN**

OBJECTIVE KEY FOR INTER (PART-I / II) Annual Examination, 2017.

Name of Subject Physics

Session 2015-17

Group: 1st New Scheme

Group: 2nd

Q. Nos.	Paper Code	Paper Code	Paper Code	Paper Code
	2471	2473	2475	2477
1.	A	D	C	B
2.	C	D	A	D
3.	C	B	B	B
4.	A	B	C	C
5.	B	A	B	A
6.	D	C	D	B
7.	B	C	D	C
8.	C	A	D	B
9.	A	B	B	D
10.	B	D	B	D
11.	C	B	A	D
12.	B	C	C	B
13.	D	A	C	B
14.	D	B	A	A
15.	D	C	B	C
16.	B	B	D	C
17.	B	D	B	A
18.	/	/	/	/
19.	/	/	/	/
20.	/	/	/	/

Q. Nos.	Paper Code	Paper Code	Paper Code	Paper Code
	2472	2474	2476	2478
1.	C	D	A	B
2.	D	A	C	C
3.	A	B	B	A
4.	C	C	B	A
5.	B	D	C	C
6.	C	A	D	B
7.	A	C	C	B
8.	A	B	D	C
9.	C	C	A	D
10.	B	A	B	C
11.	B	A	C	D
12.	C	C	D	A
13.	D	B	A	B
14.	C	B	C	C
15.	D	C	B	D
16.	A	D	C	A
17.	B	C	A	C
18.	/	/	/	/
19.	/	/	/	/
20.	/	/	/	/