

INTERMEDIATE PART-I (11th CLASS)

PHYSICS PAPER-I

TIME ALLOWED: 3.10 Hours

MAXIMUM MARKS: 83

SUBJECTIVE

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 are the dimensions and units of Gravitational Constant G in the formula $F = G \frac{m_1 m_2}{r^2}$?
- (ii) The period of simple pendulum is measured by a stop watch. What type of errors are possible in the time period?
- (iii) State principle of Homogeneity of Dimensions.
- (iv) How many years are there in one Second?
- (v) Two vectors have unequal magnitudes. Can their sum be zero? Explain briefly.
- (vi) The vector sum of three vectors gives a zero resultant. What can be the orientation of these Vectors?
- (vii) Suppose the sides of a closed polygon represent vector arranged head to tail. What is the sum of these Vectors?
- (viii) At what point or points in its path does a projectile have its minimum speed, its maximum speed?
- (ix) Define Isolated System. Give its one example.
- (x) Motion with constant velocity is a special case of motion with constant acceleration. Is this statement true? Discuss.
- (xi) Can the velocity of an object reverse the direction when acceleration is constant? If so, give an example.
- (xii) Explain the working of a carburetor of a motor car using by Bernoulli's Principle.

3. Attempt any eight parts.

8 × 2 = 16

- (i) A girl drops a cup from a certain height, which breaks into piece, what energy changes are involved?
- (ii) An object has 1 J of Potential energy. Explain what does it mean?
- (iii) Define Solar Constant, write its Value.
- (iv) When mud flies off the tyre of a moving bicycle, in what direction does it fly? Explain.
- (v) Explain what is meant by centripetal force and why it must be furnished to an object, if the object is to follow a circular path?
- (vi) What is difference between Orbital and Spin Angular Momentum?
- (vii) Name two characteristics of Simple Harmonic Motion.
- (viii) Describe some common Phenomena in which resonance plays an important role.
- (ix) Define Time Period and Frequency.
- (x) Why does Sound travel faster in Solid than in gases?
- (xi) How should a sound source move with respect to an observer so that the frequency of its sound does not change?
- (xii) Define Beats and give its frequency formula.

4. Attempt any six parts.

6 × 2 = 12

- (i) How would you distinguish between Un-Polarized and Plane-Polarized lights?
- (ii) Write the two conditions to observe the Phenomenon of Interference of light waves.
- (iii) Why the Polaroid Sunglasses are better than Ordinary Sunglasses?
- (iv) What is "single mode step index fibre"?
- (v) One can buy a cheap microscope for use by the children. The images seen in such a microscope have coloured edges. Why is this so?
- (vi) Can the mechanical energy be converted completely into heat energy? If so give an example.
- (vii) Derive the Charles Law from Kinetic Theory of Gases.
- (viii) Is it possible to construct a heat engine that will not expel heat into the atmosphere? Explain your answer.
- (ix) What do you mean when we say "Entropy mean degradation of energy"?

SECTION-II

NOTE: - Attempt any three questions.

5.(a) What is Projectile Motion? Derive expression for:-

- (i) Maximum height (ii) Range of projectile

5

- (b) Find the projection of vector $\vec{A} = 2\hat{i} - 8\hat{j} + \hat{k}$ in the direction of the vector $\vec{B} = 3\hat{i} - 4\hat{j} - 12\hat{k}$

3

P.T.O

- 6.(a) What is a Geostationary Orbit? Derive the relation for its radius and find its value. 5
- (b) A child starts from rest at the top of a slide of height 4.0m. If he reaches the bottom with a speed of $6ms^{-1}$, What percentage of his total energy at the top of the slide is lost due to friction? 3
- 7.(a) State and derive Bernoulli's Equation. 5
- (b) Calculate the entropy change when 1.0kg ice at $0^{\circ}C$ melts into water at $0^{\circ}C$. Latent heat of fusion of ice is $L_f = 3.36 \times 10^6 J kg^{-1}$. 3
- 8.(a) Describe the effect of temperature on the speed of sound in a gas by proving that $V_t = V_0 + 0.61t$. 5
- (b) Find the length and frequency of a Simple Pendulum at Karachi, if Time period 'T' is 1sec. 3
- 9.(a) What is Compound Microscope. Derive a relation for magnifying power of a compound microscope. 5
- (b) A monochromatic light of $\lambda = 588nm$ is allowed to fall on the half silvered glass plate G_1 , in the Michelson's interferometer. If mirror M_1 is moved through $0.233mm$, how many fringes will be observed to shift? 3

SECTION - III (PRACTICAL PART)

10.(A) Write answers of any four parts.

4 x 2 = 8

- (i) Derive formula $g = \frac{4\pi^2 x}{T^2}$ for vertical hanging mass with spring.
- (ii) Define Second Pendulum.
- (iii) Define Resultant Vector.
- (iv) Derive the Formula $g = \frac{2S}{t^2}$ use in electronic time apparatus.
- (v) Define like and unlike Parallel Forces.
- (vi) Why does a paper rider fly off at certain fixed length of string in Sonometer?
- (vii) Why end correction is not used in two resonance positions by using resonance tube?
- (viii) State Snell's law.

(B) Write down the brief procedure for measuring volume of cylinder by Vernier callipers. 3

OR

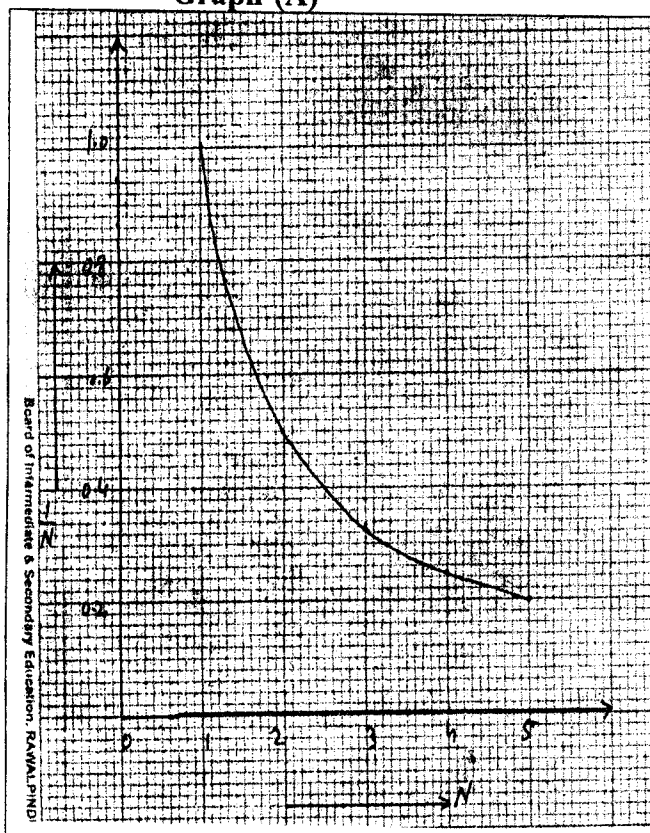
Write down the brief procedure for measuring focal length of convex lens by displacement method.

(C) Answer the following questions on the basis of graph drawn below.

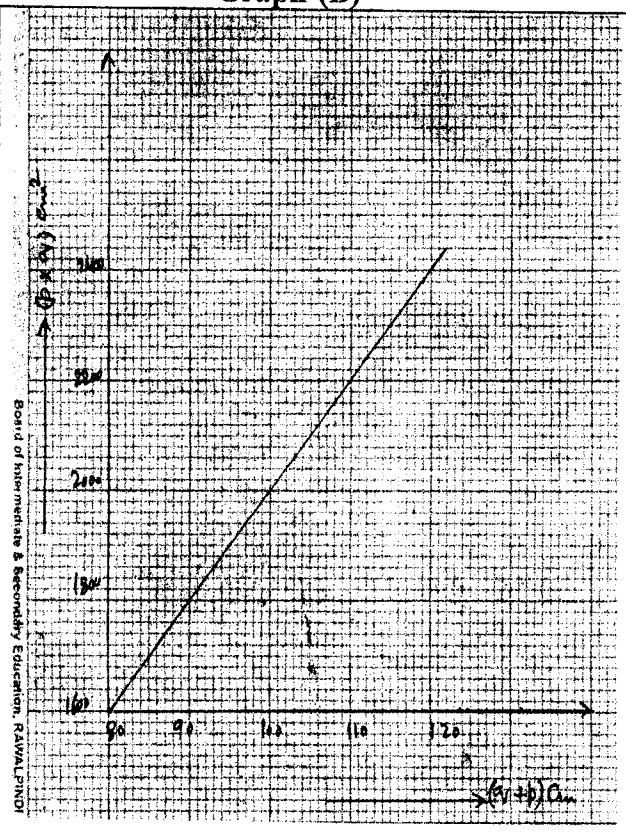
2 + 2

- (a) (i) What is the type of graph? OR (b) (i) Find slope of graph.
- (ii) Find value of $\frac{1}{2.5}$ and confirm by calculator. (ii) What does the slope represent?

Graph-(A)



Graph-(B)



PHYSICS PAPER-I

TIME ALLOWED: 20 Minutes

MAXIMUM MARKS: 17

OBJECTIVE

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) A measurement 0.0173 has significant figures:-
(A) 3 (B) 4 (C) 5 (D) 2
- (2) The analogue of force in rotational motion is :-
(A) Torque (B) Angular momentum (C) Moment of inertia (D) Acceleration
- (3) _____ is not conservative.
(A) Electric field (B) Magnetic field (C) Nuclear field (D) Gravitational field
- (4) The irregular and unsteady flow is called:-
(A) Laminar flow (B) Streamline flow (C) Turbulent flow (D) Normal flow
- (5) The acceleration in S.H.M is proportional to the:-
(A) Angular velocity (B) Displacement (C) Velocity (D) Acceleration
- (6) Michelson devised an instrument using idea of:-
(A) Diffraction of rays (B) Interference of rays (C) Polarization of rays (D) Dispersion of rays
- (7) The instrument used to measure speed of light is called:-
(A) Spectrometer (B) Telescope (C) Interferometer (D) Microscope
- (8) The efficiency of petrol engine is:-
(A) 35% (B) 25% to 30% (C) 40% (D) 45%
- (9) If ice melts, the entropy is:-
(A) Decreased (B) Increased (C) Remains the same (D) Finite
- (10) Three laws of motions are given by:-
(A) Einstein (B) Newton (C) Abu Ali Sena (D) Faraday
- (11) An un-powered and un-guided missile is called:-
(A) Guided missile (B) Powered missile (C) Ballistic missile (D) Un-powered missile
- (12) The moment of inertia is measured in:-
(A) $Kg - m^{-2}$ (B) $Kg m^2$ (C) $N. S$ (D) $Rad / Second$
- (13) The orbital momentum is given by:-
(A) Lr^2v (B) $L_0 = mrv$ (C) $L_0 = m^2va$ (D) $L_0 = m^2 r^2 v^2$
- (14) Torque acting on a body is given by:-
(A) $\tau = I^2\alpha$ (B) $\tau = I\alpha^2$ (C) $\tau = I^2\alpha^2$ (D) $\tau = I\alpha$
- (15) With increase in temperature of medium, speed of sound:-
(A) Decreases (B) Increases (C) Remains same (D) Attains constant
- (16) The additive property of waves is called:-
(A) Superposition (B) Beats (C) Interference (D) Stationary waves
- (17) The waves which die very quickly in fluids are called:-
(A) X-rays (B) Sound waves (C) Heat waves (D) Light waves

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PHYSICS PAPER-I

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SECTION - I

For Question No2, 3 and 4 of Explanation OR idea/Reason is given then award the max.

Marks. (i) 3. I unit of G (01 mark), Dimensions (01) mark

Q. NO2:- (ii) Two errors (01 + 01) marks

(iii) Statement of principle (02) marks

(iv) To show that, one second = 3.17×10^{-8} years (02 marks)

(v) Explanation Briefly (02 marks)

(vi) Explanation (02) marks

(vii) Explanation Briefly (02) marks

(viii) max. speed (01) mark, min. speed 01 mark

(ix) Definition + Example. (01 + 01) marks

(x) yes + Explanation (01 + 01) marks

(xi) yes + Example (01 + 01) marks

(xii) Explanation (02) marks

Q. NO3:- (i) Briefly Explanation — (02) marks

(ii) Explanation (02 marks)

(iii) Definition of Solar constant + value (01 + 01) marks

(iv) Explanation Briefly. (02 marks)

(v) Explanation (02 marks)

(vi) Definitions OR Differences — (02 marks)

(vii) Two characteristics of SHM (01 + 01) marks

(viii) Any two phenomena (01 + 01) marks

(ix) Definition of (Time period + frequency) (01 + 01) marks

(x) Explanation (02 marks)

(xi) Explanation (02 marks)

(xii) Definition + Formula. (01 + 01) marks

general instructions

Shahin Ahmad Bhatti
Govt. College Kabirowala
0300 6305057

2

ثانوی و اعلیٰ ثانوی تعلیمی بورڈ، ملتان

موضوع: Physics 14-11-16 پرچہ: I گروپ:

Page No 2

جنرل ہدایات برائے مارکنگ Key نیوکیٹم اولڈ کیٹیم (مارکنگ کیٹیم)

انٹری پارٹ فرسٹ ایڈیشن 2016ء

- Q. NO4:- (i) Definitions OR Differences (01+01) marks
(ii) Two Conditions of Interference (01+01) marks
(iii) Any Two points (02 marks)
(iv) Definitions (02 marks)
(v) Briefly Explanation (02) marks
(vi) yes + Example (01+01) marks
(vii) Derivation the Charles Law (02) marks
(viii) No + Explanation (01+01) marks
(ix) Briefly Explanation (02) marks

SECTION - II

- Q. NO5 (a) Definition + max. Height + Range (01+02+02) marks
(b) Data + Formula (01) mark, Substitution values (01) mark
Calculation of correct Ans. with units (01) mark

$$A \cos \theta = \frac{\vec{A} \cdot \vec{B}}{B} \Rightarrow \boxed{A \cos \theta = 2} \text{ Ans}$$

- Q. NO6 (a) Definition + Derivation of radius + value (01+03+01) marks

- (b) Data + Formula (01) mark, Sub. Values (01) mark
Calculation of correct Ans with units (01) mark

$$\% \text{ Loss of energy} = \frac{\text{Loss of Energy}}{\text{Total Energy}} \times 100 = 53.5\% = 54\%$$

$$\boxed{\% \text{ Loss of Energy} = 53.5\% \text{ OR } 54\%} \text{ Ans}$$

- Q. NO7 (a) Statement + Derivation (01+04) marks

- (b) Data + Formula (01) mark, Sub. Values (01) mark
Calculation of correct Ans. with units (01) mark

$$\Delta S = \frac{\Delta Q}{T} = \frac{m L_f}{T} = \boxed{1.23 \times 10^3 \frac{J}{K}} \text{ Ans.}$$

Shahidul Haq
Govt. W. H. Ssl. College
03077360030

Q.No8 (a) Describe effect of Temp + prove that

$$V_t = V_0 + 0.61t \quad (01 + 04) \text{ marks}$$

(b) Data + Formula (01-mark), sub-values (01-mark)

Calculation of correct Ans. with units (01-mark)

$$l = \frac{gT^2}{4\pi^2} \Rightarrow \boxed{l = 0.25 \text{ m}} \text{ Ans. } \boxed{f = \frac{1}{T} = \frac{1}{1.0} = 1 \text{ Hz}} \text{ Ans.}$$

Q.No9(a) Definition + Derivation of mag. Power (01+04) mark.

(b) Data + Formula (01-mark), sub-values (01-mark)

Calculation of correct Ans with units (01-mark)

$$m = \frac{2L}{\lambda} \Rightarrow \boxed{m = 792} \text{ Ans.}$$

SECTION - III

Q.No10 (A) If idea/Reason OR Explanation is given

in Answers give max marks $2 \times 4 = 8 \text{ marks}$

(B) Max. marks should be given if Important steps with Formula are written for Brief procedure (03 marks)

(C) Graph (A)

(i) The graph show the Portion of hyperbola (02) marks

(ii) The value of $\frac{1}{2.5}$ from the graph = 0.4

The value of $\frac{1}{2.5}$ by calculations = 0.4 (02) marks

OR

Graph B

(i) Slope = $\frac{p \times q}{p+q} = 20 \text{ cm} \Rightarrow \boxed{\text{slope} = 20 \text{ cm}} \text{ Ans.}$ (02) marks

(ii) The slope of the graph represents the focal length of lens which is 20cm $\Rightarrow \boxed{f = 20 \text{ cm}} \text{ Ans.}$ (02 marks)

Signature

MEHR EJAZ AHMAD
SSS (Physics)
GHSS Qadisi Nur Khan
Muz Tan

Shahid Jinnah
Govt. W. H. S.S. College
Mullan 03077360030

General Instructions
Bashir Ahmad
Govt. College Kabirwala
0300 6805057

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION,

MULTAN

OBJECTIVE KEY FOR INTER (PART I/ II) Supply Examination, 2016.

Name of Subject PHYSICS

Session _____

Q. Nos.	Paper Code	Paper Code	Paper Code	Paper Code
	6471	6473	6475	6477
1.	A	B	C	C
2.	A	A	B	B
3.	C	A	B	B
4.	C	A	B	C
5.	B	A	C	B
6.	B	C	B	B
7.	C	C	B	B
8.	B	B	D	C
9.	B	B	B	B
10.	B	C	A	B
11.	C	B	A	D
12.	B	B	A	B
13.	B	B	A	A
14.	D	C	C	A
15.	B	B	C	A
16.	A	B	B	A
17.	A	D	B	C
18.	/	/	/	/
19.	/	/	/	/
20.	/	/	/	/

سرٹیفیکیٹ بابت تصحیح سوالیہ پرچہ/ مارکنگ Key

ہم نے مضمون Physics پرچہ I گروپ ایم ایم سکیم انٹرمیڈیٹ/ انٹرمیڈیٹ امتحان 2016ء کا سوالیہ پرچہ تصحیح کر کے (Subjective & Objective) کو بنظر عین چیک کر لیا ہے یہ پرچہ سلیبس کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ پرچہ میں کسی قسم کی کوئی غلطی نہیں ہے۔ ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کر لیا ہے یہ Version آپس میں مطابقت رکھتے ہیں اور سلیبس (Syllabus) کے مطابق بھی ہیں۔ نیز اس پرچہ کی Key کی بابت بھی تصدیق کی جاتی ہے کہ یہ بھی درست بنائی گئی ہے۔ اس میں بھی کسی قسم کی کوئی غلطی نہیں ہے۔ مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات وصول کر کے ان کا بغور مطالعہ کر لیا ہے اور ان کی روشنی میں Key بنائی ہے۔

PREPARED & CHECKED BY

Sr. No.	Name	Designation	Institution	Mobile No.	Signature
1-	Shahmehmal	A.P	Govt W.H.S.S. ^{College}	03077360030	
2-	Bashir Ahmad Bhatti	A.P	Govt. College Kabirwala	03006305057	
3.	MEHR EJAZ AHMAD	SSS (Physics)	Govt. H.S.S. Qadirpur Khan Multan	03006347269	