INTERMEDIATE PART-I (11th CLASS)

PHYSICS   PAPER-I   GROUP-I   (NEW SCHEME)

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.** $8 \times 2 = 16$

(i) What is the cause of random error and how can it be reduce?

(ii) If a precise measurement is also an accurate measurement. Explain your answer.

(iii) Is it possible to add 5 in $2\hat{i}$? Explain.

(iv) Can the magnitude of a vector ever be negative? Explain.

(v) If a vector lies in $x - y$ plane. Is it possible, one of its rectangular components is zero? Explain.

(vi) Define conservative force. Give at least its two examples.   (vii) Explain Geyser and Aquifer.

(viii) Why a fog droplet appear to be suspended in air?

(ix) Derive the relation between speed and pressure of the fluid.

(x) What is damping and give its one application.

(xi) How does resonance play role in heating and cooking food?

(xii) If mass of a simple pendulum is doubled, what is the effect on its period? Explain.

3. **Attempt any eight parts.** $8 \times 2 = 16$

(i) What are two differences between uniform and variable velocity?

(ii) Can the velocity of an object reverse the direction when acceleration is constant? If so, give an example.

(iii) Explain the two differences between Elastic and in-elastic collision.

(iv) How would you find the distravelled by velocity-time graph?

(v) Show that: $S = r\theta$ (where θ is in radian)

(vi) Show that velocity of hoop rolling down on an inclined plane is; $v = \sqrt{gh}$

(vii) What is meant by moment of inertia? Explain.

(viii) Why does a diver change his body positions before and after diving in the pool?

(ix) Write down two differences between Transverse and Longitudinal waves.

(x) Explain the terms Crest and Trough

(xi) Why does sound travel faster in solids than in gases?

(xii) How are beats useful in tuning musical instruments? Explain.

4. **Attempt any six parts.** $6 \times 2 = 12$

(i) How is the distance between interference fringes affected by the separation between the slits of Young's experiment? Can fringes disappear?

(ii) An oil film spreading over a wet footpath shows colours. Explain how does it happen?

(iii) Write two differences between interference and diffraction phenomena of light waves.

(iv) Describe two causes of power losses in optical fibre during transmission of light signals.

(v) Why would it be advantageous to use blue light with a compound microscope?

(vi) Specific heat of a gas at constant pressure is greater than specific heat at constant volume. Why?

(vii) Does entropy of a system increase or decrease due to friction? Explain.

(viii) Give an example of a natural process that involves an increase in entropy.

(ix) Define triple point of water and write its equation.

SECTION-II

NOTE: - Attempt any three questions. $3 \times 8 = 24$

5.(a) What is the difference between Petrol Engine and Diesel engine? Explain the four stroke of Petrol Engine.   5

(b) Derive a relation for the time period of a simple pendulum by using Dimensional analysis.   3

6.(a) What is Torque? Derive an expression for torque due to force acting on a rigid body.   5

(b) A bomber dropped a bomb at a height of 490m when its velocity along the horizontal was 300 Kmh^{-1}. How long was it in air?   3

7.(a) Explain work done in gravitational field. Also define conservative field.   5

(b) A stationary wave is established in a string which is 120cm long and fixed at both ends. The string vibrates in four segments, at a frequency of 120Hz. Determine its wavelength and the fundamental frequency.   3

8.(a) Define simple harmonic motion. Prove that the projection of a particle moving along a circular path performs simple harmonic motion.   5

(b) What is the least speed at which an aeroplane can execute a vertical loop of 1km radius so that there will be no tendency for the pilot to fall down at the highest point?   3

9.(a) Discuss the Young's double slit experiment and determine the position where the dark and bright fringes will be observed.   5

(b) A glass light pipe in air will totally internally reflect a light ray if its angle of incidence is at least $39°$. What is the minimum angle for total internal reflection if pipe is in water? (Refractive index of water = 1.33)   3

PHYSICS   PAPER-I   GROUP-I   (NEW SCHEME)

TIME ALLOWED: 20 Minutes   **OBJECTIVE**   MAXIMUM MARKS: 17

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Q.No.1

(1) Which is the base quantity?

(A) Area   (B) Volume   (C) Length   (D) Density

(2) If least count is $10 kg$, then $8.00 \times 10^3 kg$ has significant figures:

(A) 1   (B) 2   (C) 3   (D) 4

(3) If the initial velocity of a projectile becomes doubled. The time of flight will become:-

(A) Double   (B) Same   (C) 3 times   (D) 4 times

(4) Unit vector of a given vector $\overline{A} = 4\hat{i} + 3\hat{j}$ is:

(A) $\dfrac{4\hat{i} + 3\hat{j}}{25}$ (B) 1   (C) $\dfrac{4\hat{i} + 3\hat{j}}{5}$ (D) $\sqrt{\dfrac{4\hat{i} + 3\hat{j}}{5}}$

(5) Time of flight of a projectile is:

(A) $\dfrac{Vi \sin\theta}{g}$ (B) $\dfrac{Vi \sin\theta}{2g}$ (C) $\dfrac{Vi^2 \sin\theta}{g}$ (D) $\dfrac{2Vi \sin\theta}{g}$

(6) Tidal energy is due to the gravitational pull of:

(A) Sun   (B) Moon   (C) Earth   (D) Mars

(7) Moment of inertia for a particle is given by:

(A) $m^2 r^2$ (B) mr^2 (C) $m^2 r$ (D) mr^{-2}

(8) S.I unit of angular momentum is:

(A) $Kg\, m^2 s^{-1}$ (B) $Kg\, m^{-2} s^{-1}$ (C) $Kg\, m^{-1} s$ (D) $Kg\, m^2 s^{-2}$

(9) Fluid dynamics is the study of the behaviour of:

(A) Fluid at rest   (B) Liquids at rest   (C) Liquids in motion   (D) Liquids and gasses in motion

(10) Blood has density equal to that of:

(A) Oil   (B) Honey   (C) Thick Tar   (D) Water

(11) Acceleration in S.H.M is proportional to the:

(A) Velocity   (B) Displacement   (C) Time period   (D) Frequency

(12) If speed of sound in air at a given pressure is "V" and now if pressure is doubled then new speed will be:

(A) $2V$ (B) $V/2$ (C) V (D) $4V$

(13) Stars moving away from Earth show:

(A) Red shift   (B) Blue shift   (C) Green shift   (D) Yellow shift

(14) In case of point source, shape of the wavefront is:

(A) Plane   (B) Spherical   (C) Circular   (D) Ellipitical

(15) Magnifying power of telescope is:

(A) $f_o + f_e$ (B) $f_o - f_e$ (C) $\dfrac{f_o}{f_e}$ (D) $\dfrac{f_e}{f_o}$

(16) In case of adiabatic process, the 1ˢᵗ law of thermodynamic is written as:

(A) $W = \Delta U$ (B) $W = Q$ (C) $W = Q - \Delta U$ (D) $W = -\Delta U$

(17) If temperature of sink is decreased, the efficiency of Carnot engine.

(A) Decreases   (B) Increases   (C) Remain same   (D) First increases then decreases

PHYSICS   PAPER-I   GROUP-I   (NEW SCHEME)

TIME ALLOWED: 20 Minutes   **OBJECTIVE**   MAXIMUM MARKS: 17

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Paper Code Number: **2475**

2019 (A)   Roll No. _____

INTERMEDIATE PART-I (11ᵗʰ CLASS)

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INTERMEDIATE PART-I (11ᵗʰ CLASS)

PHYSICS   PAPER-I   GROUP-II (NEW SCHEME)

TIME ALLOWED: 2.40 Hours   **SUBJECTIVE**   MAXIMUM MARKS: 68

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as given in the question paper.

SECTION-I

2.   **Attempt any eight parts.** $8 \times 2 = 16$

(i)   What is Radian? Explain with diagram.

(ii)   Calculate the 1 light year in metres.

(iii)   How does the direction of a vector specified in three dimensions? Explain with diagram.

(iv)   Show that: $\hat{i} \cdot \hat{j} = \hat{j} \cdot \hat{k} = \hat{k} \cdot \hat{i} = 0$

(v)   Is it possible to add a vector quantity to a scalar quantity? Explain.

(vi)   Write two differences between conservative and non-conservative forces.

(vii)   Calculate the work done in kilo joules in lifting a mass of 10kg (at steady velocity) through a vertical height of 10m.

(viii) What is Stoke's Law? Explain briefly.

(ix)   State Torricelli's theorem? Write mathematical form.

(x)   What is Hook's law? Define spring constant.

(xi)   On what factors does the velocity of mass-spring system depends?

(xii)   If a mass-spring is hung vertically and set into oscillations, why does the motion eventually stop?

3.   **Attempt any eight parts.** $8 \times 2 = 16$

(i)   Discuss the case in velocity time graph, when the car moves with constant acceleration.

(ii)   What is the difference between uniform velocity and uniform acceleration?

(iii)   Write down the impact on the bodies when a lighter body collides with a massive body at Rest. Explain by the Mathematical relation.

(iv)   Discuss the case in velocity time graph, when the acceleration is increasing.

(v)   What is meant by moment of inertia?   Explain its significance.

(vi)   Convert two Radian in degree.

(vii)   A disc and a hoop start moving down from the top of an inclined plane at the same time. Which one will be moving faster on reaching the bottom? Explain.

(viii) Define Angular Momentum and Law of Conservation of Angular Momentum.

(ix)   Describe the relation between pressure and density.

(x)   What is the difference between open and closed organ pipe?

(xi)   What are the conditions for a path difference in constructive and destructive interference?

(xii)   Why did Newton fail to calculate the velocity of sound accurately?

4.   **Attempt any six parts.** $6 \times 2 = 12$

(i)   How would you manage to get more orders of spectra using a diffraction grating?

(ii)   Write the equations of conditions for constructive and destructive interference.

(iii)   Why the Polaroid sunglasses are better than ordinary sunglasses?

(iv)   One can buy a cheap microscope for use of children. The images seen in such a microscope have coloured edges. Why is this so?

(v)   A magnifying glass gives a five times enlarged image at a distance of 25cm from the lens. Find, by ray diagram, the focal length of the lens.

(vi) Explain that the average velocity of the molecules in a gas is zero but the average of the square of velocities is not zero

(vii) Give an example of a process in which no heat is transferred to or from the system but the temperature of the system changes.

(viii) Can the mechanical energy be converted into heat energy? If so give an example

(ix) Write the names of four processes involved in a cyclic process of petrol engine.

SECTION-II

NOTE: - Attempt any three questions. $3 \times 8 = 24$

5.(a) Describe the relation for pressure of a gas enclosed in a vessel by applying kinetic theory of gases. 5

(b) How many metres are in on light year? If speed of light is $3 \times 10^8 ms^{-1}$. 3

6.(a) Discuss elastic collision in one dimension and prove that speed of approach is equal to the speed of separation. 5

(b) The magnitude of dot and cross products of two vectors are $6\sqrt{3}$ and 6 respectively. Find the angle between the vectors. 3

7.(a) Prove that for a body of mass 'm' at a height 'h' above the surface of Earth when released and falls its:
Loss in P.E = Gain in K.E. 5

(b) The wavelength of the signals from a radio transmitter is 1500m and the frequency is 200 kHz. What is the wavelength for a transmitter operating at 1000 kHz and with what speed the radio waves travel? 3

8.(a) What do you mean by geostationary orbits? Find the expression for the orbital radius of geostationary satellite. 5

(b) A block of mass 4kg is dropped from a height of 0.8m on to a spring of spring constant $K = 1980 Nm^{-1}$. Find the maximum distance through which spring will be compressed. 3

9.(a) Describe the Michelson's experiment to calculate the speed of light? 5

(b) A light is incident normally on a grating which has 2500 lines per centimetre. Compute the wavelength of a spectral line for which the deviation in second order is 15.0^o. 3

18-2019(A)-20000 **(MULTAN)**

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Q.No.1

(1) There are four readings of a micrometer to measure the diameter of a wire in mm are

1.21, 1.23, 1.25, 1.23. The mean of deviations is:

(A) 0.02 mm   (B) 0.01 mm   (C) 0.10 mm   (D) 0.20 mm

(2) The correct answer of $\dfrac{5.348 \times 10^{-2} \times 3.64 \times 10^{4}}{1.336}$ is:

(A) 1.46×10^{3} (B) 1.451×10^{3} (C) 1.457×10^{3} (D) 1.5×10^{3}

(3) $\vec{B}.\hat{B}$ is equal to:

(A) B^2 (B) 1   (C) Zero   (D) B

(4) Two forces of magnitude 10N each. Their resultant is equal to 20N. Then angle between them is:

(A) 180° (B) 30° (C) 90° (D) 0°

(5) The velocity of a body changes with constant rate. Then acceleration is:

(A) Zero   (B) Constant   (C) Negative   (D) Positive

(6) The dimensions of the ratio of power to work are:

(A) $[ML^2T^{-2}]$ (B) $[M^0LT^{-1}]$ (C) $[M^0L^0T^{-2}]$ (D) $[ML^0T^{-1}]$

(7) 2.0 radian is equal to:

(A) 57.3^{o} (B) 57.6^{o} (C) 114.6^{o} (D) 115.6^{o}

(8) Artificial gravity like earth is obtained, if space ship rotate with frequency:

(A) $\dfrac{1}{2\pi}\sqrt{gR}$ (B) $\dfrac{1}{2\pi}\sqrt{2gR}$ (C) $\dfrac{1}{4\pi}\sqrt{gR}$ (D) $\dfrac{1}{2\pi}\sqrt{\dfrac{g}{R}}$

(9) The relation $v_2 = \sqrt{2g(h_1 - h_2)}$ is called:

(A) Torricelli's theorem   (B) Ventusi relation   (C) Stoke's law   (D) Equation of continuity

(10) Viscosity of air at $30^{o}C$ is:

(A) $6.29\,Nsm^{-2}$ (B) $0.019\,Nsm^{-2}$ (C) $1.00\,Nsm^{-2}$ (D) $0.510\,Nsm^{-2}$

(11) The velocity of spring-mass vibrating system at mean position is:

(A) Zero   (B) $\sqrt{\dfrac{k}{m}}$ (C) $x_0\sqrt{\dfrac{k}{m}}$ (D) $w\sqrt{\dfrac{k}{m}}$

(12) If a stationary wave is established along a stretched string of length ℓ and it vibrate in one loop, the wave length is equal to: (A) ℓ (B) $\dfrac{\ell}{2}$ (C) $\dfrac{\ell}{3}$ (D) 2ℓ

(13) The value of $"\gamma"$ for polyatomic gas is:
(A) 1.40   (B) 1.29   (C) 1.67   (D) 1.19

(14) The property of the substances by which their concentration in solutions can be found is:

(A) Optical rotation   (B) Interference   (C) Diffraction   (D) Reflection

(15) The ratio $\dfrac{c}{v}$ is equal to:

(A) Critical angle   (B) Total reflection   (C) Refractive index   (D) Angle of refraction

(16) Human metabolism is the example of: (A) First law of thermodynamics

(B) Entropy   (C) Second law of thermodynamics   (D) Adiabatic process

(17) In which process entropy of the system remains constant?

(A) Isothermal   (B) Isochoric   (C) Irreversible   (D) Adiabatic

18(Obj)(⭐)-2019(A)-20000 **(MULTAN)**

PHYSICS PAPER-I GROUP-II (NEW SCHEME)

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 bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles 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 questions on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) The property of the substances by which their concentration in solutions can be found is:

(A) Optical rotation (B) Interference (C) Diffraction (D) Reflection

(2) The ratio $\frac{c}{v}$ is equal to:

(A) Critical angle (B) Total reflection (C) Refractive index (D) Angle of refraction

(3) Human metabolism is the example of: (A) First law of thermodynamics

(B) Entropy (C) Second law of thermodynamics (D) Adiabatic process

(4) In which process entropy of the system remains constant?

(A) Isothermal (B) Isochoric (C) Irreversible (D) Adiabatic

(5) There are four readings of a micrometer to measure the diameter of a wire in mm are

1.21, 1.23, 1.25, 1.23. The mean of deviations is:

(A) 0.02 mm (B) 0.01 mm (C) 0.10 mm (D) 0.20 mm

(6) The correct answer of $\dfrac{5.348 \times 10^{-2} \times 3.64 \times 10^{4}}{1.336}$ is:

(A) 1.46×10^3 (B) 1.451×10^3 (C) 1.457×10^3 (D) 1.5×10^3

(7) $\bar{B} . \hat{B}$ is equal to:

(A) B^2 (B) 1 (C) Zero (D) B

(8) Two forces of magnitude 10N each. Their resultant is equal to 20N. Then angle between them is:

(A) 180° (B) 30° (C) 90° (D) 0°

(9) The velocity of a body changes with constant rate. Then acceleration is:

(A) Zero (B) Constant (C) Negative (D) Positive

(10) The dimensions of the ratio of power to work are:

(A) $[ML^2T^{-2}]$ (B) $[M^0LT^{-1}]$ (C) $[M^0L^0T^{-2}]$ (D) $[ML^0T^{-1}]$

(11) 2.0 radian is equal to:

(A) 57.3^o (B) 57.6^o (C) 114.6^o (D) 115.6^o

(12) Artificial gravity like earth is obtained, if space ship rotate with frequency:

(A) $\dfrac{1}{2\pi}\sqrt{gR}$ (B) $\dfrac{1}{2\pi}\sqrt{2gR}$ (C) $\dfrac{1}{4\pi}\sqrt{gR}$ (D) $\dfrac{1}{2\pi}\sqrt{\dfrac{g}{R}}$

(13) The relation $v_2 = \sqrt{2g(h_1 - h_2)}$ is called:

(A) Torricelli's theorem (B) Ventusi relation (C) Stoke's law (D) Equation of continuity

(14) Viscosity of air at $30^o C$ is:

(A) $6.29\,Nsm^{-2}$ (B) $0.019\,Nsm^{-2}$ (C) $1.00\,Nsm^{-2}$ (D) $0.510\,Nsm^{-2}$

(15) The velocity of spring-mass vibrating system at mean position is:

(A) Zero (B) $\sqrt{\dfrac{k}{m}}$ (C) $x_0\sqrt{\dfrac{k}{m}}$ (D) $w\sqrt{\dfrac{k}{m}}$

(16) If a stationary wave is established along a stretched string of length ℓ and it vibrate in one loop,

the wave length is equal to: (A) ℓ (B) $\dfrac{\ell}{2}$ (C) $\dfrac{\ell}{3}$ (D) 2ℓ

(17) The value of $"\gamma"$ for polyatomic gas is:

(A) 1.40 (B) 1.29 (C) 1.67 (D) 1.19

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BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN
OBJECTIVE KEY FOR INTERMEDIATE ANNUAL EXAMINATION, 2019

Name of Subject: __Physics__   Session: _____

Group: __1st__   Group: __2nd__

Q. Nos	Paper Code 2471	Paper Code 2473	Paper Code 2475	Paper Code 2477	Q. Nos	Paper Code 2472	Paper Code 2474	Paper Code 2476	Paper Code 2478
1	C	B	A	B	1	B	A	C	D
2	C	C	D	B	2	A	C	D	B
3	A	D	D	A	3	D	A	A	A,B,C,D
4	C	B	B	D	4	D	D	B	C
5	D	C	C	D	5	B	B	C	D
6	B	C	A	B	6	A,B,C,D	A	D	A
7	B	A	B	C	7	C	D	B	B
8	A	C	C	A	8	D	D	A	C
9	D	D	D	B	9	A	B	C	D
10	D	B	B	C	10	B	A,B,C,D	A	B
11	B	B	C	D	11	C	C	D	A
12	C	A	C	B	12	D	D	B	C
13	A	D	A	C	13	B	A	A	A
14	B	D	C	C	14	A	B	D	D
15	C	B	D	A	15	C	C	D	B
16	D	C	B	C	16	A	D	B	A
17	B	A	B	D	17	D	B	A,B,C,D	D
18					18				
19	/	/	/	/	19	/	/	/	/
20	/	/	/	/	20	/	/	/	/

سر ٹیفکٹ بابت تصحیح سوالیہ پرچہ / مارکنگ Key

ہم نے مضمون __Physics__ کا پرچہ __I__ گروپ __I, II__ اسکیم __New__ انٹر سالانہ امتحان 2019 کا

سوالیہ پرچہ انشائیہ و معروضی (Subjective & Objective) کو بنظر غائر چیک کر لیا ہے۔ یہ پرچہ Syllabus کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ پرچہ میں کسی قسم کی کوئی غلطی نہ ہے۔ ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کر لیا ہے۔ یہ Version آپس میں مطابقت رکھتے ہیں۔ نیز اس پرچہ کی معروضی (MCQs) Key کی بابت تصدیق کی جاتی ہے کہ اس میں بھی کسی قسم کی کوئی غلطی نہ ہے۔ مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات وصول کرکے ان کا بغور مطالعہ کر لیا ہے اور ان کی روشنی میں Key بنائی ہے۔ نیز سب ایگزامینرز کیلئے تفصیلی مارکنگ ہدایات / مارکنگ اسکیم / Rubrics بھی تیار کر دی گئی ہیں۔

Prepared & Checked By: Dated: __29-05-19__

S.#	Name	Designation	Institution	Mobile No	Signature
1	ALSH MUHAMMAD	Principal	G.C Jahanian	03008390411	(sig)
2	Shahid Ashraf	Associate Prof.	GC. Civil lines	03077360030	(sig)
3	Iftikhar Hussain Paracha	A.P.	S.M.D.C. Multan	03336060851	(sig)
4	Abdul Qadus Ansari	A.P	Govt. A.H.Is. College Mtn	0305-863889	(sig)
5					

Re-Checked By ہم نے درج بالا سوالیہ پرچہ (انشائیہ + معروضی) و معروضی "Key" اور ہدایات کے حوالے سے مکمل طور پر تسلی کر لی ہے، کسی قسم کی کوئی غلطی نہ ہے۔

1	Shabbir Saqib	Asso. Prof	G.C. Civil Lines Multan	03017551681	(sig)
2	Ali Hussain Gillani	Asso. Prof	Govt. Emerson College Multan	0300-738111 9	(sig)
3					

تاریخ _____

INTERMEDIATE PART-I (11ᵗʰ CLASS)

PHYSICS   PAPER-I   GROUP-I   (OLD SCHEME)

TIME ALLOWED: 3.10 Hours   **SUBJECTIVE**   MAXIMUM MARKS: 83

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

SECTION-I

Q.No.2   Attempt any eight parts. $8 \times 2 = 16$

(i)   The period of a simple pendulum is measured by a stop watch. What type of errors are possible?

(ii)   Why do we find it useful to have two units for the amount of substance kilogram and mole?

(iii)   How many seconds are there in one year?

(iv)   Define base quantities and derived quantities.

(v)   Can you add zero to a null vector?

(vi)   If $\vec{A} + \vec{B} = 0$ what can you say about the components of the two vectors?

(vii)   Can the magnitude of a vector have a negative value?

(viii) Find the unit vector of vector $\vec{A} = 4\hat{i} + 3\hat{j}$

(ix)   Define momentum and write down its S.I unit.

(x)   Motion with constant velocity is a special case of motion with constant acceleration. Is this statement true?

(xi)   Explain the condition under which the velocity and acceleration are parallel.

(xii)   A person is standing near a fast moving train, is there any danger he will fall towards it?

Q.No.3   Attempt any eight parts. $8 \times 2 = 16$

(i)   Calculate the work done in kilo joules in lifting a mass of 10kg (at a steady velocity) through a vertical height of 10m.

(ii)   A girl drops a cup from a certain height, which breaks into pieces. What energy changes are involved?

(iii)   An object has 1J of potential energy. Explain what does it mean?

(iv)   Show that orbital angular momentum is, $L_0 = mvr$.

(v)   Define centripetal force and centripetal acceleration.

(vi)   What is moment of Inertia?

(vii)   Name two characteristics of simple harmonic motion.

(viii) Can we realize an ideal simple pendulum?

(ix)   Describe some common phenomena in which resonance plays an important role.

(x)   What features do longitudinal waves have in common with transverse waves?

(xi)   Define the term   (i) Node   (ii) Antinode

(xii)   Define interference of two waves.

Q.No.4   Attempt any six parts. $6 \times 2 = 12$

(i)   Under what conditions two or more sources of light behave as coherent sources?

(ii)   Can visible light produce interference fringes? Explain.

(iii)   Define diffraction of light.

(iv)   Why would it be advantageous to use blue light with a compound microscope?

(v)   How the light signal is transmitted through the optical fibre?

(vi)   Define magnification of an optical instrument.

(vii)   Why is the average velocity of the molecules in a gas zero but the average of the square of velocities is not zero?

(viii) Specific heat of a gas at constant pressure is greater than specific heat at constant volume. Why?

(ix)   What is efficiency of an engine operating between temperatures 700k and 350k?

SECTION-II

NOTE: - Attempt any three questions of the following:- $3 \times 8 = 24$

5.(a)   Define scalar product giving one example. Give its four characteristics.   5

  (b)   A football is thrown upward with an angle of 30° with respect to the horizontal.
To throw a 40m pass, what must be the initial velocity of the ball?   3

6.(a)   State and explain Work-Energy Principle.   5

  (b)   Show that 1 rad. $= 57.3^o$ 3

7.(a)   State and explain Torricelli's theorem.   5

  (b)   A heat engine performs 100J of work and at the same time rejects 400J of heat energy
to the cold reservoirs. What is the efficiency of engine?   3

8.(a)   Define and explain Doppler's effect only for two cases.   5

  (b)   A simple pendulum is 50.0cm long. What will be its frequency of vibration at
a place where $g = 9.8 \, ms^{-2}$?   3

9.(a)   What is simple microscope? Find magnification of simple microscope.   5

  (b)   In a double slit experiment the second order maximum occurs at $\theta = 0.25^o$.
The wavelength is 650nm. Determine the slit separation.   3

SECTION-III (PRACTICAL)

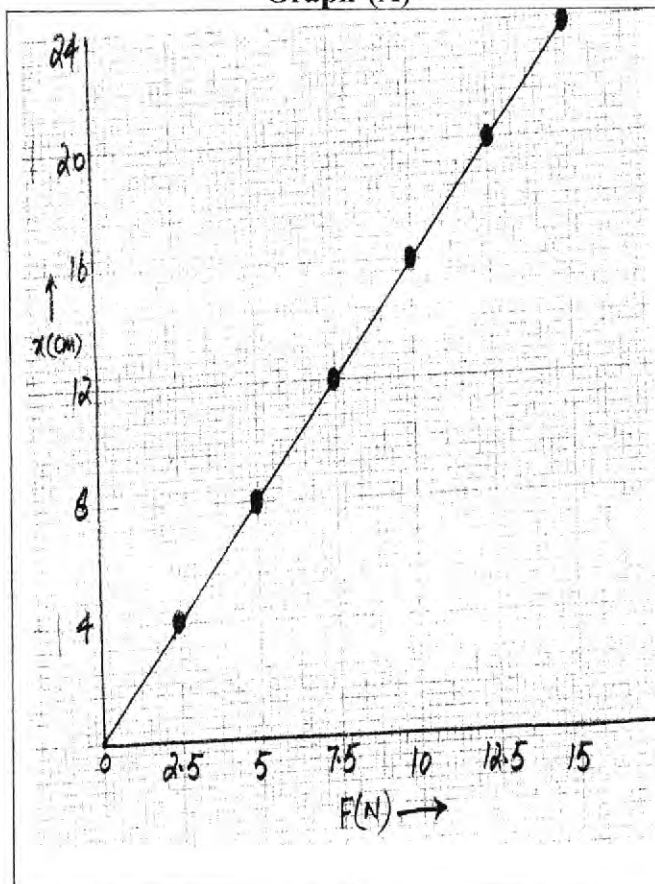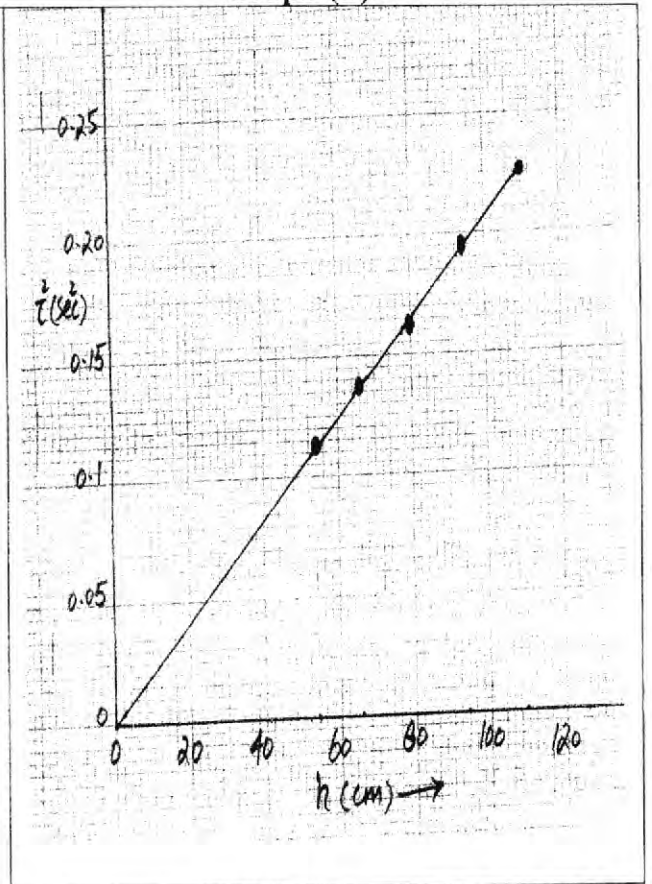**10. (A)**   **Write answers of any four parts.** $4 \times 2 = 8$

    (i)   What is meant by least count? Find lest count of vernier callipers.

    (ii)   What is meant by pitch of screw gauge?

    (iii)   Why we use electronic timer to find value of 'g' by free fall method.

    (iv)   What do you mean by elastic limit?

    (v)   What is meant by index correction?

    (vi)   Find the critical angle for glass if its refractive index is 1.5.

    (vii)   How does the electronic timer measure time of free fall accurately?

    (viii)   Why does the paper rider fly off at resonant length of the wire?

 (B)   Write down the procedure to show experimentally that time period of simple pendulum
is independent of amplitude.   3

<div align="center">OR</div>

Write down the procedure to determine experimentally, the focal length of a convex lens
by displacement method.

 (C)   **Answer the following questions on the basis of graph drawn below:-** $2 \times 2 = 4$

    (A)   (i) What do you infer from the graph?   **OR**   (B)   (i) What do you infer from the graph?

          (ii) Find the slope of the graph.   (ii) Find the slope of the graph.

<div align="center">Graph-(A)   Graph-(B)</div>

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(1)   The number of base quantities are:

    (A) 9   (B) 7   (C) 3   (D) 5

(2)   The cross product of $\hat{k}$ and $\hat{j}$ i.e $\hat{k} \times \hat{j}$ is equal to:

    (A) $\hat{i}$ (B) 1   (C) $-\hat{i}$ (D) 0

(3)   The maximum value of torque is given by:

    (A) $r\,F\sin\theta$ (B) $r\,F$ (C) $r\,F\cos\theta$ (D) $r\,F^2\sin\theta$

(4)   1 kilo-watt-hour is equal to:

    (A) $3.6 \times 10^6\,J$ (B) $36 \times 10^6\,J$ (C) $0.36 \times 10^6\,J$ (D) $0.036 \times 10^6\,J$

(5)   The plane angle 1 radian is equal to:

    (A) 57.9^o (B) 57.8^o (C) 57.3^o (D) 58.3^o

(6)   The centripetal force in circular motion is given by:

    (A) $m\,r\,\omega^2$ (B) $m\,r^2\omega^2$ (C) $m\,r^2\omega$ (D) $m^2 r^2\omega^2$

(7)   A freely falling body of mass 1 kg has its weight:

    (A) 9.8 N   (B) 0   (C) 980 N   (D) 98 N

(8)   The unit of blood pressure 1 Torr is equal to:

    (A) $1.333\,Nm^{-2}$ (B) $13.33\,Nm^{-2}$ (C) $133.3\,Nm^{-2}$ (D) $1333\,Nm^{-2}$

(9)   A simple pendulum has time period 2 sec. Its frequency will be:

    (A) 2 Hz   (B) 0.5 Hz   (C) 0.2 Hz   (D) 1.0 Hz

(10)   The experiment value of speed of sound at S.T.P is:

    (A) $332\,ms^{-1}$ (B) $335\,ms^{-1}$ (C) $328\,ms^{-1}$ (D) $325\,ms^{-1}$

(11)   In interference pattern, fringe spacing is given by:

    (A) $\dfrac{\lambda L^2}{d}$ (B) $\dfrac{\lambda^2 L}{d}$ (C) $\dfrac{\lambda L}{d}$ (D) $\dfrac{\lambda d}{L}$

(12)   In Michelson's rotating mirror experiment, the speed of light is determined by:

    (A) $16df$ (B) $\dfrac{1}{16}df$ (C) $16d^2 f$ (D) $16df^2$

(13)   The diameter of core in single mode step index fibre is:

    (A) $0.5\,\mu m$ (B) $5.0\,\mu m$ (C) $50\,\mu m$ (D) $500\,\mu m$

(14)   The value of universal gas constant 'R' is given by:

    (A) $8.314\,J\,mole^{-1}k^{-1}$ (B) $83.14\,J\,mole^{-1}k^{-1}$ (C) $0.8314\,J\,mole^{-1}k^{-1}$ (D) $85.14\,J\,mole^{-1}k^{-1}$

(15)   In cyclic process, the total change in internal energy of the system:

    (A) Increases   (B) Is zero   (C) Decreases   (D) Remains constant

(16)   The Boltzman constant 'k' is equal to:

    (A) RN_A (B) $R^2 N_A$ (C) $\dfrac{R}{N_A}$ (D) $\dfrac{N_A}{R}$

(17)   The refractive index of a medium is defined by the relation:

    (A) $n = \dfrac{c}{v}$ (B) $n = \dfrac{v}{c}$ (C) $n = cv$ (D) $n = cv^2$

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OBJECTIVE KEY FOR ITERMEDEAT ANNUAL EXAMINATION, 2019'

Name of Subject: _Physics_   Session: _2019_

Q.Nos	Paper Code 6471	Paper Code	Paper Code	Paper Code
1	B			
2	C			
3	B			
4	A			
5	C			
6	A			
7	B			
8	C			
9	B			
10	A			
11	C			
12	A			
13	B			
14	A			
15	B			
16	C			
17	A			
18				
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سرٹیفکیٹ بابت تصحیح سوالیہ پرچہ /مارکنگ Key

ہم نے مضمون ___فزکس___ پرچہ ___۱___ گروپ ___I___ سکیم ___اول/دوم___ انٹر سالانہ امتحان 2019ء کا

سوالیہ پرچہ انشائیہ ومعروضی (Subjective & Objective) کو بنظر عمیق چیک کرلیا ہے یہ پرچہ Syllabus کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ

پرچہ میں کسی قسم کی کوئی غلطی نہ ہے۔ ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کرلیا ہے۔ یہ Version آپس میں مطابقت رکھتے ہیں۔ نیز اس پرچہ

کی معروضی (MCQs) Key کی بابت تصدیق کی جاتی ہے کہ اس میں بھی کسی قسم کی کوئی غلطی نہ ہے۔ مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات

وصول کرکے ان کا بغور مطالعہ کرلیا ہے اور ان کی روشنی میں Key بنائی ہے۔ نیز سب ایگزامینر ز کیلئے تفصیلی مارکنگ ہدایات/ مارکنگ سکیم/Rubrics بھی تیار کر دی گئی ہیں۔

Prepared & Checked By: **Dated:** _____

S.#	Name	Designation	Institution	Mobile No	Signature
1	Kaleem Ullah	A/P	Govt. College of Sc. multan	0301-7409972	
2	AISH MUHAMMAD	Principal	G.C. Jahanian	0308590411	
3	Iftekhar Hussain Parvez	H.O.D.	G.M.D.C. Multan	03336060851	
4	Shahid Iqbal	Associate	G.C. Civil lines	03077360030	
5	Abdul Ghani Ansar	A/P	Govt. A.H. Js College Nalla	0305-8438885	

Re-Checked By ہم نے درج بالا سوالیہ پرچہ (انشائیہ + معروضی) ،معروضی "Key" اور ہدایات کے حوالہ سے مکمل طور پر تسلی کرلی ہے۔ کسی قسم کی کوئی غلطی نہ ہے۔

1	Shabbir Sajib	Asso. Prof.	G.C. Civil Lines Multan	0301755/681	
2	Ali Hussain Gillani	Asso. prof.	Govt. Emerson College Multan	0300-738199	
3					

تاریخ