ADAMJEE COACHING CENTRE

Preparation Paper 2025-26

IX- PHYSICS **By: S.M FAZAL-UL-KARIM**

CH#01: Physical Quantities and Measurement

1. Define Physics. Also define any five branches of physics.
2. Define Fundamental Quantities, Derived Quantities & SI unit with example
3. Define Least Count, Zero Error with its types, Relative Density.
4. How can we measure the volume of a regular & irregular solid?
5. What do you understand by the term "The Standard Mass"
6. Define: i) Density ii) Significant figures with its Rules

CH#02: Kinematics

7. Define:
   i) Types of Motion ii) Acceleration iii) Retardation iv) Kinematics
8. Derive 2nd and 3rd equation of motion.
9. Differentiate between Speed & Velocity and Scalar & Vector (3 points each)

Work Example# 02, 03, 04, 05, 07.

Numerical:

i) Equation of motion (Part b)
ii) Motion due to gravity (Part d)

CH#03: Dynamics

10. Describe Momentum in terms of force.
11. Explain Law of conservation of Momentum.
12. State & explain Newton's Laws of Motion.
13. Write applications of the Centrifuge.
14. Define friction. Also define its types, advantages and disadvantages
15. Methods of reducing friction.
16. Differentiate b/w Mass and Weight, Differentiate b/w Centripetal Force & Centrifugal Force
17.

Work Example# 02, 03, 04, 05,07

Numerical:

i) Momentum: Q1 (c), Q2 (b)
ii) Laws of motion: Q6, Q8
iii) Circular motion: Q9 (c)
iv) Friction Q10 (b)

CH#04: Turning Effect of Forces

18. What is meant by like & unlike parallel forces.
19. What is meant by resolution of forces? By using trigonometric ratios find its horizontal & vertical components. i.e $Fx = F\cos\theta$, $Fy = F\sin\theta$
20. How can we determine force and direction from its perpendicular components? $F = \sqrt{F_x^2 + F_y^2}$ $\theta = \tan^{-1}\left(\frac{Fy}{Fx}\right)$
21. Define:
    i) Torque ii) Centre of gravity iii) Couple iv) Principle of Moment
22. Define Equilibrium with its types. Also define States and Conditions of Equilibrium.

Work Example# 02, 03

Numerical:

i) Moment of forces: Q5 (b) ii) Addition of force Q2(b)

CH#05: Forces & Matter

23. Define:
    i) Force ii) Elastic limit iii) Elasticity iv) Density
24. State and explain Pascal's Law with its application & Hooke's Law.
25. Describe the factors that affect the pressure.

Work Example# 01, 02

Numerical:

i) Pressure: Q8, Q9

CH#06: Gravitation

26. State Newton's Law of Gravitation. Derive the equation $F = \frac{Gm_1m_2}{r^2}$
27. By using Newton's Law of Gravitation find out the Mass of earth.
28. Derive an expression for the velocity that a satellite must possess when orbiting around the earth & an expression for the time period of a satellite orbiting around the earth.
29. Differentiate b/w i) g & G ii) Natural and Artificial Satellite
30. Evaluate the acceleration due to gravity in terms of M_E, R_E & G.
    i) At a distance twice the earth's radius ii) At a distance one half the earth's radius.

Work Example# 02,03,04

Numerical:

i) Weight: Q6b, Q7, Q8b
ii) Mass of earth: Q11
iii) Newton's Law of Gravitation 4

CH#07: Properties of Matter

31. Describe the Kinetic Molecular Theory of Matter.
32. Describe the properties & behaviour of gases in the light of kinetic molecular theory.
33. Explain the pressure volume relationship in gases (Boyle's Law.)
34. Differentiate between Evaporation & Boiling point.

Work Example# 01, 02

Numerical:

i) Gases and kinetic theory Q7, Q8, Q9

CH#08: Energy Source & Transfer of Energy

35. Define the following with their units & Mathematical Expression
    i) Efficiency ii) Power iii) Work iv) Gravitational P.E
36. Difference between i) Renewable & Non-Renewable Energy. ii) K.E & P.E
37. Derive the Equations i) P.E=mgh & ii) K.E= ½ mv^2.

Work Example# 01, 03, 05

Numerical: Q6, Q8, Q19, Q23 (b)

CH#09: Thermal Properties Of Matter

38. Write down the types of scales with which we can measure the temperature.
39. Define:
    i) Heat Capacity ii) Specific Heat Capacity iii) Thermal Expansion iv) Linear Expansion
40. Write down the difference between:
    i) Heat & Temperature ii) Heat of Fusion & Heat of vaporization

Work Example# 02, 03

Numerical: **Q3 (c), Q13**

41. Explain the Application and consequences of Thermal Expansion

ADAMJEE COACHING CENTRE

Comprehensive Examination 2025-26

Physics - I For IX

Time: 3 Hours **Max. Marks 60**

Section "A" Multiple Choice Questions (MCQs)

Note: (i) Attempt all the questions from this section.
(ii) Do not copy down all the part of questions. Write only the answer against the proper number of the question and its part according to the question paper.
(iii) Each question carries 01 mark.

Q. 1 Choose the correct answer for each from the given options. (12)

i. Newton's law of gravitation holds between every two objects in the:
(*) Earth (*) Jupiter (*) Moon (*) Universe

ii. Quantity of motion contained in a body is called:
(*) Force (*) Inertia (*) Momentum (*) Gravity

iii. A body is in equilibrium when it has:
(*)Uniform speed (*) Uniform acceleration (*) Zero acceleration (*) None of these

iv. The force acting per unit area on a surface is called:
(*)Density (*) Stress (*) Pressure (*) Elasticity

v. Power is the product of velocity and:
(*)Force (*) Work (*)Energy (*) Displacement

vi. Which of the following is not a unit of pressure:
(*)Pascal (*)Bar (*)Atmosphere (*)Newton

vii. _____ is not a renewable source of energy.
(*) Solar energy (*) Coal (*) Wind energy (*) Geothermal energy

viii. If the pressure of a gas is doubled, its volume becomes:
(*)Half (*) Doubled (*) One fourth (*) Remains same

ix. 1 Megametre = ___ m
(*) 10^3m (*) 10^6m (*) 10^9m (*) 10^{12}m

x. The least count of micrometer screw gauge is:
(*) 0.01cm (*) 0.001cm (*) 0.1cm (*) 0.1mm

xi. 98010 has significant numbers:
(*)Three (*) Four (*) Five (*) Two

xii. A hydraulic machine works on:
(*) Newton's 3rd law of motion (*) Newton's Law of gravitation
(*) Pascal's Law (*) Hooke's Law

Comprehensive Examination 2025-26

Physics - I For IX

Section "B" (Short-Answer Questions) Marks: 24

Note: Attempt any EIGHT (08) questions from this section. Each question carries equal marks.

Q2. Define Physics. Also define any four branches of physics

Q3. Define Motion. Also define all the types of Motion with one example each.

Q4. Define and explain Pascal's Law & Hooke's Law.

Q5. Define:
i) Torque ii) Centre of gravity iii) Couple

Q6. Write two differences between any two of the following:
(i) Heat & Temperature (ii) Evaporation & Boiling Point iii) g and G

Q7. Give scientific reasons: (Any 2)
i. Why does hydrogen filled balloons possess potential energy.
ii. Why weight of an object is different on different planets.
iii. Why is mercury used in thermometer?

Q8. A cylinder contains $60cm^3$ of air at a pressure of 140kPa. What will its volume be if the pressure on it is increased to 420kPa?

Q9. If a body thrown vertically upward with vertical velocity of $50ms^{-1}$. Calculate the maximum height which body can reach.

Q10. A spring has a spring constant of $30Nm^{-1}$ what load is required to produce an extension of

Q11. Weight of Naveera is 700N on the Earth's surface. What will be Naveera's weight at the surface of Moon? (g at moon = 1.6 m/s^2)

Q12. At what maximum speed must an object travel in a circle of radius 3m to experience a centripetal acceleration of $12m/s^2$.

Q13. Calculate the efficiency of a machine which consumes 200J of energy and performs 50J of work.

Section "C" (Descriptive - Answer Questions) Marks: 24

NOTE: Attempt any Four (04) questions from this section. Each question carries equal marks.

Q14. Derive the equation $2as = vf^2 - vi^2$

Q15. State and explain the Newton's law of universal gravitation. Prove that:

$$F = \frac{Gm_1m_2}{r^2}$$

Q16. Define Momentum and explain the Law of conservation of Momentum.

OR

Derive and expression for mass of earth.

Q17. Define Coefficient of linear expansion and derive:

$$L_2 = L_1 (1 + \alpha \Delta T)$$

Q18. Define kinetic energy & potential energy with their units and also derive:

$$KE = \frac{1}{2} mv^2$$

Q19. Define friction & its types. Write down the advantages & disadvantages of frictions; also write down the methods of reducing friction.

PRACTICAL CENTRE

B-14,Block# 1, Gulshan-e-Iqbal, Karachi. Phone:34976530-34812547-34984762

Comprehensive Examination - 2026

(According to the Syllabus of the Board of Secondary Education, Karachi)

Time: 3 Hours **PHYSICS (IX)** *Max Marks : 60*

General Instructions:

Do not copy the questions. Write the answers only with respect to the questions. Do not write the options. Only write the correct answers of (MCQs).

SECTION "A" MULTIPLE CHOICE QUESTIONS (MCQs) (12 Marks)

Note: (i) Attempt all questions of this section.
(ii) Do not copy the questions. Write only the answer.
(iii) Each question carries One mark.

Q.1 Choose the correct answer from the given options:

i) The number of significant figures in 1004 is/are:
* 1 * 2 * 3 * 4

ii) The motion of pendulum is an example of:
* Translational motion * Rotational motion
* Vibratory motion * Spin motion

iii) The boiling point of mercury is:
* 78.4°C * 80.2°C * 100°C * 257°C

iv) The angle between rectangular components of a vector is:
* 30^o * 45^o * 60^o * 90^o

v) Young's modulus of Rubber is:
* 0.02 GPa * 2 GPa * 200 GPa * 210 GPa

vi) Natural satellite of Earth is:
* Neptune * Jupiter * Moon * Mars

vii) An object with particles close together and vibrating describes a:
* Gas * Liquid * Solid * All of these

viii) $\frac{\text{Joule}}{\text{sec}} =$:
* Watt * ***Volt*** * ***Pascal*** * None of these

ix) The critical velocity (V_c) =:
* gR * $\frac{g}{R}$ * $\sqrt{gR}$ * $\sqrt{\frac{g}{R}}$

x) It is a scalar quantity:
* Weight * Velocity * Mass * Acceleration

xi) A body of 50kg mass whose acceleration is $5m/s^2$, the affecting force will be:
* 10N * 0.1N * 2.50N * 250N

xii) The amount of heat needed to convert a substance from liquid to gas is called:
* Specific heat * Latent heat of vaporization
* Latent heat of fusion * Heat of sun

Cont. Page# 2...

SECTION "B" SHORT ANSWER QUESTIONS (24 Marks)

Note: Attempt any Eight (08) Questions from this Section. Each Question Carries Three (03) Marks.

Q.2 Write down S.I. units of the following physical quantities: (Any Six)

(i)	Torque	**(ii)**	Momentum
(iii)	Power	**(iv)**	Acceleration
(v)	Velocity	**(vi)**	Pressure
(vii)	Weight	**(viii)**	Density
(ix)	Temperature	**(x)**	Work

OR Define significant figure. Determine the number of significant figures in:-

(i)	1.33	**(ii)**	0.0012
(iii)	7.00	**(iv)**	0.00101

OR Write any three points on importance of physics in daily life.

Q.3 Write down three differences between (Any One) the following:

(a) Evaporation & Boiling	**(b)** Mass and Weight
(c) Distance & Displacement	**(d)** Natural and Artificial Satellite
(e) g and G	**(f)** Heat and Temperature

OR Define the following terms. (Any three)

(i) Orbit	**(ii)** Centre of mass
(iii) Scalar quantities	**(iv)** Uniform speed
(v) Brownian motion	**(vi)** Acceleration
(vii) Specific gravity	**(viii)** Force

Q.4 Derive the relation $\Delta P = Ft$.

OR Derive 1st equation of motion.

OR Define work and write down its two formulae.

Q.5 What is moment of force? Write its formula with unit and factors (names only) on which it depends.

OR State Newton's Second Law of Motion and derive its equation.

OR Write three state of equilibrium with one example of each state.

Q.6 Write down three states of matter in human body.

OR Write down any three uses of Artificial Satellites.

OR Derive the equation $W = Fd\cos\theta$

Q.7 Write down any three characteristics of the Gravitational force.

OR What is potential energy? Derive $P.E. = mgh$.

OR State and prove Newton's law of universal gravitation.

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ANEES HUSSAIN COACHING CLASSES

EXCELLENCE IN EDUCATION SINCE 1989

COMPREHENSIVE EXAMINATION 2025-2026

PHYSICS PAPER-SSC PART-I (SCIENCE GROUP)

According to the syllabus of the Board of Secondary Education, Karachi

Total Time: 3 Hours **Total Marks: 60**

General Instructions:

Section 'A': It consists of 12 Multiple choice questions (MCQs) and all of them are to be answered.
Section 'B': It consists of 12 Questions out of which 08 to be answered.
Section 'C': It comprises 06 Questions out of which 04 questions are to be answered.

SECTION 'A'
(MULTIPLE CHOICE QUESTIONS)

Time 30 Minutes **(12 Marks)**

Note:

(i) Attempt all Questions from this section.
(ii) Do not copy down the question. Write only the correct answer against the proper number of the question and its part according to the question paper.

Q. 1: Choose the correct answer for each from the given options:

i. 1 liter is equal to:

• $1000\,cm^3$ • $100\,cm^3$ • $10\,cm^3$ • $1\,cm^3$

ii. 9.801 has _____ significant figures.

• One • Two • Three • Four

iii. Gradient of distance time graph is numerically equal to:

• Speed • Velocity • Acceleration • none of these

iv. Coefficient of friction between tyre and road is:

• 0.5 • 0.8 • 1.2 • none of these

v. Quantity of motion contained in a body is called:

• Force • Inertia • Momentum • Gravity

vi. A body is in equilibrium when it has a:

• Variable speed • Constant force • Zero acceleration • none of these

vii. Ocean tides are caused by the gravity of the:

• Venus • Mars • Jupiter • Moon

viii. Which of the following is not a unit of pressure?

• Pascal • Bar • Atmosphere • Newton

ix. It is the non-renewable energy sources:

• Tidal energy • Natural gas • Solar energy • Wind energy

x. The melting point of pure water is:

• 0 K • 273 K • 373 K • 227 K

xi. The pressure in a fluid depends upon:

• density • depth • gravitational acceleration • all of these

xii. The only metal that is not solid at room temperature is:

• water • tungsten • mercury • none

Time Duration: 2:30 hours **Marks: 48**

SECTION 'B'
(SHORT-ANSWER QUESTIONS)

Marks: 24

Note: Answer any EIGHT (08) questions from this section.

Q2. Write three rules for determining significant figures.

OR Write three importance of physics in daily life.

Q3. Write three points of difference between any one of them:

i. Artificial and natural satellite ii. Heat and Temperature

iii. Mass and Weight iv. g and G

Q4. Define Centripetal force and also describe any one application of centrifuge.

Q5. Determine the force from its rectangular components with the help of diagram.

OR Define three states of equilibrium give examples of each.

Q6. State Hooke's law and write its mathematical expression.

OR Write three characteristics of Gravitational force

Q7. Define power. Also derive the equation $P = F.V$

OR Write applications of wind energy.

Q8. A wooden piece has length = radius = 2m. Calculate its volume as a Cylinder and Sphere.

Q9. A ball falls down from top of height of 70m. How much time will the ball take to reach the ground.

OR A car moving on a road with a velocity of 30 ms^{-1}, when brakes are applied its velocity decreases at a rate of 6 ms^{-2}. Find the distance it will cover before coming to rest.

Q10. A block is placed on a wet slippery floor. The mass of block is 15kg. When it is pulled through a string and Spring balance, it shows force equal to 3N. Find the coefficient of friction.

OR A car is running on a circular part of highway having about 1000m radius. The mass of car is 600kg, and its velocity is 72km/h. Find centripetal force exerted by the car.

Q11. A man is pushing a wheelbarrow on a horizontal ground with a force of 300N making an angle of 60° with ground. Find the horizontal and vertical components of the force.

OR Spring has spring constant $k = 30\ Nm^{-1}$. What load is required to produce an extension of 400cm?

Q12. How much heat is required to boil 3kg water which is initially10°C?

OR Air at a pressure of 1.0×10^5 Pa is contained in a cylinder fitted with a piston. The air is now compressed by pushing the piston, so that the same mass of air now occupies one - fifth the original volume without any change in temperature. Calculate the pressure of the air.

Q13. Calculate the power of a machine. If the machine performs 900 joules of work in 30minutes.

OR If the efficiency of machine is 50% and its output is 100J then calculate its input.

SECTION 'C'

(DETAILED-ANSWER QUESTIONS) **Marks: 24**

Note: Answer any FOUR (04) questions from this section. All questions carry equal marks.

Q14. Define Kinematics and derive the equation: $S = V_i t + \frac{1}{2} a t^2$ **OR** $2aS = Vf^2 - Vi^2$

Q15. Define resultant force and describe graphical method of vector's addition of forces.

Q16. Define linear expansion, Co-efficient of linear expansion and derive the relation, $\Delta L = \alpha L \Delta T$.

OR Define Evaporation and also write any factors on which evaporation depends.

Q17. Define Kinetic Energy and Potential Energy. Also derive the equation $K.E = \frac{1}{2} m v^2$ **OR** $P.E = mgh$

Q18. State Pascal's Principle and with the help of diagram write construction and working of Hydraulic press.

OR State & explain Boyle's Law. Write it's one application.

Q19. Define Friction, also write two advantages and disadvantages of friction.

OR State Newton's first and second law of motion. Derive **F = ma**.

"PHYSICAL QUANTITIES & MEASUREMENT # 1"

1. Define Physics and branches of physics.
2. Write Importance of physics in daily life. **OR** Importance of Physics in Science Technology and Society
3. Write fundamental & derived quantities with name of units and symbols of units.
4. Define Density with formula and unit also write ways of measurement of density.
5. Define Significant Figures and write the Rules for determining significant figures.

Problems: W.E 4, Section B. Q 3 & Q 8

"KINEMATICS # 2"

1. Define rest and motion. Describe types of motion with examples.
2. Write the differences between:
   i. Distance and Displacement ii. Speed and Velocity iii. Scalar & Vector quantities
   iv. Translatory, Rotatory & vibratory motion.
3. Derive the equation $S = V_i t + \frac{1}{2} a t^2$ and $2aS = V_f^2 - V_i^2$
4. Define: kinematics, uniform velocity, acceleration, uniform acceleration & motion due to gravity

Problems: Section B: Equation of motion: a, b, Motion due to gravity: c, d, e.
Worked examples: 2, 3, 4, 5, 6

"DYNAMICS # 3"

1. Define: Force and Inertia, Dynamics, Friction, Coefficient of friction, uniform circular motion.
2. State Newton's Laws of motion, derive F = ma, also give examples of first and third law.
3. Write the differences between mass and weight
4. Define momentum. State and explain the law of conservation of momentum.
5. Derive the relation of Momentum in terms of force. **($\Delta p = Ft$)**
6. Define centripetal force & write factors on which centripetal force depends, give examples. Define centrifugal force & give examples.
7. Write the advantages and disadvantages of friction.
8. Write the ways to reduce friction.

Problems: Section B: 2b, 5b, c, 7, 9c, 10b, Worked. Examples: 3, 4, 6, 7,

"TURNING EFFECT OF FORCES # 4"

1. Define: Center of gravity, Equilibrium, Static Equilibrium, Dynamic Equilibrium.
2. Define resultant force. Describe head to tail rule of vector addition of forces.

3. Define Resolution of a vector. Find rectangular components of a vector with the help of trigonometric ratios.
4. How can the magnitude of a vector be determined if its rectangular components are given and find its direction? ($F = \sqrt{F_x^2 + F_y^2}$ and $\theta = tan^{-1}\left(\frac{F_y}{F_x}\right)$)
5. Define Torque (moment of force), write factors on which torque depends also write its unit.
6. Define Couple, prove that moment of couple is the product of one of forces and arm of couple.
7. State and describe conditions of equilibrium.
8. Explain the three states of equilibrium with the help of examples and also draw diagrams.

Problems: Section B: 3b, 4b, 6b, 8b, c. Worked. Examples: 2, 4.

"FORCES AND MATTER # 5"

1. Define: Forces acting on solids, Extension of spring, Elasticity, Hooke's Law, Elastic Limit, Atmospheric Pressure, Hydraulic Machine.
2. Define Pressure, write its formula and S.I unit, also define its unit and explain it with the help of examples.
3. Describe Pressure in fluids with the help of examples also write Factors affecting pressure in liquid.
4. State Pascal's Principle and with the help of a diagram write construction and working of Hydraulic press.

Problems: Section B: 4, 8, 9. Worked. Examples: 2, 3, 4.

"GRAVITATION # 6"

1. State Newton's Law of Gravitation and derive $F = \frac{Gm_1 m_2}{r^2}$
2. Define: Gravitation, Gravitational Field, Field Force, Artificial Satellites, Geostationary orbit. Orbit, Orbital Velocity.
3. Write down the differences between 'g' and 'G'.
4. Write the characteristics of Gravitational force.
5. Derive the formula for mass of earth. Determine mass of Earth by using Law of Gravitation.
6. Write the uses of artificial satellite.
7. Explain Newton's Law of Gravitation in the motion of satellite **OR** Derive expression for velocity of a satellite.
8. Derive expression for the time period of a satellite.
9. Expression for orbital velocity of a Satellite in terms of gravitational acceleration OR Derive $v = \sqrt{g_h(R + h)}$
10. Derive an expression for Critical Velocity of a Satellite and calculate its value.

Problems: Section B: 4, 7, 11, 13a. Worked. Examples: 1, 3, 4.

"PROPERTIES OF MATTER # 7"

1. Define: Matter, Brownian motion, and Kinetic Molecular Model of Matter.
2. Write Physical properties of solids, Liquids & Gases.
3. Which variables describe completely the behavior of gas on the basis of KMT.

4. Pressure - volume relationship in gases (The results of a Boyles experiment).
5. State Boyle's Law and write the applications of Boyle's law.

Problems: Section B: 7, 8 & 9. Worked. Examples: 1, 2.

"ENERGY SOURCES & TRANSFER OF ENERGY # 8"

1. Define: Energy, Elastic potential energy, Chemical potential energy, Law of Conservation of Energy, Power, and Efficiency.
2. Define work, derive formula for work ($W = F\ d\ \text{Cos}\ \theta$) and write its unit.
3. Define K. E. Derive the equation of $\mathbf{K.E} = \frac{1}{2}\mathbf{m}\,\mathbf{v}^2$
4. Define Gravitational Potential Energy. Also Derive **P.E = mgh.**
5. Describe Wind Energy & write its applications.
6. Write the differences between i. 'K.E' and 'P.E' ii. Renewable Energy Source & Non-Renewable Sources.

Problems: Section B: 2, 6, 8, 17, 19, 21b, 23b, 24b. Worked. Examples: 1, 2, 3, 5.

"THERMAL PROPERTIES OF MATTER # 9"

1. Define: Heat capacity, Heat of vaporization, Thermal Expansion, Co-efficient of linear expansion,
   Co- efficient of volume expansion, Real Expansion, Apparent Expansion.
2. Write the differences between i. Heat and Temperature ii. Heat of fusion and heat of vaporization
   iii. Evaporation and Boiling
3. Define thermometer. How many scales are there to measure temperature.
4. Define Specific heat capacity write its formula, unit, give examples.
   Write factors on which heat capacity depends & write the effects due to large specific heat of water.
5. Define Heat of fusion. Describe experiment of conversion of Ice (Solid) into water liquid.
6. Define evaporation, write the factors which influence surface evaporation.
7. Define thermal expansion and derive the relation, $\Delta L = \alpha\ L\ \Delta T$
8. Define volumetric expansion and derive the relation $\Delta V = \beta\ V\ \Delta T$
9. Write the applications and consequences of thermal expansion.

Problems: Section B: 1c, 2c, 3c, 4b, 13. Worked. Examples: 1, 2, 3.

WISH YOU GOOD LUCK!!!

ضروری ہدایت: اس پرچے پر کسی قسم کی علامت ہرگز نہ لکھیے۔

AE-II/65/III/011225/M

BOARD OF SECONDARY EDUCATION KARACHI

S.S.C. 2nd ANNUAL EXAMINATION – 2025

Max. Marks: 60 | PHYSICS(THEORY) PAPER-I طبیعیات (نظری) پرچہ اوّل | Time: 3 hours

کل نمبر: ۶۰ | CLASS-X (SCIENCE GROUP) جماعت دہم (سائنس گروپ) | وقت: تین گھنٹے

SECTION "A"(COMPULSORY)

حصہ الف (لازمی)

MULTIPLE CHOICE QUESTIONS (MCQs) MARKS:12

(کثیر الانتخابی سوالات) نمبر: ۱۲

Note: *(i) Attempt all the parts of this section. (ii) Don't copy the part of the question, write only the answers, numbered as in the question paper. (iii) Each part carries 1 mark.*

اہم ہدایات: ۱) تمام اجزاء کے جوابات تحریر کیجیے۔ ۲) اجزاء کاپی پر لکھ نہ کیجیے، پرچے کے مطابق صحیح نمبر ڈال کر صرف جواب لکھیے ۳) ہر جز کا نمبر ایک ہے۔

1. Choose the correct answer for each from the given options:

۱۔ دیئے ہوئے ممکنہ جوابات میں سے ہر ایک کے لیے درست جواب کا انتخاب کیجیے:

(i). *The density of Aluminum is:*
☆2700 kg/m³ ☆2800 kg/m³
☆270 kg/m³ ☆2710 kg/m³

(i). الومینیم کی کثافت ہے:
2700kg/m³☆ 2800kg/m³☆
270kg/m³☆ 2710kg/m³☆

(ii). *It is a scalar quantity:*
☆Weight ☆Mass
☆Velocity ☆Acceleration

(ii). یہ ایک غیر سمتی مقدار ہے:
☆وزن ☆کمیت
☆ولاسٹی ☆اسراع

(iii). *A body of 50kg mass whose acceleration is 5ms⁻², the affecting force will be:*
☆10N ☆0.1N
☆2.50N ☆250N

(iii). ایک 50kg والا جسم جس کا اسراع 5ms⁻² ہو اس پر اثر انداز ہونے والی قوت ہوگی:
10N☆ 0.1N☆
2.50N☆ 250N☆

(iv). *Tan 30⁰ =:*
☆0.707 ☆1.732
☆1 ☆0.577

(iv). := Tan 30⁰
0.707☆ 1.732☆
1☆ 0.577☆

(v). *K = ⁰C + _:*
☆273 ☆32
☆1.8 ☆298

(v). K = ⁰C + _:
273☆ 32☆
1.8☆ 298☆

(vi). *Pascal (Pa) is the S.I. unit, used for:*
☆Force ☆Pressure
☆Work ☆Area

(vi). S.I. نظام میں اکائی پاسکل (Pa) استعمال ہوتی ہے:
☆قوت کے لیے ☆دباؤ کے لیے
☆کام کے لیے ☆رقبہ کے لیے

(vii). *The critical velocity (Vc) =:*
☆gR ☆$\frac{g}{R}$
☆$\sqrt{gR}$ ☆$\sqrt{\frac{g}{R}}$

(vii). تنقیدی رفتار Vc =:
gR☆ $\frac{g}{R}$☆
$\sqrt{gR}$☆ $\sqrt{\frac{g}{R}}$☆

(viii). *The melting point of Tungsten is:*
☆3920 ⁰C ☆ 6500 ⁰C
☆5400 ⁰C ☆3570 ⁰C

(viii). ٹنگسٹن کا نقطہ پگھلاؤ ہے:
3920 ⁰C☆ 6500 ⁰C☆
5400 ⁰C☆ 3570 ⁰C☆

(ix). *The energy radiated from the Sun is known as:*
☆Solar Energy ☆Hydroelectric Energy
☆Heat Energy ☆Nuclear Energy

(ix). سورج سے خارج ہونے والی توانائی کو کہا جاتا ہے:
☆شمسی توانائی ☆پن بجلی توانائی
☆حرارتی توانائی ☆جوہری توانائی

(x). *Pressure = depth × density ×__:*
☆Volume ☆Acceleration due to gravity
☆Area ☆Universal gravitational constant

(x). دباؤ = گہرائی × کثافت × __:
☆حجم ☆اسراع (کشش ثقل)
☆رقبہ ☆مستقل عالمی کشش ثقل

(xi). *The boiling point of Mercury is:*
☆78.4⁰C ☆80.2⁰C
☆100⁰C ☆257⁰C

(xi). پارہ کا نقطہ کھولاؤ ہے:
78.4⁰C ☆ 80.2⁰C ☆
100⁰C ☆ 257⁰C ☆

Continued.....

(xii). *Mass of the Earth is:*

☆6.0×10^{23}kg ☆6.0×10^{24}kg 6.0×10^{24}kg☆ 6.0×10^{23}kg☆

☆6.0×10^{25}kg ☆6.0×10^{26}kg 6.0×10^{26}kg☆ 6.0×10^{25}kg ☆

(xii). زمین کی کمیت ہے:

SECTION "B"
(SHORT-ANSWER QUESTIONS) MARKS: 24

Note: Attempt any EIGHT questions from this section. Each question carries Three Marks.

2. *Write down the S.I. units of the following physical quantities:*
   (i) Torque (ii) Weight (iii) Power (iv) Temperature
   (v) Velocity (vi) Density
3. *Define the following:*
   (i) Acceleration (ii) Scalars (iii) Uniform Speed
4. *Define Momentum. Write down its formula and S.I. unit.*
5. *Write down three differences between Heat and Temperature.*
6. *Explain Hook's Law applied to Helical Spring.*
7. *Define Work, and write down its two formulas.*
8. *The thermal energy required to raise the temperature of 50gm of water from 40°C to 70°C is 6300joules. Calculate the specific heat capacity of water.*
9. *How much work is needed to move horizontally a body 20m by force of 30N, the angle between the body and the horizontal surface is 60°?*
10. *A cyclist is making a turn along a circle of radius 20m, at a speed of 5ms $^{-1}$. If the combined mass of the cyclist plus the bicycle is 60kg. Calculate the static friction that road exerts on tyres.*
11. *A 60kg object is moving at a velocity of 15ms $^{-1}$. What is its momentum.*
12. *A bus is moving on a road with 15ms $^{-1}$ and its acceleration 5ms $^{-2}$. Find the final velocity of bus after 6 Seconds.*
13. *A gardener is deriving a lawnmower with a force of 80N that makes an angle of 45° with the ground. Find its horizontal components.*

حصہ "ب"
(مختصر جواب کے سوالات) نمبر:۲۴

نوٹ: اس حصہ سے کوئی آٹھ سوالات کے جوابات مطلوب ہیں۔ ہر سوال کے تین نمبر ہیں۔

۲۔ مندرجہ ذیل طبعی مقداروں کی S.I. اکائیاں تحریر کیجیے۔
(i) ٹارک (ii) وزن (iii) طاقت (iv) درجہ حرارت
(v) دلاسٹی (vi) کثافت

۳۔ مندرجہ ذیل کی تعریف کیجیے:
(i) اسراع (ii) غیر سمتی مقداریں (iii) یکساں رفتار

۴۔ مومنٹم کی تعریف کیجیے اس کا کلیہ اور (S.I.) اکائی بھی لکھیے۔

۵۔ حرارت اور درجہ حرارت میں تین فرق تحریر کیجیے۔

۶۔ ہیلکل اسپرنگ (Helical Spring) پر ہک کے قانون کی وضاحت کیجیے۔

۷۔ کام کی تعریف کیجیے اور اس کے دو کلیے تحریر کیجیے۔

۸۔ 50 گرام پانی کے درجہ حرارت کو 40°C سے 70°C تک بڑھانے کے لیے 6300 جول حرارتی توانائی درکار ہے۔ پانی کی مخصوص حرارتی گنجائش معلوم کیجیے۔

۹۔ ایک جسم کو 20 میٹر حرکت دینے کے لیے کتنے کام کی ضرورت ہوگی اگر جسم پر 30 نیوٹن کی قوت عمل کرے جسم اور افقی سطح کے درمیان 60° کا زاویہ ہے۔

۱۰۔ ایک سائیکل سوار ایک دائرے میں مڑتا ہے جس کا رداس 20 میٹر ہے اور سائیکل سوار کی رفتار 5ms $^{-1}$ ہے۔ اگر بائیسکل اور سائیکل سوار کی مجموعی کمیت 60 کلوگرام ہے تو ساکن رگڑ معلوم کیجیے۔ جس سے سائیکل سڑک پر چلتی ہے۔

۱۱۔ ایک 60 کلوگرام کا جسم 15 میٹر فی سیکنڈ کی رفتار سے حرکت کر رہا ہے، اس کا مومنٹم بتایئے۔

۱۲۔ ایک بس روڈ پر 15ms $^{-1}$ کی رفتار سے حرکت کر رہی ہے اس کا اسراع 5ms $^{-2}$ ہے۔ بس کی آخری دلاسٹی 6 سیکنڈ کے بعد معلوم کیجیے۔

۱۳۔ ایک سالن باغ میں گھاس کاٹنے کی مشین پر 80N کی قوت لگاتے ہوئے زمین پر 45° کا زاویہ بنا رہا ہے۔ اس کے افقی اجزاء معلوم کیجیے۔

SECTION "C"
(DESCRIPTIVE-ANSWER QUESTIONS) Marks: 24

Note: Attempt any **FOUR** questions from this Section. Each question carries (Six) 6 marks.

14. *Define Kinetic Energy and derive the equation of:*
$$K.E = \frac{1}{2}mv^2$$
15. *What do you mean by resolution of a vector? Split a vector into its horizontal and vertical components.*
16. *Define uniform velocity and derive the relation:*
$$S = V_i t + \frac{1}{2}at^2$$
17. *What is meant by Pressure? Write down its S.I. unit and formula. Also explain the factors affecting on it?*
18. *Explain specific heat capacity and also explain the effects of large specific heat of water with examples from daily life.*
19. *State and explain Boyle's Law. Write its one application.*

حصہ "ج"
(تفصیلی جواب کے سوالات) نمبر:۲۴

نوٹ: اس حصہ سے کوئی چار سوالات کے جوابات مطلوب ہیں۔ ہر سوال کے چھ (6) نمبر ہیں۔

۱۴۔ حرکی توانائی کی تعریف کیجیے اور مندرجہ ذیل مساوات کو اخذ کیجیے۔
$$K.E = \frac{1}{2}mv^2$$

۱۵۔ ویکٹر کی تحلیل سے کیا مراد ہے؟ ایک ویکٹر کو اس کے عمودی اور افقی اجزاء میں تحلیل کیجیے۔

۱۶۔ یکساں دلاسٹی کی تعریف کیجیے۔ اور مندرجہ ذیل کو اخذ کیجیے۔
$$S = V_i t + \frac{1}{2}at^2$$

۱۷۔ دباؤ سے کیا مراد ہے؟ اس کا کلیہ اور اکائی تحریر کیجیے نیز اس پر اثر انداز ہونے والے عوامل کی وضاحت کیجیے۔

۱۸۔ مخصوص حرارتی گنجائش کی وضاحت کیجیے، پانی کی بڑی حرارتی گنجائش کی وجہ سے کیا اثرات مرتب ہوتے ہیں روزمرہ کی مثالوں سے واضح کیجیے۔

۱۹۔ بوائل کا قانون تحریر کیجیے۔ اس کی وضاحت کیجیے اور ایک اطلاق تحریر کیجیے۔

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