



SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-I
Subject:	Chemistry-11	Date:		Time:	
Questions Type	Type 9 - Short Test (No Choice) - Marks=35				
Test Syllabus:	Unit-4,				

Q.1 Circle the Correct Answers.

(9x1=9)

- Dipole – dipole forces are present among:
(A) Molecules of Iodine (B) Atoms of Neon in gaseous state (C) Chloroform molecules
(D) CCl_4 molecules
- London dispersion forces are the only forces present among the:
(A) Molecules of water in liquid state (B) Atoms of helium in gaseous state at high temperature
(C) Molecules of solid iodine (D) Molecules of hydrogen chloride gas
- Acetone and chloroform are soluble in each other due to:
(A) Intermolecular hydrogen bonding (B) Dipole-dipole interaction (C) Instantaneous dipoles
(D) All of the above
- Which of the given has Hydrogen Bonding:
(A) CH_4 (B) CCl_4 (C) NH_3 (D) NaCl
- Which is Pseudo solid?
(A) CaF_2 (B) Glass (C) NaCl (D) CaCl_2
- Allotropy is the property of:
(A) Compound (B) Element (C) Atom (D) Mixture
- Transition temperature of KNO_3 is:
(A) 13.2°C (B) 95.5°C (C) 128°C (D) 32.2°C
- The Axes (unit cell length) for Cu is:
(A) $a \neq b = c$ (B) $a \neq b \neq c$ (C) $a = b \neq c$ (D) $a = b = c$
- If $a \neq b \neq c$ and $\alpha = \gamma = 90^\circ \neq \beta \neq 90^\circ$ then crystal system is:
(A) Monoclinic (B) Diclinic (C) Triclinic (D) Polyclinic

Q.2 Write short answers of the following questions.

(5x2=10)

- What are dipole-induced dipole forces?
- Why HF is the weakest acid than other Hydrogen Halides?
- What is the role of Hydrogen bonding in biological compounds?
- What are Debye forces? Explain.
- Define allotropy with an example.

NOTE: Attempt the following questions.

(8x2=16)

- Write a note on the factors affecting the strength of London forces.
 - Differentiate between Isomorphism and polymorphism with suitable examples.
- Define liquid crystals and write their uses.
 - What are liquid crystals. Give their three uses in daily life.

MCQs Ans Key.

Q:1 (C)

Q:2 (C)

Q:3 (A)

Q:4 (C)

Q:5 (B)

Q:6 (B)

Q:7 (C)

Q:8 (D)

Q:9 (A)



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(D) All of the above
- Which of the given has Hydrogen Bonding:
(A) CH₄ (B) CCl₄ (C) NH₃ (D) NaCl
- Which is Pseudo solid?
(A) CaF₂ (B) Glass (C) NaCl (D) CaCl₂
- Allotropy is the property of:
(A) Compound (B) Element (C) Atom (D) Mixture
- Transition temperature of KNO₃ is:
(A) 13.2 °C (B) 95.5 °C (C) 128 °C (D) 32.2 °C
- The Axes (unit cell length) for Cu is:
(A) $a \neq b = c$ (B) $a \neq b \neq c$ (C) $a = b \neq c$ (D) $a = b = c$
- If $a \neq b \neq c$ and $\alpha = \gamma = 90^\circ \neq \beta \neq 90^\circ$ then crystal system is:
(A) Monoclinic (B) Triclinic (C) Triclinic (D) Polyclinic

Q.2 Write short answers of the following questions.

(5x2=10)

- Define hydrogen bonding. Show hydrogen bonding in ammonia molecule.
- Describe cleaning action of soaps and detergents on the basis of H-bonding.
- Write four properties of solids.
- Define Anisotropy and Allotropy.
- Write down types of crystalline solids.

NOTE: Attempt the following questions.

(8x2=16)

- 3(a) Write a note on three factors affecting the London Forces.
- (b) Explain Hydrogen Bonding in Protein and DNA.
- 4(a) Write a note on the factors affecting the strength of London forces.
- (b) Define liquid crystals and write their uses.

MCQs Ans Key.

Q:1 (C)

Q:2 (C)

Q:3 (A)

Q:4 (C)

Q:5 (B)

Q:6 (B)

Q:7 (C)

Q:8 (D)

Q:9 (A)



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(9x1=9)

- Dipole – dipole forces are present among:
(A) Molecules of Iodine (B) Atoms of Neon in gaseous state (C) Chloroform molecules
(D) CCl₄ molecules
- London dispersion forces are the only forces present among the:
(A) Molecules of water in liquid state (B) Atoms of helium in gaseous state at high temperature
(C) Molecules of solid iodine (D) Molecules of hydrogen chloride gas
- Acetone and chloroform are soluble in each other due to:
(A) Intermolecular hydrogen bonding (B) Dipole-dipole interaction (C) Instantaneous dipoles
(D) All of the above
- Which of the given has Hydrogen Bonding:
(A) CH₄ (B) CCl₄ (C) NH₃ (D) NaCl
- When water freezes, its volume increases:
(A) 10% (B) 9% (C) 15% (D) 18%
- Which is Pseudo solid?
(A) CaF₂ (B) Glass (C) NaCl (D) CaCl₂
- Allotropy is the property of:
(A) Compound (B) Element (C) Atom (D) Mixture
- Transition temperature of KNO₃ is:
(A) 13.2 °C (B) 95.5 °C (C) 128 °C (D) 32.2 °C
- If $a \neq b \neq c$ and $\alpha = \gamma = 90^\circ \neq \beta \neq 90^\circ$ then crystal system is:
(A) Monoclinic (B) Diclinc (C) Triclinic (D) Polyclinic

Q.2 Write short answers of the following questions.

(5x2=10)

- Why water is liquid at room temperature but H₂S and H₂Se are gases, comment?
- What are Debye forces? Explain.
- Write four properties of solids.
- Transition temperature is exhibited by both elements and compounds. Explain.
- One of the unit cell angles of Hexagonal crystal is 120°. Justify it

NOTE: Attempt the following questions.

(8x2=16)

- Define critical temperature and give its three examples.
 - What is H-bonding? Discuss H-Bonding in biological compounds.
- Differentiate between Isomorphism and polymorphism with suitable examples.
 - Explain Hydrogen Bonding in Protein and DNA.

MCQs Ans Key.

Q:1 (C)

Q:2 (C)

Q:3 (A)

Q:4 (C)

Q:5 (B)

Q:6 (B)

Q:7 (B)

Q:8 (C)

Q:9 (A)



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Questions Type	Type 9 - Short Test (No Choice) - Marks=35				
Test Syllabus:	Unit-4,				

Q.1 Circle the Correct Answers.

(9x1=9)

- 1 The resolution of human naked eye is:
(A) 1mm (B) 1 μ m (C) 1nm (D) 1cm
- 2 The resolution of typical compound microscope:
(A) 1.0 μ m (B) 2.0 μ m (C) 4.0 μ m (D) 3.0 μ m
- 3 The resolution of naked eye is:
(A) 1.0mm (B) 0.3mm (C) 0.6mm (D) 0.7mm
- 4 Cell wall is secreted by:
(A) Protoplasm (B) Nucleoplasm (C) Golgi complex (D) ribosome
- 5 Chitin is found in cell wall of:
(A) Algae (B) Bacteria (C) Fungi (D) Plants
- 6 De Duve discovered cell organelle:
(A) Mitochondria (B) Lysosome (C) Plastids (D) Golgi complex
- 7 Cisternae are associated with:
(A) ER (B) Mitochondria (C) Nucleus (D) Chloroplast
- 8 Sedimentation rate of Eukaryotic Ribosome is:
(A) 30 S (B) 50 S (C) 70 S (D) 80 S
- 9 Parenchymatous cells are specialized for:
(A) Store food (B) Support (C) Photosynthesis (D) Growth

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) Define Cell theory. Who proposed it?
- (ii) How many types of endoplasmic reticulum are present?
- (iii) Define storage disease.
- (iv) What is Stroma? Give its Function.
- (v) Where the new Ribosomes assembled?

NOTE: Attempt the following questions.

(8x2=16)

- 3(a) Describe the Fluid Mosaic model of plasma membrane.
- (b) Give comparison between prokaryotic and eukaryotic cell.
- 4(a) What is Cytoskeleton? Give its functions.
- (b) Explain the structure and functions of lysosomes.

MCQs Ans Key.

Q:1 (A)

Q:2 (B)

Q:3 (A)

Q:4 (A)

Q:5 (C)

Q:6 (B)

Q:7 (A)

Q:8 (D)

Q:9 (A)



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Q.1 Circle the Correct Answers.

(9x1=9)

- 1 The resolution of human naked eye is:
(A) 1mm (B) 1 μ m (C) 1nm (D) 1cm
- 2 The process of taking in liquid material by cell membrane is called:
(A) Phagocytosis (B) Exocytosis (C) Pinocytosis (D) Lymphocytosis
- 3 Chitin is found in cell wall of:
(A) Algae (B) Bacteria (C) Fungi (D) Plants
- 4 Cell membrane has 60—80 %:
(A) Lipids (B) Proteins (C) Carbohydrates (D) Vitamins
- 5 Golgi apparatus is concerned with cell:
(A) Division (B) Lysis (C) Secretion (D) Storage
- 6 Stroma is a fluid in the chloroplast:
(A) Thylakoids (B) Matrix (C) Granum (D) Intergranum
- 7 Glyoxysomes are most abundant in:
(A) Human Blood (B) Plant seedings (C) Liver cells (D) Microorganisms
- 8 Chloroplasts has a double membranous envelope that encloses dense fluid filled region known as:
(A) Matrix (B) Stroma (C) Thylakoid (D) Granum
- 9 The soluble part of the cytoplasm is called:
(A) stroma (B) gel (C) cytosol (D) matrix

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) What is cytosol?
- (ii) Define polysome and ribosomes.
- (iii) What is peroxisome?
- (iv) What is stroma? Give its function.
- (v) What are chromosomes? Why they are important?

NOTE: Attempt the following questions.

(8x2=16)

- 3(a) Explain Electron Transport Chain in Mitochondria.
- (b) What are plastids? Explain structure and function of Chloroplast.
- 4(a) Write a detailed note on chromosomes.
- (b) Give structure and function of endoplasmic reticulum.

MCQs Ans Key.

Q:1 (A)

Q:2 (C)

Q:3 (C)

Q:4 (B)

Q:5 (C)

Q:6 (A)

Q:7 (B)

Q:8 (B)

Q:9 (C)



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Q.1 Circle the Correct Answers.

(9x1=9)

- 1 The presence of nucleus in the cell was reported by:
(A) Lorenz Oken (B) Theodor Schwann (C) Schleiden (D) Robert Brown
- 2 Chitin is found in cell wall of:
(A) Algae (B) Bacteria (C) Fungi (D) Plants
- 3 Cell membrane is chemically composed of proteins:
(A) 10-20% (B) 20-30% (C) 40-50% (D) 60-80%
- 4 The fluid which surrounds the thylakoids is called:
(A) Matrix (B) Stroma (C) Cytoplasm (D) Nucleoplasm
- 5 Golgi apparatus is concerned with cell:
(A) Division (B) Lysis (C) Secretion (D) Storage
- 6 Organelle _____ is concerned with cells secretion:
(A) Ribosomes (B) Mitochondria (C) Centrioles (D) Golgi complex
- 7 What is not true about microfilaments?
(A) Actin (B) Amoeboid movement (C) Cyclosis
(D) Linked with outer surface of plasma membrane
- 8 The fluid that surrounds the Thylakoid is called:
(A) Matrix (B) Stroma (C) Medium (D) Cytoplasm
- 9 The number of chromosomes in fruit fly Drosophila:
(A) 16 (B) 26 (C) 8 (D) 48

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) Give name of Robert Hooke's publication on cell discovery.
- (ii) Differentiate between phagocytosis and pinocytosis.
- (iii) Define Tay-Sachs' disease.
- (iv) What is glycogenosis type-II disease?
- (v) No SQs has been taken from this topic.

NOTE: Attempt the following questions.

(8x2=16)

- 3(a) Describe structure and functions of plasma membrane.
- (b) Write a detailed note on chromosomes.
- 4(a) Give comparison between prokaryotic and eukaryotic cell.
- (b) Describe the structure and function of Mitochondria.

MCQs Ans Key.

Q:1 (D)

Q:2 (C)

Q:3 (D)

Q:4 (B)

Q:5 (C)

Q:6 (D)

Q:7 (D)

Q:8 (B)

Q:9 (C)



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Test Syllabus:	Unit-4,				

Q.1 Circle the Correct Answers.

(7x1=7)

- When the force is parallel to the direction of motion of the body, then work done on the body is
(A) zero (B) minimum (C) infinity (D) maximum
- The work done is said to be negative when force and displacement are:
(A) parallel (B) anti-parallel (C) perpendicular (D) none
- Area under force-displacement graph gives:
(A) Velocity (B) Power (C) Work done (D) Acceleration
- Kilo watt hour is the unit of:
(A) Power (B) Energy (C) Force (D) Torque
- Which of the following pairs does not have identical dimensions:
(A) momentum and impulse (B) energy and work (C) mass and momentum of inertia
(D) torque and energy
- Power of an electric heater is (approximate power):
(A) 1 k W (B) 2 k W (C) 3 k W (D) 4 k W
- What is the kinetic energy of a 50 gm bullet moving at a speed of:
(A) 2500J (B) 1500J (C) 1250J (D) none of the above
- When a meteorite enter into earth's atmosphere, the energy converts into:
(A) heat energy (B) kinetic energy (C) nuclear energy (D) mechanic energy

Q.2 Write short answers of the following questions.

(5x2=10)

- Give name at least two conservativ and two non-conservative forces.
- Derive a relation between power and velocity.
- Define kilowatt hour. Show that $1 \text{ kWh} = 3.6 \times 10^6 \text{ J}$.
- Write power in terms of force and velocity?
- What is escape velocity of an object? Write its mathematical expression.

NOTE: Attempt the following questions.

(9x2=18)

- 3(a) Explain the interconversion of potential energy and kinetic energy.
- (b) A man pushes a lawn mower with a 40 N force directed at an angle of 20° downward from the horizontal. Find the work done by the man as he cuts a strip of grass 20 m long.
- 4(a) Show that work done in gravitational field is independent of path followed.
- (b) A car of mass 800 kg travelling at 54 kmh^{-1} is brought to rest in 60 meters. Find the average retarding force on a car. What has happened to original kinetic energy?

MCQs Ans Key.

Q:1 (D)

Q:2 (B)

Q:3 (C)

Q:4 (A)

Q:5 (C)

Q:6 (A)

Q:7 (D)

Q:8 (A)



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Test Syllabus:	Unit-4,				

Q.1 Circle the Correct Answers.

(7x1=7)

- Work is
(A) vector quantity (B) scalar quantity (C) fundamental quantity (D) conservative quantity
- The work done in moving a body from one place to another in a gravitational field is independent of:
(A) force of gravity (B) the applied force (C) the path followed by the body
(D) the power consumed
- The dimension of power is:
(A) MLT^{-1} (B) ML^2T^{-2} (C) ML^2T^{-1} (D) ML^2T^{-3}
- Which of the following quantity is calculated by multiplying force with velocity:
(A) acceleration (B) power (C) torque (D) work
- The value of Escape velocity is:
(A) $11.6 \times 10^3 \text{ ms}^{-1}$ (B) $11 \times 10^3 \text{ ms}^{-1}$ (C) $11.5 \times 10^3 \text{ ms}^{-1}$ (D) $12 \times 10^3 \text{ ms}^{-1}$
- The work needed to lift a body of mass 'm' from the surface of earth forces such a potential energy is called:
(A) kinetic energy of the body (B) absolute potential energy (C) potential energy
(D) elastic potential energy
- The escape velocity can be given by the formula:
(A) $\sqrt{\frac{2MG}{R}}$ (B) $\sqrt{\frac{2MG}{R^2}}$ (C) $\sqrt{\frac{2mMG}{R^2}}$ (D) $\sqrt{\frac{mMG}{R}}$
- If the velocity of an object is doubled then its K.E becomes:
(A) Double (B) Constant (C) Four times (D) Sixteen times

Q.2 Write short answers of the following questions.

(5x2=10)

- An object has one joule potential energy. What does it mean? Explain.
- An object has 1J of potential energy. Explain what does it mean?
- What does negative sign show in the expression. $U_g = -\frac{GMm}{R}$.
- State law of conservation of energy.
- A girl drops a cup from a certain height, which energy changes are involved?

NOTE: Attempt the following questions.

(9x2=18)

- Define absolute gravitational P.E. Derive expression for the absolute value of gravitational P.E of a body at a distance 'r' from the center of the earth.
 - A 70 kg man runs up a long flight of stairs in 4.0s. The vertical height of the stairs is 4.5 m. Calculate his power output in watts.
- What sort of energy is in the following: (a) Compressed spring (b) Water in high dam (c) A moving car.
 - A diver weighing 750 N dives from a board 10 m above the surface of a pool of water. Use the conservation of mechanical energy to find his speed at a point 5.0 m above the water surface, neglecting air friction.

MCQs Ans Key.

Q:1 (B)

Q:2 (C)

Q:3 (D)

Q:4 (B)

Q:5 (B)

Q:6 (B)

Q:7 (A)

Q:8 (C)



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Q.1 Circle the Correct Answers.

(7x1=7)

- 1 Work is
(A) vector quantity (B) scalar quantity (C) fundamental quantity (D) conservative quantity
- 2 The average power and instantaneous power becomes equal if work done at:
(A) any rate (B) at variable rate (C) at uniform rate (D) at high rate
- 3 The power is 1 kilo-watt if work is done at the rate of:
(A) 1000 J s^{-1} (B) 100 J s^{-1} (C) 1000 J min^{-1} (D) 1000 erg s^{-1}
- 4 Which of the following quantity is calculated by multiplying force with velocity:
(A) acceleration (B) power (C) torque (D) work
- 5 The ratio between orbital and escape velocities is:
(A) $1:\sqrt{2}$ (B) $\sqrt{2}:1$ (C) $2:1$ (D) $1:2$
- 6 The P.E. stored by a mass spring system at an extension of 2cm is 10J. The P.E. stored by the same system at an extension of 4cm will be:
(A) 10J (B) 20J (C) 30J (D) 40J
- 7 The dimensions of kinetic energy are:
(A) $[\text{ML}^2\text{T}^{-2}]$ (B) $[\text{ML}^{-2}\text{T}^2]$ (C) $[\text{ML}^{-1}\text{T}^{-2}]$ (D) $[\text{ML}^{-1}\text{T}^{-1}]$
- 8 Absolute potential energy of a body at the earth's surface is equal to:
(A) $-GM/R$ (B) $-GMm/R$ (C) $-Gm/r^2$ (D) $-Gm/r$

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) Calculate the work done in kilogoules in lifting a mass of 10kg through a vertical height of 10m.
- (ii) What do you mean by variable force? Give its two examples.
- (iii) How can you calculate work done by a force acting on an object from force displacement graph?
- (iv) Define kilowatt hour. Show that $1 \text{ kWh} = 3.6 \times 10^6 \text{ J}$.
- (v) Write some methods to obtain solar energy.

NOTE: Attempt the following questions.

(9x2=18)

- 3(a) Prove that work done by gravitational field is independent of the path followed. And what you conclude from this?
- (b) How large a force is required to accelerate an electron ($m = 9.1 \times 10^{-31} \text{ kg}$) from rest to the speed of $2.0 \times 10^7 \text{ ms}^{-1}$ through a distance of 5.0 cm?
- 4(a) Define Absolute Potential Energy. Derive a relation for absolute gravitational potential energy.
- (b) A force F acting on an object varies with distance x as show in Fig. 4.7. Calculate the work done by the force as the object moves from $x = 0$ to $x \text{ m}$.

MCQs Ans Key.

Q:1 (B)

Q:2 (C)

Q:3 (A)

Q:4 (B)

Q:5 (A)

Q:6 (B)

Q:7 (A)

Q:8 (B)



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Test Syllabus:	Unit-4,				

Q.1 Circle the Correct Answers.

(5x1=5)

- If ω is complex cube root of unity then conjugate of ω is:
(A) ω^2 (B) $-\omega^2$ (C) $-\omega$ (D) i
- The sum of the four fourth roots of unity is:
(A) 0 (B) 1 (C) -1 (D) i
- $1 - \omega + \omega^2 =$:
(A) -1 (B) 0 (C) $-\omega$ (D) -2ω
- If one root of $x^2 - 3x + a = 0$ is 2, then $a =$ ____ is 2, the $a =$:
(A) -2 (B) 2 (C) 0 (D) -3
- If the roots of the equation $\frac{a}{x-a} + \frac{b}{x-b} = 1$ are equal in magnitude and opposite in signs then.
(A) $a + b = 1$ (B) $a - b = 0$ (C) $a - b = 1$ (D) $a + b = 0$

Q.2 Write short answers of the following questions.

(5x2=10)

- Solve by using quadratic formula $15x^2 + 2ax - a^2 = 0$.
- Solve the equation $2x^4 - 32 = 0$
- Find the nature of roots of $2x^2 - 7x + 3 = 0$.
- Show that roots of the equation $px^2 - (p - q)x - q = 0$ will be rational.
- The sum of a positive number and its square is 380. Find the number.

NOTE: Attempt the following questions.

(10x2=20)

- If the Roots of $Px^2 + qx + q = 0$ are α, β then prove that $\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}} + \sqrt{\frac{p}{q}} = 0$.
 - Solve the following systems of equations: $x^2 + y^2 + 6x = 1$; $x^2 + y^2 + 2(x + y) = 3$
- Solve the following equation: $\sqrt{x+7} + \sqrt{x+2} = \sqrt{6x+13}$
 - Solve the equation $x^4 - 6x^2 + 10 - \frac{6}{x^2} + \frac{1}{x^4} = 0$.

MCQs Ans Key.

Q:1 (A)

Q:2 (A)

Q:3 (D)

Q:4 (B)

Q:5 (D)



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Q.1 Circle the correct answer.

(11x1=11)

- If P and Q are polynomials and $Q \neq 0$, then $\frac{P}{Q}$ is called a ----- sentence.
(A) Divided (B) Polynomial (C) Irrational (D) Rational
- If ω is complex cube root of unity then conjugate of ω is:
(A) ω^2 (B) $-\omega^2$ (C) $-\omega$ (D) i
- If ω is complex cube root of unity then $\omega^{29} + \omega^{28} + 1 = \underline{\hspace{1cm}}$:
(A) 0 (B) 1 (C) 2 (D) 3
- If $x = \sqrt{2 + \sqrt{2 + \sqrt{2 + \dots + \infty}}}$, then $x = \underline{\hspace{1cm}}$.
(A) 0 (B) 1 (C) 2 (D) None of these
- $x^3 - 3x^2 + 2x - 6$ has factor:
(A) $x-4$ (B) $x-3$ (C) $x+3$ (D) $x+2$
- The product of roots of the equation $3x^2 + 4x = 0$ is:
(A) $-\frac{4}{3}$ (B) $\frac{4}{3}$ (C) 0 (D) 4
- If p and q are roots of the equation $x^2 + px = (p+1)x$, then q is equal to:
(A) 1 (B) 2 (C) 3 (D) 4
- If $x^2 - 3 = 0$ then sum of roots is:
(A) 0 (B) 3 (C) -3 (D) 1
- The roots of $x^2 + 2x + 3 = 0$ are:
(A) Imaginary (B) Real, equal (C) Real, unequal (D) rational
- Only one of the roots of $ax^2 + bx + c = 0$, $a \neq 0$, is zero if:
(A) $c = 0$ (B) $b = 0, c = 0$ (C) $b = 0, c \neq 0$ (D) $b \neq 0, c = 0$
- The roots of the equation $(x-a)(x-b) + (x-b)(x-c) + (x-c)(x-a) = 0$ are:
(A) rational (B) real (C) irrational (D) complex

Q.2 Write short answers of the following questions.

(6x2=12)

- Solve the following equations by completing the square: $x^2 + 4x - 1085 = 0$
- Solve $x^3 + x^2 + 2 + 1 = 0$
- State "Remainder Theorem".
- If α, β are the roots of $3x^2 - 2x + 4 = 0$ find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$.
- If α, β are roots of $ax^2 + bx + c = 0$, $a \neq 0$ form the equation whose roots are α^2, β^2 .
- Show that the roots of the equation $x^2 - 2\left(m + \frac{1}{m}\right)x + 3 = 0$, $m \neq 0$, will be real.

Q.3 Write short answers of the following questions.

(6x2=12)

- Solve by using quadratic formula $15x^2 + 2ax - a^2 = 0$.
- Solve the following equations by factorization: $\frac{a}{ax-1} + \frac{b}{bx-1} = a + b$; $x \neq \frac{1}{a}, \frac{1}{b}$
- Solve the following equations by completing the square: $x^2 - 2x - 899 = 0$
- Reduce $2x^4 - 3x^3 - x^2 - 3x + 2 = 0$ into quadratic form.
- Find the remainder by remainder theorem when the polynomial $x^2 + 3x + 7$ is divided by $x + 1$.
- Discuss the nature of the roots of $25x^2 - 30x + 9 = 0$.

NOTE: Attempt a long question.

(5+5=10)

- Solve the equation $x^2 + x - 4 + \frac{1}{x} + \frac{1}{x^2} = 0$.
- Prove that $\frac{x^2}{a^2} + \frac{(mx+c)^2}{b^2} = 1$ will have equal roots if $c^2 = a^2m^2 + b^2$; $a \neq 0, b \neq 0$.

MCQs Ans Key.

Q:1 (D)

Q:2 (A)

Q:3 (A)

Q:4 (C)

Q:5 (B)

Q:6 (C)

Q:7 (A)

Q:8 (A)

Q:9 (A)

Q:10 (D)

Q:11 (B)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Mathematics-11	Date:		Time:	
Questions Type	Type 11 - Short Test - (No Choice) Marks=45				
Test Syllabus:	Unit-4,				

Q.1 Circle the correct answer.

(11x1=11)

- An equation of the form $ax^2 + bx + c = 0$ is called quadratic if:
(A) $a = 0$ (B) $b = 0$ (C) $c = 0$ (D) $a \neq 0$
- ω^3 equals:
(A) 0 (B) -1 (C) i (D) 1
- Four fourth roots of unity are:
(A) $-1, 1, i, -i$ (B) $-2, 2, -2i, 2i$ (C) $-3, 3, 3i, -3i$ (D) $\pm 4, \pm 4i$
- The polynomial $3x^2 + 2x + 1$ has degree:
(A) 0 (B) 3 (C) 2 (D) 4
- The degree of polynomial $\sqrt{ax^3 + bx^2 + cx} = 4$ is:
(A) $\frac{3}{2}$ (B) $\frac{1}{2}$ (C) 3 (D) 4
- If one root of the equation $x^2 + ax + 2 = 0$ is '2' then 'a' is equal to:
(A) -3 (B) 3 (C) 4 (D) -2
- Synthetic division is a process of:
(A) Addition (B) Multiplication (C) Subtraction (D) Division
- If $x + 3$ is a factor of $3x^3 + kx^2 - 22x + 24$, then value of k is:
(A) 1 (B) 2 (C) -1 (D) None of these
- The product of roots of the equation $3x^2 + 4x = 0$ is:
(A) $-\frac{4}{3}$ (B) $\frac{4}{3}$ (C) 0 (D) 4
- If α, β are the roots of $4x^2 + 5x - 6 = 0$, then value of $4\alpha + 4\beta$ equals:
(A) $-\frac{5}{4}$ (B) -5 (C) -6 (D) 5
- For real and repeated roots $b^2 - 4ac$ will be:
(A) Positive (B) Negative (C) Zero (D) Imaginary

Q.2 Write short answers of the following questions. (6x2=12)

- If ω is a root of $x^2 + x + 1 = 0$, show that its other root is ω^2 .
- Find values of 'a' and 'b' if -2 and 2 are roots of polynomial $x^3 - 4x^2 + ax + b$.
- If α, β are roots of $3x^2 - 2x + 4 = 0$, find value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$.
- If α, β are the roots of the equation $ax^2 + bx + c = 0$, form the equations whose roots are: $\frac{1}{\alpha^3}, \frac{1}{\beta^3}$
- Discuss the nature of the roots of $2x^2 - 5x + 1 = 0$.
- The sum of a positive number and its square is 380. Find the number.

Q.3 Write short answers of the following questions. (6x2=12)

- Solve by using quadratic formula $15x^2 + 2ax - a^2 = 0$. (ii) Solve $x^2 + 7x + 12 = 0$. (iii) Define roots of an equation.
- Find the remainder by remainder theorem when the polynomial $x^2 + 3x + 7$ is divided by $x + 1$.
- Show that the roots of the equation $(P + q)x^2 - Px - q = 0$ will be rational.
- Show that the roots of the equation $x^2 - 2\left(m + \frac{1}{m}\right)x + 3 = 0, m \neq 0$, will be real.

NOTE: Attempt a long question.

(5+5=10)

- Solve the following systems of equations: $12x^2 - 25xy + 12y^2 = 0$; $4x^2 + 7y^2 = 148$
- Solve the equation $x^4 - 6x^2 + 10 - \frac{6}{x^2} + \frac{1}{x^4} = 0$.

MCQs Ans Key.

Q:1 (D)

Q:2 (D)

Q:3 (A)

Q:4 (C)

Q:5 (A)

Q:6 (A)

Q:7 (D)

Q:8 (C)

Q:9 (C)

Q:10 (B)

Q:11 (C)



SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-I
Subject:	Mathematics-11	Date:		Time:	
Questions Type	Type 3 - MCQs + SQs Test - Marks=30				
Test Syllabus:	Unit-4,				

O Four possible answers A, B, C & D to each question are given. Circle the correct one. (10x1=10)

- 1 If $x^2 + 1 = 0$ and i is its root then other root is:
(A) -1 (B) $-i$ (C) 1 (D) ± 1
- 2 Roots of $x^2 - x - 2 = 0$ are:
(A) 2,-1 (B) -2,1 (C) -2,-1 (D) 2,1
- 3 If ω is complex cube root of unity then
 $\omega^{29} + \omega^{28} + 1 = \underline{\hspace{2cm}}$:
(A) 0 (B) 1 (C) 2 (D) 3
- 4 The degree of polynomial $\sqrt{ax^3 + bx^2 + cx} = 4$ is:
(A) $\frac{3}{2}$ (B) $\frac{1}{2}$ (C) 3 (D) 4
- 5 For what value of k , the roots of the equation $x^2 + \sqrt{k}x + 1 = 0$ are equal:
(A) 1 (B) 2 (C) 3 (D) 4
- 6 For what value of k , the sum of the roots of the equation $x^2 + kx + 4 = 0$ is equal to the product of its roots:
(A) ± 1 (B) 4 (C) ± 4 (D) -4
- 7 If the roots of the quadratic equation $ax^2 + bx + c = 0$ are complex, then:
(A) $b^2 - 4ac > 0$ (B) $b^2 - 4ac < 0$ (C) $b^2 - 4ac = 0$ (D) $b^2 + 4ac = 0$
- 8 Nature of roots of quadratic equation can be found with the help of:
(A) discriminant (B) factor theorem (C) long division (D) remainder theorem
- 9 Roots of $Px^2 + qx + r = 0$ are equal if:
(A) $P = qr$ (B) $Pq = r$ (C) $q^2 = 4Pr$ (D) $r^2 = P$
- 10 Only one of the roots of $ax^2 + bx + c = 0$, $a \neq 0$, is zero if:
(A) $c = 0$ (B) $b = 0, c = 0$ (C) $b = 0, c \neq 0$ (D) $b \neq 0, c = 0$

Q.2 Write short answer of the following questions. (10x2=20)

- (i) Solve by using quadratic formula $15x^2 + 2ax - a^2 = 0$.
- (ii) Solve the equation by quadratic formula $16x^2 + 8x + 1 = 0$.
- (iii) Solve the following equations by completing the square: $x^2 + 4x - 1085 = 0$
- (iv) Solve the following equations by completing the square: $x^2 - 3x - 648 = 0$
- (v) Define exponential equation.
- (vi) Solve $x^3 + x^2 + 2 + 1 = 0$
- (vii) Find values of 'a' and 'b' if -2 and 2 are roots of polynomial $x^3 - 4x^2 + ax + b$.
- (viii) When $x^4 + 2x^3 + kx^2 + 3$ is divided by $(x - 2)$ the remainder is 1. Find the value of k .
- (ix) Use the factor theorem to determine if the polynomial is a factor of the second polynomial.
 $\omega + 2, 2\omega^3 + \omega^2 - 4\omega + 7$
- (x) If α, β are the roots of the equation $ax^2 + bx + c = 0$, form the equations whose roots are: $\alpha + \frac{1}{\alpha}, \beta + \frac{1}{\beta}$

Q.2 Write short answer of the following questions. (10x2=20)

- (i) Solve $\frac{x}{x+1} + \frac{x+1}{x} = \frac{5}{2}; x \neq 0$
- (ii) Define roots of an equation.
- (iii) Solve the following equations by factorization: $9x^2 - 12x - 5 = 0$
- (iv) What are the extraneous roots of an equation?
- (v) Find four fourth roots of 16.

- (vi) State "Remainder Theorem".
- (vii) If α, β are roots of $ax^2 + bx + c = 0$, $a \neq 0$ form the equation whose roots are α^2, β^2 .
- (viii) Find the nature of roots of $2x^2 - 7x + 3 = 0$.
- (ix) Discuss the nature of the roots of $2x^2 - 5x + 1 = 0$.
- (x) A number exceeds its square root by 56. Find the number.

Q.2 Write short answer of the following questions.

(10x2=20)

- (i) Solve the following equations by factorization: $\frac{a}{ax-1} + \frac{b}{bx-1} = a + b$; $x \neq \frac{1}{a}, \frac{1}{b}$
- (ii) State two basic techniques for solving a quadratic equation.
- (iii) Reduce $2x^4 - 3x^3 - x^2 - 3x + 2 = 0$ into quadratic form.
- (iv) Evaluate: $(-1 + \sqrt{-3})^5 + (-1 - \sqrt{-3})^5$
- (v) Solve the equation $2x^4 - 32 = 0$
- (vi) If α, β are the roots of $x^2 - Px - P - C = 0$, prove that $(1 + \alpha)(1 + \beta) = 1 - C$.
- (vii) If α, β are the roots of the equation $ax^2 + bx + c = 0$, form the equations whose roots are: $\frac{1}{\alpha^3}, \frac{1}{\beta^3}$
- (viii) Show that the roots of the equation $(P + q)x^2 - Px - q = 0$ will be rational.
- (ix) Show that the roots of the equation $x^2 - 2\left(m + \frac{1}{m}\right)x + 3 = 0$, $m \neq 0$, will be real.
- (x) The sum of a positive number and its square is 380. Find the number.

MCQs Ans Key.

Q:1 (B)

Q:2 (A)

Q:3 (A)

Q:4 (A)

Q:5 (D)

Q:6 (D)

Q:7 (A)

Q:8 (A)

Q:9 (C)

Q:10 (D)