



SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-I
Subject:	Chemistry-11	Date:		Time:	
Questions Type	Type 8 - Short Test (No Choice) - Marks=30				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(6x1=6)

- The wave number of the light emitted by a certain source is $2 \times 10^6 \text{m}^{-1}$. The wavelength of this light is:
(A) 500 nm (B) 500 m (C) 200 nm (D) $5 \times 10^7 \text{m}$
- When atoms are subjected to strong electric field, splitting of spectral lines is called:
(A) Zeeman effect (B) Stark effect (C) Photoelectric effect (D) Compton effect
- De-Broglie equation is represented by:
(A) $h = \frac{\lambda}{mv}$ (B) $m = \frac{h}{\lambda v}$ (C) $m = \frac{\lambda}{hv}$ (D) $\lambda = \frac{h}{mv}$
- Which equation correctly presents the Heisenberg's uncertainty principle?
(A) $\Delta x \cdot \Delta p = \frac{h}{4\pi}$ (B) $\Delta x \cdot \Delta p > \frac{h}{4\pi}$ (C) $\Delta x \cdot \Delta p \geq \frac{h}{4\pi}$ (D) $\Delta x \cdot \Delta p \leq \frac{h}{4\pi}$
- The electron in a subshell is filled according to formula:
(A) $2n^2$ (B) $2(2l+1)$ (C) $(2l+1)$ (D) none of these
- Orbitals having same energy are called:
(A) Hybrid orbitals (B) Valence orbitals (C) Degenerate orbitals (D) d-orbitals

Q.2 Write short answers of the following questions.

(8x2=16)

- The $\frac{e}{m}$ value of positive rays is less than cathode rays. Justify.
- Which ever gas is used in the discharge tube, the nature of the cathode rays remains same? Why?
- Derive an expression up to radius of n^{th} orbit for hydrogen atom.
- What is atomic emission spectrum?
- What is meant by fine structure of Hydrogen Spectrum?
- Write names of spectral series of hydrogen spectrum.
- State Heisenberg uncertainty Principle and give its mathematical form.
- How does the above equation tell you that? Radius is inversely proportional to the number of protons in the nucleus.

NOTE: Attempt the long question.

(4+4=8)

- Calculate the energy of electron in He^+ in first five orbits and justify that the energy difference are different from those of hydrogen atom.
- Calculate the wave number of the photon when the electron jumps from $n = 5$ to $n = 2$. In which series of spectral lines and spectral regions these photons will appear.

MCQs Ans Key.

Q:1 (A)

Q:2 (B)

Q:3 (D)

Q:4 (C)

Q:5 (B)

Q:6 (C)



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Questions Type	Type 8 - Short Test (No Choice) - Marks=30				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(6x1=6)

- In the ground state of an atom, the electron is present:
(A) In the nucleus (B) In the second shell (C) Nearest to the nucleus
(D) Farthest from the nucleus
- When atoms are subjected to strong electric field, splitting of spectral lines is called:
(A) Zeeman effect (B) Stark effect (C) Photoelectric effect (D) Compton effect
- Which equation correctly presents the Heisenberg's uncertainty principle?
(A) $\Delta \times \Delta p = \frac{h}{4\pi}$ (B) $\Delta \times \Delta p > \frac{h}{4\pi}$ (C) $\Delta \times \Delta p \geq \frac{h}{4\pi}$ (D) $\Delta \times \Delta p \leq \frac{h}{4\pi}$
- The electron in a subshell is filled according to formula:
(A) $2n^2$ (B) $2(2l+1)$ (C) $(2l+1)$ (D) none of these
- Maximum number of electrons in f-subshell is:
(A) 2 (B) 6 (C) 10 (D) 14
- Rutherford's model of atom failed because:
(A) the atom did not have a nucleus and electrons
(B) it did not account for the attraction between protons and neutrons
(C) it did not account for stability of the atom
(D) there is actually no space between the nucleus and the electrons

Q.2 Write short answers of the following questions.

(8x2=16)

- Why the nature of cathode rays is independent of the nature of gas used in discharge tube.
- Cathode rays are electrons. Justify.
- How positive rays are produced?
- Write down the nuclear reaction involving in the conversion of Cu into Zn.
- Write down two postulates of plank's quantum theory of radiation.
- Justify the statement that angular momentum of electron revolving in orbit is quantized?
- Differentiate between continuous and line spectrum.
- What is origin of Hydrogen Spectrum?

NOTE: Attempt the long question.

(4+4=8)

- State and explain plank's quantum theory.
- What are Quantum numbers, Explain principle Quantum Number.

MCQs Ans Key.

Q:1 (C)

Q:2 (B)

Q:3 (C)

Q:4 (B)

Q:5 (D)

Q:6 (C)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Chemistry-11	Date:		Time:	
Questions Type	Type 4 - SQs + LQs Test - Marks=40				
Test Syllabus:	Unit-5,				

Q.1 Write short answers of the following questions.

(6x2=12)

- Why positive rays are also called canal rays?
- Calculate the radius of n^{th} orbit for hydrogen atom.
- Differentiate between atomic emission spectrum and atomic absorption spectrum.
- How the wave nature of electron was verified experimentally?
- How does the above equation tell you that? Radius is inversely proportional to the number of protons in the nucleus.
- Justify that the distance gaps between different orbits go on increasing from the lower to the higher orbits.

Q.2 Write short answers of the following questions.

(6x2=12)

- The $\frac{e}{m}$ values for positive rays are different for different gases, but that of cathode rays obtained from different gases is the same. Give reasons.
- Write the nuclear equation for the Discovery of Neutrons.
- Define spectrum and mention its types.
- What is meant by fine structure of Hydrogen Spectrum?
- Differentiate between Zeeman effect and Stark effect.
- How do you come to know that the velocities of electrons in higher orbits, are less than those in lower orbits of hydrogen atom?

Write long answers of the following questions.

(2x8=16)

- What is de-Broglie's wavelength of an electron in meters travelling at half a speed of light? [$m = 9.109 \times 10^{-31}$ kg, $c = 3 \times 10^8$ ms⁻¹]
- Give the different postulates of Bohr's atomic model.
- Give the postulates of Bohr's atomic model. Which postulate tells us that orbits are stationary and energy is quantized?
- Calculate the wave number of the photon when the electron jumps from $n = 5$ to $n = 1$. In which series of spectral lines and spectral regions these photons will appear.



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Questions Type	Type 8 - Short Test (No Choice) - Marks=30				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(6x1=6)

- The nature of positive rays depends on:
(A) The nature of electrode (B) The nature of discharge tube (C) The nature of residual gas
(D) All of above
- Positive rays were discovered by:
(A) J.J Thomson (B) Goldstein (C) William Crookes (D) Rutherford
- When fast neutron carries nuclear reaction with nitrogen it ejects particles:
(A) α (B) β (C) γ (D) δ
- De-Broglie equation is represented by:
(A) $h = \frac{\lambda}{mv}$ (B) $m = \frac{h}{\lambda v}$ (C) $m = \frac{\lambda}{hv}$ (D) $\lambda = \frac{h}{mv}$
- Which equation correctly presents the Heisenberg's uncertainty principle?
(A) $\Delta x \cdot \Delta p = \frac{h}{4\pi}$ (B) $\Delta x \cdot \Delta p > \frac{h}{4\pi}$ (C) $\Delta x \cdot \Delta p \geq \frac{h}{4\pi}$ (D) $\Delta x \cdot \Delta p \leq \frac{h}{4\pi}$
- Quantum number values for 2p orbitals are:
(A) n = 2, l = 1 (B) n = 1, l = 2 (C) n = 1, l = 0 (D) n = 2, l = 0

Q.2 Write short answers of the following questions.

(8x2=16)

- What is Cathode Ray tube?
- What is line and Continuous Spectrum?
- What is origin of Hydrogen Spectrum?
- Mention two defects of Bohr's model.
- How the dual nature of an electron was verified.
- What is orbital? Draw the shape of p-orbitals.
- How does the above equation tell you that? Radius is inversely proportional to the number of protons in the nucleus.
- Do you think that the size of Li^{+2} is even smaller than He^{+} ? Justify with calculations.

NOTE: Attempt the long question.

(4+4=8)

- Convert the mass of electron into grams and velocity of light into cm s^{-1} and then calculate the wavelength of an electron in cm.
- Give four defects of Bohr's atomic model.

MCQs Ans Key.

Q:1 (C)

Q:2 (B)

Q:3 (A)

Q:4 (D)

Q:5 (C)

Q:6 (A)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Biology-11	Date:		Time:	
Questions Type	Type 9 - Short Test (No Choice) - Marks=35				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(9x1=9)

- 1 Phylogeny describes a species:
(A) Morphological Similarities with other species. (B) Evolutionary history.
(C) Reproductive compatibilities with other species. (D) Geographical Distribution.
- 2 The known species of animals are:
(A) 1.5 million (B) 53.1 million (C) 73.1 million (D) 2.5 million
- 3 Binomial nomenclature system was given by:
(A) Pasteur (B) De Duve (C) Lamarck (D) Linnaeus
- 4 To accommodate euglena like organisms and bacteria, kingdom protista was proposed by:
(A) Ernst Haeckel (B) Linnaeus (C) Robert Whittaker (D) E-Chatton
- 5 Organelles of symbiotic origin are:
(A) Mitochondria (B) Vacuole (C) Ribosome (D) Golgi body
- 6 Capsomers are subunits which form capsid of a virion. These capsomeres are chemically.
(A) Lipids (B) Nucleic acids (C) Carbohydrate (D) Proteins
- 7 Lytic cycle completion occurs about.
(A) 15 Min (B) 25 Min (C) 35 Min (D) 05 Min
- 8 Paramyxoviruses cause the disease:
(A) Influenza (B) Polio (C) Mumps & Measles (D) Herpes Simple
- 9 Hepatitis is an inflammation of:
(A) Stomach (B) Pancreas (C) Liver (D) Kidney

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) What are prions?
- (ii) How virion differ from prion?
- (iii) Sketch and label diagram of bacteriophage.
- (iv) On the Basis of morphology, How viruses are classified?
- (v) What are Pocks?

NOTE: Attempt the following questions.

(8x2=16)

- 3(a) Write a note on Acquired Immune Deficiency Syndrome.
- (b) Give biological classification of corn plant.
- 4(a) Explain structure of bacteriophage.
- (b) Discuss any two disease caused by viruses.

MCQs Ans Key.

Q:1 (B)

Q:2 (A)

Q:3 (D)

Q:4 (A)

Q:5 (A)

Q:6 (D)

Q:7 (B)

Q:8 (C)

Q:9 (C)



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Questions Type	Type 9 - Short Test (No Choice) - Marks=35				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(9x1=9)

- 1 Closely related classes are grouped into:
(A) Division (B) Order (C) Family (D) Kingdom
- 2 The common name of Allium cepa is:
(A) Piyaz (B) Bathu (C) Channa (D) Potato
- 3 Madcow disease is caused by:
(A) Virus (B) Bacteria (C) Prions (D) Fungus
- 4 Mad cow infection and mysterious brain infection in man are caused by:
(A) Bacteria (B) Fungus (C) Prions (D) Virion
- 5 Lytic cycle completion occurs about.
(A) 15 Min (B) 25 Min (C) 35 Min (D) 05 Min
- 6 The process in which the phage is called a prophage is termed as:
(A) Induction (B) lysogeny (C) Deduction (D) Penetration
- 7 Influenza viruses are:
(A) DNA naked (B) DNA enveloped (C) RNA enveloped (D) RNA naked
- 8 Paramyxoviruses cause the disease:
(A) Influenza (B) Polio (C) Mumps & Measles (D) Herpes Simple
- 9 A disease, which is highly contagious is:
(A) Measles (B) Mumps (C) Influenza (D) Herpes

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) Give disadvantages of common names.
- (ii) Define capsid.
- (iii) What is HIV?
- (iv) What are Pocks?
- (v) What are mumps and measles?

NOTE: Attempt the following questions.

(8x2=16)

- 3(a) What is glycolysis? Draw its scheme of reactions.
- (b) Describe Life Cycle of a Bacteriophage.
- 4(a) Sketch the infection cycle of HIV.
- (b) Explain structure of virus.

MCQs Ans Key.

Q:1 (A)

Q:2 (A)

Q:3 (C)

Q:4 (C)

Q:5 (B)

Q:6 (B)

Q:7 (C)

Q:8 (C)

Q:9 (B)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Biology-11	Date:		Time:	
Questions Type	Type 11 - Short Test (No Choice) - Marks=45				
Test Syllabus:	Unit-5,				

Q.1 Circle the correct answer.

(13x1=13)

- 1 Initially, the classification was based on:
(A) Cytology (B) Physiology (C) Morphology (D) Genetic features
- 2 Binomial system of nomenclature was devised by:
(A) E-Chatton (B) Ernst Hackle (C) Robert Whittaker (D) Carlous Linnaeus
- 3 The Common name for Solanum melangena is:
(A) Onion (B) Brinjal (C) Potato (D) Amaltas
- 4 Binomial nomenclature system was given by:
(A) Pasteur (B) De Duve (C) Lamark (D) Linnaeus
- 5 Solanum esculentum is the scientific name of:
(A) Potato (B) Tobacco (C) Onion (D) Tomato
- 6 Madcow disease is caused by:
(A) Virus (B) Bacteria (C) Prions (D) Fungus
- 7 Mad cow infection and mysterious brain infection in man are caused by:
(A) Bacteria (B) Fungus (C) Prions (D) Virion
- 8 The smallest known viruses are:
(A) Bacteriophage (B) Pseudomonas (C) Polio (D) E-coli
- 9 Capsomers are subunits which form capsid of a virion. These capsomeres are chemically.
(A) Lipids (B) Nucleic acids (C) Carbohydrate (D) Proteins
- 10 About 25 minutes after initial infections approximate number of new bacteriophages formed is:
(A) 100 (B) 200 (C) 2000 (D) 500
- 11 Measles and mumps is caused by virus belonging to a group called as:
(A) Pox virus (B) Paramyxo virus (C) Polio virus (D) Adeno Virus
- 12 The single stranded RNA-tumor viruses are:
(A) Spherical (B) Elongated (C) Spiral (D) Cubical
- 13 Pig could be the source of infection of hepatitis:
(A) A (B) B (C) E (D) C

Q.2 Write short answers of the following questions.

(6x2=12)

- (i) Define capsid. (ii) How virion differ from prion? (iii) Compare prophage with provirus.
- (iv) On the Basis of morphology, How viruses are classified? (v) What are the symptoms of AIDS?
- (vi) What is reverse transcriptase? Give its function.

Q.3 Write short answers of the following questions.

(6x2=12)

- (i) Why euglena is difficult to classify? (ii) Differentiate between lytic and lysogenic phage. (iii) What is HIV?
- (iv) Write the name of two viral diseases and their causative agents. (v) What are Retroviruses and Paramyxoviruses?
- (vi) Write down symptoms and preventions of hepatitis.

NOTE: Attempt a long question.

(4+4=8)

- 4(a) How HIV is transmitted?
- (b) Describe Linnaeus system of Binomial nomenclature in detail.

MCQs Ans Key.

Q:1 (C)

Q:2 (D)

Q:3 (B)

Q:4 (D)

Q:5 (D)

Q:6 (C)

Q:7 (C)

Q:8 (C)

Q:9 (D)

Q:10 (B)

Q:11 (B)

Q:12 (A)

Q:13 (C)



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Questions Type	Type 11 - Short Test (No Choice) - Marks=45				
Test Syllabus:	Unit-5,				

Q.1 Circle the correct answer.

(13x1=13)

- 1 Closely related classes are grouped into:
(A) Division (B) Order (C) Family (D) Kingdom
- 2 The number of capsomeres in capsid of adenovirus are:
(A) 152 (B) 252 (C) 352 (D) 452
- 3 To accommodate euglena like organisms and bacteria, kingdom protista was proposed by:
(A) Ernst Haeckel (B) Linnaeus (C) Robert Whittaker (D) E-Chatton
- 4 Organelle of symbiotic origin is:
(A) Cell wall (B) Cell membrane (C) Mitochondria (D) Vacuole
- 5 Madcow disease is caused by:
(A) Virus (B) Bacteria (C) Prions (D) Fungus
- 6 The smallest known viruses are:
(A) Bacteriophage (B) Pseudomonas (C) Polio (D) E-coli
- 7 The process in which the phage is called a prophage is termed as:
(A) Induction (B) lysogeny (C) Deduction (D) Penetration
- 8 About 60% of adults are immune to disease.
(A) Mumps (B) Measles (C) Influenza (D) Polio
- 9 Paramyxoviruses cause the disease:
(A) Influenza (B) Polio (C) Mumps & Measles (D) Herpes Simple
- 10 Which one of the following is not viral disease?
(A) Cow pox (B) Mumps (C) Tetanus (D) Small pox
- 11 A disease, which is highly contagious is:
(A) Measles (B) Mumps (C) Influenza (D) Herpes
- 12 Hepatitis is an inflammation of:
(A) Stomach (B) Pancreas (C) Liver (D) Kidney
- 13 Pig could be the source of infection of hepatitis:
(A) A (B) B (C) E (D) C

Q.2 Write short answers of the following questions.

(6x2=12)

- (i) Give biological classification of corn. (ii) Give disadvantages of common names.
- (iii) Differentiate between lytic and lysogenic phage. (iv) What are the symptoms of AIDS? (v) What are Pocks?
- (vi) What are mumps and measles?

Q.3 Write short answers of the following questions.

(6x2=12)

- (i) What is binomial nomenclature? What are two rules of nomenclature? (ii) Why euglena is difficult to classify?
- (iii) What do you mean by term venome? (iv) Define capsid. (v) What are prions?
- (vi) Write down symptoms and preventions of hepatitis.

NOTE: Attempt a long question.

(4+4=8)

- 4(a) Explain structure of virus.
- (b) Write a detailed note on "AIDS". Draw life cycle of HIV.

MCQs Ans Key.

Q:1 (A)

Q:2 (B)

Q:3 (A)

Q:4 (C)

Q:5 (C)

Q:6 (C)

Q:7 (B)

Q:8 (A)

Q:9 (C)

Q:10 (C)

Q:11 (B)

Q:12 (C)

Q:13 (C)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Physics-11	Date:		Time:	
Questions Type	Type 10 - Short Test (No Choice) - Marks=35				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(9x1=9)

- A wheel of radius 50 cm having an angular speed of 5 rad/s have linear speed:
(A) 1.5 m/s (B) 3.5 m/s (C) 4.5 m/s (D) 2.5 m/s
- If a body is moving in the counter clockwise direction the the direction of angular velocity will be:
(A) Toward the centre (B) Away from the centre (C) Along the linear velocity
(D) Perpendicular to both radius and linear velocity
- A body is moving in a circular path. The angle between its linear velocity and angular velocity is:
(A) 180° (B) 90° (C) 45° (D) 0°
- Centripetal acceleration is also called:
(A) Tangential (B) Radial (C) Angular (D) Rotational
- Which one of the following force cannot do any work on the particle on which it acts?
(A) Fractional force (B) Gravitational force (C) Electrostatic force (D) Centripetal force
- Choose the quantity which plays the same role in angular motion as that of mass in linear motion.
(A) Angular Acceleration (B) Torque (C) Moment of Inertia (D) Angular Momentum
- The moment of inertia of 10 kg hoop about the axis of rotation perpendicular to its plane having radius 5m is:
(A) 50 kgm² (B) 100 kgm² (C) 150 kgm² (D) 250 kgm²
- The rate of change of linear momentum of a body is equal to:
(A) Moment of force (B) The applied force (C) The applied torque (D) Impulse
- Relation between the speed of disc and hoop at the bottom of an incline is:
(A) $v_{disc} = \sqrt{\frac{3}{4}}v_{hoop}$ (B) $v_{disc} = \sqrt{\frac{4}{3}}v_{hoop}$ (C) $v_{disc} = \sqrt{\frac{2}{5}}v_{hoop}$ (D) $v_{disc} = 2v_{hoop}$

Q.2 Write short answers of the following questions.

(5x2=10)

- Define positive and negative angular acceleration. Give examples for each.
- Prove the relation between linear velocity and angular velocity.
- Define moment of inertia, how it is related to torque.
- Show that the angular momentum $L_o = mvr$.
- Explain why an object orbiting around the earth is said to be free falling?

NOTE: Attempt the following questions.

(8x2=16)

- Explain rotational kinetic energy. Prove that velocity of disc is greater than hoop.If both are rolling down from the same height.
 - What is the least speed at which an aeroplane can execute a vertical loop of 1.0 km radius so that there will be no tendency for the pilot to fall down at the highest point?
- What are artificial satellites? Find the expression for velocity and period to put a satellite into the orbit.
 - What should be the orbiting speed to launch a satellite in a circular orbit 900 km above the surface of the Earth? (Take mass of the Earth as 9.0×10^{24} kg and its radius as 6400 km).

MCQs Ans Key.

Q:1 (D)

Q:2 (D)

Q:3 (B)

Q:4 (B)

Q:5 (D)

Q:6 (C)

Q:7 (D)

Q:8 (B)

Q:9 (B)



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Questions Type	Type 10 - Short Test (No Choice) - Marks=35				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(9x1=9)

- The angular velocity of the minute hand of a clock is:
(A) $2\pi \text{ rads}^{-1}$ (B) $\pi \text{ rads}^{-1}$ (C) $\frac{\pi}{60} \text{ rads}^{-1}$ (D) $4\pi \text{ rads}^{-1}$
- The relation between linear velocity and angular velocity is:
(A) $\underline{v} = \underline{\omega} \times \underline{r}$ (B) $\underline{v} = \underline{\omega} \times \underline{r}$ (C) $\underline{\omega} = \underline{v} \times \underline{r}$ (D) $\underline{\omega} = \underline{r} \times \underline{v}$
- A wheel of diameter 1m makes 60 rev/min. The linear speed of a point on its rim in ms^{-1} is:
(A) π (B) 2π (C) $\frac{\pi}{2}$ (D) 3π
- Centripetal force performs:
(A) Maximum work (B) Minimum work (C) Negative work (D) No work
- The centripetal force is always directed.
(A) Away from the centre along the radius (B) Along the direction of motion
(C) Opposite to the motion of the body (D) Towards the centre along the radius
- Which one of the following is not directed along the axis of rotation?
(A) Angular acceleration (B) Angular momentum (C) Centripetal acceleration
(D) Angular displacement
- Moment of inertia of 100 kg sphere having radius 50 cm will be:
(A) 10 kg m^2 (B) 5 kg m^2 (C) 500 kg m^2 (D) 2.5 kg m^2
- The rotational kinetic energy of a hoop of mass m moving down an inclined plane with velocity v will be:
(A) $\frac{1}{4}mv^2$ (B) $\frac{1}{2}mv^2$ (C) $\frac{3}{4}mv^2$ (D) mv^2
- An orbital speed of a satellite can be determined by the equation:
(A) $\sqrt{2gR}$ (B) $\sqrt{\frac{2GM}{R}}$ (C) \sqrt{gR} (D) $\sqrt{\frac{GM}{R}}$

Q.2 Write short answers of the following questions.

(5x2=10)

- Explain the difference between tangential velocity and angular velocity.
- Prove the relation between linear velocity and angular velocity.
- Define moment of inertia, how it is related to torque.
- Show that the angular momentum $L_o = mvr$.
- Explain weightlessness in satellites.

NOTE: Attempt the following questions.

(8x2=16)

- Define rotational K.E. Also derive formula for rotational K.E of a disc and a hoop coming down an inclined plane.
 - A tiny laser beam is directed from the Earth to the Moon. If the beam is to have a diameter of 2.50 m at the Moon, how small must divergence angle be for the beam? The distance of Moon from the Earth is $3.8 \times 10^8 \text{ m}$.
- Explain rotational kinetic energy. Find rotational kinetic energy of a disc and hoop.
 - Consider the rotating cylinder shown in Figure. Suppose that $m = 5.0 \text{ kg}$, $F = 0.60 \text{ N}$ and $r = 0.20 \text{ m}$. Calculate (a) the torque acting on the cylinder, (b) the angular acceleration of the cylinder. (Moment of inertia of cylinder = $\frac{1}{2}mr^2$).

MCQs Ans Key.

Q:1 (A)

Q:2 (B)

Q:3 (A)

Q:4 (D)

Q:5 (D)

Q:6 (C)

Q:7 (D)

Q:8 (B)

Q:9 (C)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Physics-11	Date:		Time:	
Questions Type	Type 2 - SQs Test - Marks=40				
Test Syllabus:	Unit-5,				

SHORT QUESTIONS TEST

1- Write short answers to any 7 questions: (7x2=14)

- Explain the difference between tangential velocity and angular velocity.
- Define angular velocity, how its direction is determine?
- Prove that $a = r\alpha$
- 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?
- Banked tracks are needed for turns on highway. Why?
- Define centripetal force and centripetal acceleration.
- State the direction of the follow's vectors in simple situations, angular momentum and angular velocity.
- Why does the coasting rotating system slow down as some material object is added to the system during rotation?
- A disc and hoop start moving down from the top of inclined plane at the same time. Which one will be moving faster on reaching the ground?
- What type of energies is possessed by a hoop moving down frictionless inclined plane?

2- Write short answers to any 7 questions: (7x2=14)

- Show the $S = r\theta$
- How many radians are there in 2 degree?
- Prove that $v = r\omega$.
- What is difference between Angular Acceleration and Centripetal Acceleration?
- Show that the angular momentum $L_0 = mvr$.
- Why does a diver change its body position before diving in the pool?
- A disc without slipping rolls down a hill of height 10.0 m. If the disc starts from rest at the top of hill, what is its speed at the bottom?
- A lift is ascending with the acceleration 'a'. Derive the expression for apparent weight. The body of mass 'm' in it.
- Define weightlessness and gravity free system.
- Explain why an object orbiting around the earth is said to be free falling?

3- Write short answers to any 6 questions: (6x2=12)

- Derive the relation between radian, degree and revolution.
- Define positive and negative angular acceleration. Give examples for each.
- Prove the relation between linear velocity and angular velocity.
- Define moment of inertia, how it is related to torque.
- What will be the effect on moment of inertia of a cylinder of about its axis if its diameter is doubled?
- What is difference between inertia and moment of inertia?
- What is meant by angular momentum? State Law of Conservation of Angular momentum.
- What is the different between real and apparent weight?
- What happens be the minimum velocity, for a satellite to orbit close to the Earth around it?



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Physics-11	Date:		Time:	
Questions Type	Type 1 - MCQs Test - Marks=20				
Test Syllabus:	Unit-5,				

Q.1 Four possible answers A, B, C & D to each question are given. Circle the correct one. (20x1=20)

- One revolution is equal to:
(A) π rad (B) 2π rad (C) $\frac{\pi}{2}$ rad (D) $\frac{\pi}{4}$ rad
- Angle 30° is equal to:
(A) $\frac{\pi}{2}$ rad (B) $\frac{\pi}{3}$ rad (C) $\frac{\pi}{4}$ rad (D) $\frac{\pi}{6}$ rad
- A wheel of radius 50 cm having an angular speed of 5 rad/s have linear speed:
(A) 1.5 m/s (B) 3.5 m/s (C) 4.5 m/s (D) 2.5 m/s
- Which one of the following is correct?
(A) $\omega = r v$ (B) $v = \frac{r}{\omega}$ (C) $v = r\omega$ (D) $\omega = \frac{r}{v}$
- The direction of angular velocity is determined by:
(A) Left hand rule (B) Head to tail rule (C) Right had rule (D) General rule
- When a particle is moving along a circular path, its projection along the diameter executes:
(A) Linear motion (B) Vibratory motion (C) Rotatory motion (D) SHM
- $\omega = 60 \text{ rev min}^{-1}$ is equal to:
(A) $\pi \text{ rad s}^{-1}$ (B) $2\pi \text{ rad s}^{-1}$ (C) $\frac{1}{\pi} \text{ rad s}^{-1}$ (D) $\frac{2}{\pi} \text{ rad s}^{-1}$
- Angular acceleration is produced by:
(A) Power (B) Torque (C) Pressure (D) Force
- A body can have a constant velocity when it follows a:
(A) Elliptical path (B) Circular path (C) Parabolic path (D) Rectilinear path
- When a bbody moves in a circle, the angle between linear velocity 'v' and angular velocity ' ω ' is:
(A) 180° (B) 90° (C) 60° (D) 45°
- A wheel of diameter 1m makes 60 rev/min. The linear speed of a point on its rim in ms^{-1} is:
(A) π (B) 2π (C) $\frac{\pi}{2}$ (D) 3π
- Which one of the following is not directed along the axis of rotation?
(A) Angular acceleration (B) Angular momentum (C) Centripetal acceleration
(D) Angular displacement
- The dimensions of Angular momentum L are:
(A) $[\text{ML}^2\text{T}^{-2}]$ (B) $[\text{MLT}^{-1}]$ (C) $[\text{ML}^2\text{T}^{-2}]$ (D) $[\text{ML}^{-2}\text{T}]$
- The direction of angular momentum of a body moving along a circle is:
(A) Along the tangent (B) Perpendicular to the plane of the circle (C) Radially outward
(D) Radially inward
- The diver spins faster when momentum of inertia becomes:
(A) Smaller (B) Greater (C) Constant (D) Zero
- The rotational K.E of a hoop of radius 'r' is:
(A) $\frac{1}{4}mr^2\omega^2$ (B) $\frac{1}{2}mr^2\omega^2$ (C) $mr^2\omega^2$ (D) $\frac{1}{2}r^2\omega^2$
- The ratio of velocity of disc of velocity of hoop is:
(A) $\frac{3}{\sqrt{2}}$ (B) $\frac{4}{\sqrt{3}}$ (C) $\frac{2}{3}$ (D) $\frac{4}{3}$
- The linerar velocity of a disc when it reaches the bottom of an inclined plane of height 'h' is:
(A) \sqrt{gh} (B) $\sqrt{\frac{2}{3}gh}$ (C) $\sqrt{\frac{4}{3}gh}$ (D) $\sqrt{\frac{1}{3}gh}$
- A man of 1 kg is freefalling. The force of gravity is:
(A) 1N (B) 9.8N (C) 0.5N (D) Zero
- A body of mass 10 kg in free falling lift has weight:
(A) 10 N (B) 9.8 N (C) Zero N (D) 980 N

MCQs Ans Key.

Q:1 (B)	Q:2 (D)	Q:3 (D)	Q:4 (C)	Q:5 (C)	Q:6 (B)
Q:7 (B)	Q:8 (B)	Q:9 (D)	Q:10 (B)	Q:11 (A)	Q:12 (C)
Q:13 (A)	Q:14 (B)	Q:15 (A)	Q:16 (B)	Q:17 (A)	Q:18 (A)
Q:19 (B)	Q:20 (C)				



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Mathematics-11	Date:		Time:	
Questions Type	Type 5 - Short Test (No Choice) - Marks=25				
Test Syllabus:	Unit-5,				

Q.1 Circle the correct Answer.

(5x1=5)

- 1 $(x-1)^2 = x^2 - 2x + 1$ is called:
(A) Equation (B) conditional fraction (C) Identity (D) fraction
- 2 Partial fractions of $\frac{1}{x(x+1)}$ are of the form:
(A) $\frac{1}{x-1} + \frac{1}{x+1}$ (B) $\frac{1}{x-1} - \frac{1}{x+1}$ (C) $\frac{1}{x} + \frac{1}{x+1}$ (D) $\frac{1}{x} - \frac{1}{x+1}$
- 3 If degree of $P(x) = 4$ and degree of $Q(x) = 3$, then $\frac{P(x)}{Q(x)}$ will be:
(A) Proper rational function (B) Improper rational function (C) Polynomial
(D) conditional equation
- 4 If $\frac{2x+1}{(x-1)(x+2)(x+3)} = \frac{A}{x-1} + \frac{B}{x+2} + \frac{C}{x+3}$, then B is:
(A) $-\frac{5}{4}$ (B) $\frac{1}{4}$ (C) 1 (D) None of these
- 5 If $\frac{1}{(x+1)((x-3)^2)} = \frac{A}{x+1} + \frac{B}{x-3} + \frac{C}{(x-3)^2}$, then A is:
(A) $\frac{1}{16}$ (B) $\frac{1}{4}$ (C) $-\frac{1}{16}$ (D) None of these.

Q.2 Write short answers of the following questions. (5x2=10)

- (i) Define Conditional equation.
- (ii) Define Partial Fractions.
- (iii) Define proper and improper fraction.
- (iv) Resolve $\frac{3x-11}{(x^2+1)(x+3)}$ into partial fractions.
- (v) Resolve the following into partial fractions. $\frac{3x+7}{(x^2+4)(x+3)}$

NOTE: Attempt the following long questions. (5+5=10)

- 3(a) Resolve into partial fraction: $\frac{x^2}{(x-2)(x-1)^2}$
- (b) Resolve into partial fractions of $\frac{9x-7}{(x^2+1)(x+3)}$.

MCQs Ans Key.

Q:1 (C)

Q:2 (D)

Q:3 (B)

Q:4 (C)

Q:5 (A)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Mathematics-11	Date:		Time:	
Questions Type	Type 9 - Short Test (No Choice)- Marks=35				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(5x1=5)

- 1 $x^2 - x - 2 = (x + 1)(x - 2)$ is:
(A) Quadratic equation (B) conditional equation (C) Linear equation (D) Identity
- 2 The fraction $\frac{x^2+7x+3}{x+1}$ is:
(A) Improper (B) Proper (C) Equivalent (D) Identity
- 3 $\frac{x^2+x+1}{Q(x)}$ will be proper rational function if:
(A) Degree of Q(x) = 1 (B) Degree of Q(x) = 2 (C) Degree of Q(x) = 3 (D) None of these.
- 4 If $\frac{2x}{(x+3)(x-1)(x+2)^2} = \frac{A}{x+3} + \frac{B}{x-1} + \frac{C}{x+2} + \frac{D}{(x+2)^2}$, then A is:
(A) $\frac{5}{4}$ (B) $\frac{1}{12}$ (C) 1 (D) None of these.
- 5 Partial fractions of $\frac{1}{x^3+1}$ will be of the form:
(A) $\frac{A}{x+1} - \frac{Bx+C}{x^2-x+1}$ (B) $\frac{A}{x-1} + \frac{Bx+C}{x^2-x+1}$ (C) $\frac{A}{x+1} - \frac{B}{x^2-x+1}$ (D) $\frac{Ax+B}{x^2+1} + \frac{C}{x^2-x+1}$

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) Define Partial Fractions.
(ii) Define identity and give example.
(iii) Define proper and improper fraction.
(iv) Resolve $\frac{7x+25}{(x+3)(x+4)}$ into partial fractions.
(v) Define equation.

NOTE: Attempt the following questions.

(10x2=20)

- 3(a) Resolve $\frac{3x^2-4x-5}{(x-2)(x^2+7x+10)}$ into partial fractions.
(b) Resolve into partial fractions of $\frac{9x-7}{(x^2+1)(x+3)}$.
- 4(a) Resolve $\frac{1}{(x-1)(2x-1)(3x-1)}$ into partial fractions.
(b) Resolve $\frac{9}{(x+2)^2(x-1)}$ into Partial fractions.

MCQs Ans Key.

Q:1 (D)

Q:2 (A)

Q:3 (C)

Q:4 (A)

Q:5 (A)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Mathematics-11	Date:		Time:	
Questions Type	Type 9 - Short Test (No Choice)- Marks=35				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(5x1=5)

- 1 The fraction $\frac{2x^2+5}{x-3}$ is:
(A) Proper (B) Rational (C) Polynomial (D) Improper
- 2 $\frac{x^2-3}{3x+1}$ is:
(A) Polynomial (B) Equation (C) Proper fraction (D) Improper fraction
- 3 The partial fractions of $\frac{x+1}{(x-1)(x-2)}$ are of the form:
(A) $\frac{A}{x-1} + \frac{B}{x+2}$ (B) $\frac{A}{x-1} + \frac{B}{x-2}$ (C) $\frac{Ax+B}{x-1} + \frac{C}{x-2}$ (D) $\frac{A}{x-1} + \frac{Bx+C}{x-2}$
- 4 $\frac{3x^2-4x-5}{(x-2)(x+2)(x+5)} = \frac{A}{x-2} + \frac{B}{x+2} + \frac{C}{x+5}$, then C is:
(A) $-\frac{1}{28}$ (B) $\frac{30}{7}$ (C) $-\frac{5}{4}$ (D) None of these
- 5 $\frac{2x^2}{(x-3)(x+2)^2}$ is a fraction:
(A) Proper (B) Improper (C) Identity (D) Irrational

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) Define Conditional equation.
(ii) Define Partial Fractions.
(iii) Resolve $\frac{7x+25}{(x+3)(x+4)}$ into partial fractions.
(iv) Resolve $\frac{3x-11}{(x^2+1)(x+3)}$ into partial fractions.
(v) Resolve the following into partial fractions. $\frac{3x+7}{(x^2+4)(x+3)}$

NOTE: Attempt the following questions.

(10x2=20)

- 3(a) Resolve into partial fraction: $\frac{x^2}{(x-2)(x-1)^2}$
(b) Resolve $\frac{3x^2-4x-5}{(x-2)(x^2+7x+10)}$ into partial fractions.
- 4(a) Resolve into partial fractions of $\frac{9x-7}{(x^2+1)(x+3)}$.
(b) Resolve $\frac{1}{(x-1)(2x-1)(3x-1)}$ into partial fractions.

MCQs Ans Key.

Q:1 (D)

Q:2 (D)

Q:3 (B)

Q:4 (B)

Q:5 (A)



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Name:		Roll#:		Class:	Inter Part-I
Subject:	Mathematics-11	Date:		Time:	
Questions Type	Type 9 - Short Test (No Choice)- Marks=35				
Test Syllabus:	Unit-5,				

Q.1 Circle the Correct Answers.

(5x1=5)

- 1 The conditional equation $\frac{1}{x} = 3$ holds if $x =$ - - - - -
 (A) $\frac{1}{3}$ (B) $\frac{1}{2}$ (C) $\frac{1}{4}$ (D) None of these
- 2 If $\frac{1}{(1-ax)(1-bx)(1-cx)} = \frac{A}{1-ax} + \frac{B}{1-bx} + \frac{C}{1-cx}$, then C:
 (A) $\frac{c^2}{(c-a)(c-b)}$ (B) $\frac{a^2}{(a-b)(a-c)}$ (C) $\frac{b^2}{(b-a)(b-c)}$ (D) None of these
- 3 Partial fractions of $\frac{2x^3+x^2-x-3}{x(2x+3)(x-1)}$ are:
 (A) $1 + \frac{1}{x} + \frac{8}{5(2x+3)} - \frac{1}{5(x-1)}$ (B) $1 + \frac{1}{x} - \frac{8}{5(2x+3)} + \frac{1}{5(x-1)}$ (C) $1 + \frac{1}{x} - \frac{8}{5(2x+3)} - \frac{1}{5(x-1)}$
 (D) None of these.
- 4 In $\frac{P(x)}{Q(x)}$, if degree of P(x) \geq degree of Q(x), then fraction is:
 (A) Proper (B) Improper (C) Irrational (D) Identity
- 5 If $\frac{3x-11}{(x^2+1)(x+3)} = \frac{Ax+B}{x^2+1} + \frac{C}{x+3}$, then C is:
 (A) 2 (B) -2 (C) 3 (D) None of these.

Q.2 Write short answers of the following questions.

(5x2=10)

- (i) Define rational fraction.
- (ii) Define proper and improper fraction.
- (iii) Define proper and improper fraction.
- (iv) Resolve $\frac{7x+25}{(x+3)(x+4)}$ into partial fractions.
- (v) Resolve the following into partial fractions. $\frac{3x+7}{(x^2+4)(x+3)}$

NOTE: Attempt the following questions.

(10x2=20)

- 3(a) Resolve $\frac{3x^2-4x-5}{(x-2)(x^2+7x+10)}$ into partial fractions.
- (b) Resolve $\frac{x^2-2x+3}{x^4+x^2+1}$ into partial fractions.
- 4(a) Resolve into partial fraction: $\frac{x^2}{(x-2)(x-1)^2}$
- (b) Resolve into partial fractions of $\frac{9x-7}{(x^2+1)(x+3)}$.

MCQs Ans Key.

Q:1 (A)

Q:2 (A)

Q:3 (C)

Q:4 (B)

Q:5 (B)