



# SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-II
Subject:	Mathematics-12	Date:		Time:	
Questions Type	Type 9 - Short Test (No Choice) - Marks=35				
Test Syllabus:	Unit-1,				

## Q.1 Circle the Correct Answers.

(5x1=5)

- If  $y = f(x)$ , then the variable  $x$  is called ----- variable of a function  $f$ .  
(A) dependent (B) independent (C) image of  $y$  (D) None of these
- $f(x) = x^3$  is a/an \_\_\_\_\_ function:  
(A) constant (B) odd (C) even (D) none of these
- $\operatorname{csch}^{-1} x =$   
(A)  $\ln\left(\frac{1+\sqrt{x^2+1}}{x}\right)$  (B)  $\ln\left(\frac{1+\sqrt{1-x^2}}{x}\right)$  (C)  $\ln\left(\frac{1+\sqrt{1+x^2}}{2}\right)$  (D)  $\frac{1}{2}\ln\left(\frac{x+1}{x-1}\right)$
- $\lim_{x \rightarrow 0} \frac{\sin 3x}{\sin 2x}$  is equal to:  
(A)  $\frac{2}{3}$  (B)  $\frac{3}{2}$  (C)  $\frac{1}{6}$  (D)  $\frac{1}{4}$
- $\lim_{x \rightarrow a} [f(x) - g(x)] = \dots$   
(A)  $\lim_{x \rightarrow a} f(x) - \lim_{x \rightarrow a} g(x)$  (B)  $\lim_{x \rightarrow a} f(x) \times \lim_{x \rightarrow a} g(x)$   
(C)  $\lim_{x \rightarrow a} f(x) + \lim_{x \rightarrow a} g(x)$  (D)  $\lim_{x \rightarrow a} f(x) \pm \lim_{x \rightarrow a} g(x)$

## Q.2 Write short answers of the following questions.

(5x2=10)

- Find  $\frac{f(a+h)-f(a)}{h}$  and simplify where  $f(x) = 6x - 9$
- Find  $f^{-1}(x)$  when  $f(x) = (-x + 9)^3$
- Without finding  $f(x)$ . State Domain and Range of  $f^{-1}(x)$  if  $f(x) = \sqrt{x+2}$ .
- Evaluate each limit by using theorems of limits:  $\lim_{x \rightarrow 2} (\sqrt{x^3+1} - \sqrt{x^2+5})$
- Evaluate each limit by using algebraic techniques:  $\lim_{h \rightarrow 0} \frac{\sqrt{x+h} - \sqrt{x}}{h}$

## NOTE: Attempt the following questions.

(10x2=20)

- If  $f(x) = (-x + 9)^3$ , find  $f^{-1}(x)$  and verify  $f(f^{-1}(x)) = f^{-1}(f(x)) = x$ .
- Find the values of  $m$  and  $n$ , so that given function  $f(x)$  is continuous at  $x = 3$  where  
$$f(x) = \begin{cases} mx & \text{if } x < 3 \\ n & \text{if } x = 3 \\ -2x + 9 & \text{if } x > 3 \end{cases}$$
- If  $f(x) = \begin{cases} 3x & \text{if } x \leq -2 \\ x^2 - 1 & \text{if } -2 < x < 2 \\ 3 & \text{if } x \geq 2 \end{cases}$ , discuss continuity at  $x = 2$ .
- Evaluate the  $\lim_{x \rightarrow 0} \frac{\sec x - \cos x}{x}$ .

# MCQs Ans Key.

Q:1 (B)

Q:2 (B)

Q:3 (A)

Q:4 (B)

Q:5 (A)



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Test Syllabus:	Unit-1,				

## Q.1 Circle the Correct Answers.

(5x1=5)

- If  $f(x) = x^{\frac{2}{3}} + 6$  then  $f(0)$ :  
(A) 1 (B) 4 (C) 6 (D) 8
- If  $f(x)$  is continuous at point  $x = a$ , then:  
(A)  $f(a) = \lim_{x \rightarrow a} f(x)$  (B)  $f(a) = \lim_{x \rightarrow 0} f(x)$  (C)  $f(0) = \lim_{x \rightarrow a} f(x)$  (D)  $f(x) = \lim_{x \rightarrow a} f(x)$
- The function  $y = e^{x \cdot \ln 2} = 2^x$  is a/an \_\_\_\_\_ function of  $x$ :  
(A) constant (B) explicit (C) exponential (D) logarithmic
- Every relation, which can be represented by a linear equation in two variables, represents a:  
(A) graph (B) function (C) cartesian product (D) relation
- $\lim_{x \rightarrow a} f(x) = l$  if and only if:  
(A)  $\lim_{h \rightarrow 0} f(a+h) = l$  (B)  $\lim_{h \rightarrow a} f(a+h) = l$  (C)  $\lim_{x \rightarrow a} f(a+h) = 0$  (D)  $\lim_{h \rightarrow 0} f(a+h) = 0$

## Q.2 Write short answers of the following questions.

(5x2=10)

- Express the volume  $V$  of a cube as a function of the area  $A$  of its base.
- Find  $\frac{f(a+h) - f(a)}{h}$  and simplify where  $f(x) = \cos x$
- Define function.
- Evaluate  $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x^2 - x}$ .
- Define discontinuous function.

## NOTE: Attempt the following questions.

(10x2=20)

- Find  $\frac{f(a+h) - f(a)}{h}$  and simplify where  $f(x) = x^3 + 2x^2 - 1$
  - Evaluate  $\lim_{x \rightarrow a} \frac{x^n - a^n}{x^m - a^m}$ .
- If  $f(x) = (-x + 9)^3$ , find  $f^{-1}(x)$  and verify  $f(f^{-1}(x)) = f^{-1}(f(x)) = x$ .
  - Evaluate  $\lim_{\theta \rightarrow 0} \frac{\tan \theta - \sin \theta}{\sin^3 \theta}$ .

# MCQs Ans Key.

Q:1 (C)

Q:2 (A)

Q:3 (C)

Q:4 (B)

Q:5 (A)



# SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-II
Subject:	Physics-12	Date:		Time:	
Questions Type	Type 8 - Short Test (No Choice) - Marks=30				
Test Syllabus:	Unit-12,				

## Q.1 Circle the Correct Answers.

(6x1=6)

- The electric field lines are closer where the field is:  
(A) Strong (B) Weak (C) Uniform (D) Variable
- Total flux through a closed surface depends on:  
(A) Shape of surface (B) Charge enclosed only (C) Medium only (D) Charge and Medium
- A rubber ball of radius 2 cm has a charge of  $5 \mu\text{C}$  on its surface, which is uniformly distributed, the value of  $\vec{E}$  at its centre is:  
(A)  $10 \text{ NC}^{-1}$  (B) Zero (C)  $2.5 \text{ NC}^{-1}$  (D)  $5 \times 10^{-6} \text{ NC}^{-1}$
- A charge of  $10^{-10} \text{ C}$  between two parallel plates 1 cm apart experience a force of  $10^{-5} \text{ N}$ :  
(A) 10 V (B)  $10^2 \text{ V}$  (C)  $10^3 \text{ V}$  (D)  $10^4 \text{ V}$
- Electron volt is the Unit of:  
(A) Potential (B) Potential difference (C) Electric current (D) Electric energy
- The capacitance of a capacitor depends upon:  
(A) Thickness of plates (B) Charges on the plates (C) Voltage applied  
(D) Geometry of the capacitor

## Q.2 Write short answers of the following questions.

(8x2=16)

- Distinguish between electric field and field intensity.
- What are factors upon which electric flux depend?
- How sharks locate their prey. Explain briefly.
- Show that  $1 \text{ eV} = 1.6 \times 10^{-19} \text{ J}$
- A particle carrying a charge of  $5e$  falls through a potential difference of 10.0 V. What will be the energy acquired by it.
- Describe the force or forces on a positive point charge when placed between parallel plates a) With similar and equal charges b) With opposite and equal charge
- Define dielectric constant give its mathematical form.
- What is time constant of a capacitor resistance circuit and prove that  $R.C = \text{time constant}$ .

## NOTE: Attempt the long question.

(5+3=8)

- What is capacitor? Find the capacitance of parallel plate capacitor?
- Define electric potential. Derive an equation for electric potential at a point due to a point charge.

# MCQs Ans Key.

Q:1 (A)

Q:2 (D)

Q:3 (B)

Q:4 (C)

Q:5 (D)

Q:6 (C)



# SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-II
Subject:	Physics-12	Date:		Time:	
Questions Type	Type 3 - MCQs + SQs Test - Marks=30				
Test Syllabus:	Unit-12,				

## Q.1 Four possible answers A, B, C & D to each question are given. Circle the correct one.

(10x1=10)

- Closeness of the electric field lines is the measure of:  
(A) Direction of field (B) Strength of field (C) Potential difference (D) Uniformity of field
- A charge of 4 Coulomb is in the field of intensity 4N/C. The force on the charge is:  
(A) 8N (B) 16 N (C) 4 N (D) 1 N
- Equation  $\phi = E \cdot A$  is applicable to surface.  
(A) Spherical (B) Cylindrical (C) Conical (D) Flat
- An ECG records the between points on human skin generated by electric process in the heart:  
(A) Heart beat (B) Pulse rate (C) Pressure (D) Voltage
- One electron volt is equal to:  
(A)  $1.6 \times 10^{-19}$  Joule (B)  $1.6 \times 10^{-19}$  Coulomb (C)  $1.6 \times 10^{-19}$  N (D)  $1.6 \times 10^{18}$  Joule
- Charge on electron is:  
(A)  $1.6 \times 10^{19}C$  (B)  $1.6 \times 10^{-19}C$  (C)  $1.6 \times 10^{-17}C$  (D)  $1.6 \times 10^{17}C$
- If electric and magnetic forces on an electron balance each other, the electric intensity be:  
(A)  $E = \frac{mg}{q}$  (B)  $E = \frac{q}{mg}$  (C)  $E = \frac{F_e}{q}$  (D)  $E = \frac{1}{4\pi\epsilon_0} \frac{q}{r^2}$
- A Capacitor stores energy in the form of:  
(A) Magnetic field (B) Heat energy (C) Electrical energy (D) Mechanical energy
- If the separation between the plates of a capacitor is doubled then its capacitance become:  
(A) Double (B) Half (C) One fourth (D) Three times
- The quantity time constant RC has units of:  
(A) Charge (B) Time (C) Capacitance (D) Resistance

## Q.2 Write short answers of the following questions.

(10x2=20)

- Define Gaussian surface and electric lines of force.
- Define electric field intensity as potential gradient and write its formula.
- Define electric potential difference with unit.
- How sharks locate their prey. Explain briefly.
- Differentiate between electrical potential difference and electric potential at a point.
- A particle carrying a charge of  $5e$  falls through a potential difference of 10.0 V. What will be the energy acquired by it.
- Write two similarities and dissimilarities among electric force and gravitational force?
- Define dielectric constant give its mathematical form.
- Why capacitance of a parallel plate capacitor increase in the presence of dielectric?
- Define capacitance also define its unit.

## MCQs Ans Key.

Q:1 (B)

Q:2 (B)

Q:3 (D)

Q:4 (D)

Q:5 (A)

Q:6 (B)

Q:7 (A)

Q:8 (C)

Q:9 (B)

Q:10 (B)



# SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-II
Subject:	Chemistry-12	Date:		Time:	
Questions Type	Type 3 - MCQs + SQs Test - Marks=30				
Test Syllabus:	Unit-1,				

**Q.1 Four possible answers A, B, C & D to each question are given. Circle the correct one.**

**(10x1=10)**

- The basis of modern periodic table is:  
(A) Electron affinity (B) Atomic mass (C) Ionization Potential (D) Atomic number
- Which of the following are alkaline earth metals?  
(A) Be, Mg, Ca (B) Li, Na, K (C) Fe, CO, Ni (D) B, Al, Ga
- Which one is an incomplete period?  
(A) 4<sup>th</sup> (B) 5<sup>th</sup> (C) 6<sup>th</sup> (D) 7<sup>th</sup>
- Number of elements in the first period of the periodic table is:  
(A) 2 (B) 8 (C) 14 (D) 18
- Non-metals are present in which block of periodic table?  
(A) s-block (B) p-block (C) d-block (D) f-block
- Which of the following statement is correct?  
(A) Na atom is smaller than Na<sup>+</sup> (B) Na atom is larger than K atom (C) F atom is smaller than F<sup>-</sup>  
(D) F atom is larger than F
- Which of the following element has lowest- ionization energy?  
(A) Beryllium (B) Boron (C) Carbon (D) Oxygen
- Which of the following has highest M.P?  
(A) Aluminium (B) Silicon (C) Phosphorus (D) Sulphur
- Keeping in view the size of atoms, which order is the correct one?  
(A) Mg > Sr (B) Ba > Mg (C) Lu > Ce (D) Cl > I
- Mark the correct statement:  
(A) Covalent character of metal halides increase from left to right in a period.  
(B) Boiling points of group IV-A hydrides decrease down the group.  
(C) Ionic character of hydrides increases from left to right in a period.  
(D) The basicity of group II-A oxides decreases on descending the group.

**Q.2 Write short answers of the following questions.**

**(10x2=20)**

- Why the 2<sup>nd</sup> electron affinity values of an element are represented by positive sign?
- Define "Electron Affinity". Why second electron affinity value is positive?
- Negative ion is always bigger in size than its parent atom. Why?
- M.P.B.P of short periods increases upto middle of the period and then decrease. Why?
- Give reasons that hydration energy of Al<sup>3+</sup> ions more than Mg<sup>2+</sup> ions?
- Define atomic radius. Why atomic radius of IA group elements increases in a group?
- Hydration energy of the following ions are in the order. Explain. Al<sup>3+</sup> > Mg<sup>2+</sup> > Na<sup>+</sup>
- Explain the variation in melting points along the short periods.
- Why does ionic character of halides decreases from left to right in a period?
- Justify the position of hydrogen at the top of VII A group.

## MCQs Ans Key.

Q:1 (D)

Q:2 (A)

Q:3 (D)

Q:4 (A)

Q:5 (B)

Q:6 (C)

Q:7 (B)

Q:8 (B)

Q:9 (B)

Q:10 (A)



# SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-II
Subject:	Chemistry-12	Date:		Time:	
Questions Type	Type 8 - Short Test (No Choice) - Marks=30				
Test Syllabus:	Unit-1,				

## Q.1 Circle the Correct Answers.

(6x1=6)

- Which one is an incomplete period?  
(A) 4<sup>th</sup> (B) 5<sup>th</sup> (C) 6<sup>th</sup> (D) 7<sup>th</sup>
- Non-metals are present in which block of periodic table?  
(A) s-block (B) p-block (C) d-block (D) f-block
- Which of the following element has lowest- ionization energy?  
(A) Beryllium (B) Boron (C) Carbon (D) Oxygen
- Which ion will have maximum heat of hydration?  
(A) Na<sup>+</sup> (B) Cs<sup>+1</sup> (C) Ba<sup>+2</sup> (D) Mg<sup>+2</sup>
- Which one is not a periodic property:  
(A) Ionization energy (B) Density (C) Atomic Radii (D) Hydration energy
- Mark the correct statement:  
(A) All lanthanides are present in the same group. (B) All halogens are present in the same period.  
(C) All the alkali metals are present in the same group.  
(D) All the noble gases are present in the same period.

## Q.2 Write short answers of the following questions.

(8x2=16)

- What are periods and groups?
- d and f-blocks elements are called transition element. Give reason.
- Diamond is a non-conductor but graphite is a good conductor, Why?
- Negative ion is always bigger in size than its parent atom. Why?
- M.P.B.P of short periods increases upto middle of the period and then decrease. Why?
- The oxidation state varies in a period but remains almost constant in a group. Give reason.
- Hydration energy depends on the charge density of ion. Justify the statement.
- How does lanthanide contraction control the atomic size of elements of 6<sup>th</sup> and 7<sup>th</sup> periods?

## NOTE: Attempt the long question.

(4+4=8)

- Define ionization energy. How does it vary in a group and period of the periodic table.
- Write two similarities and two dissimilarities of hydrogen with IV-A group elements.

# MCQs Ans Key.

Q:1 (D)

Q:2 (B)

Q:3 (B)

Q:4 (D)

Q:5 (B)

Q:6 (C)



# SMART TEST SERIES

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Name:		Roll#:		Class:	Inter Part-II
Subject:	Biology-12	Date:		Time:	
Questions Type	Type 3 - MCQs + SQs Test - Marks=30				
Test Syllabus:	Unit-15,				

**Q.1 Four possible answers A, B, C & D to each question are given. Circle the correct one.**

**(10x1=10)**

- 1 Most cartilaginous fishes possess salt excreting organs known as the:  
(A) Coecal gland (B) Foetal gland (C) Rectal gland (D) Sebaceous gland
- 2 Number of Ammonia molecules required to produce one molecule of urea is:  
(A) 01 (B) 02 (C) 03 (D) 04
- 3 Non surgical removal of kidney stone is called:  
(A) Dialysis (B) Lithotripsy (C) Uremia (D) Kidney transplant
- 4 The incidence of calcium oxalate type stones are:  
(A) 40% (B) 50% (C) 60% (D) 70%
- 5 The high degree renal failure is called:  
(A) Uremia (B) End stage Renal Disease (C) Both A & B (D) Ureducty
- 6 The human Abdominal cavity is lined by a thin epithelium called:  
(A) Ectoderm (B) Endoderm (C) Peritoneum (D) Epidermis
- 7 High level of circulating calcium in the blood is called:  
(A) Hypercalcemia (B) Hypoglycemia (C) Osteomalacia (D) Hyperoxaluria
- 8 The mechanism of evaporative cooling in respiratory tract of dog is known as:  
(A) Panting (B) Shivering Thermogenesis (C) Thermoregulation (D) Vasodilation
- 9 Saliva and urine are used for evaporative cooling by:  
(A) Bat (B) Dogs (C) Birds (D) Seals
- 10 The homeostatic thermostat is present in a brain part called:  
(A) Thalamus (B) Hypothalamus (C) Hipocampus (D) Amygdala

**Q.2 Write short answers of the following questions.**

**(10x2=20)**

- (i) Define Excretion.
- (ii) Describe thermostat function and feedback control in human.
- (iii) Why leaves are said to be excretophores.
- (iv) What are different metabolic wastes in human?
- (v) Write two important functions of liver.
- (vi) What is counter current multiplier Mechanism?
- (vii) What is Renal failure?
- (viii) What are heat shock proteins?
- (ix) Differentiate between Vasodilation and Vasoconstriction.
- (x) How marine mammals adapted to live in cold water?

## MCQs Ans Key.

Q:1 (C)

Q:2 (B)

Q:3 (B)

Q:4 (D)

Q:5 (C)

Q:6 (C)

Q:7 (A)

Q:8 (A)

Q:9 (A)

Q:10 (B)



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Questions Type	Type 8 - Short Test (No Choice) - Marks=30				
Test Syllabus:	Unit-15,				

## Q.1 Circle the Correct Answers.

(6x1=6)

- 1 g of ammonia nitrogen requires how much water for excretion:  
(A) 50 ml (B) 100 ml (C) 250 ml (D) 500 ml
- The central station of metabolism and the body's central metabolic clearing agent is:  
(A) Stomach (B) Liver (C) Kidneys (D) Gut
- Arginase splits the arginine to form urea and:  
(A) Ornithine (B) Citruline (C) Creatinine (D) Ammonia
- The urine leaves the body during urination from bladder through a tube called:  
(A) Pelvis (B) Urethra (C) Ureter (D) Medulla
- A pair of kidneys, consist of millions of functional units called:  
(A) Nephrons (B) Neurons (C) Dendrons (D) Flatrons
- The reabsorption of water in collecting tubules is under the control of:  
(A) Aldosterone (B) ADH (C) Tubular Secretion (D) Pressure filtration

## Q.2 Write short answers of the following questions.

(8x2=16)

- (i) How Osmoregulation takes place in marine environment?
- (ii) What are different metabolic wastes in human?
- (iii) What are juxtamedullary nephron? Give their importance.
- (iv) Enlist the three steps of urine formation in human.
- (v) What is Lithotripsy? Explain.
- (vi) What are heat shock proteins?
- (vii) What are physiological adaptations of heat exchange in animals.
- (viii) How mammals thermoregulate in cold environments?

## NOTE: Attempt the long question.

(4+4=8)

- 3(a) Describe excretion in plants.
- (b) Write a note on thermoregulation in mammals.

# MCQs Ans Key.

Q:1 (D)

Q:2 (B)

Q:3 (A)

Q:4 (B)

Q:5 (A)

Q:6 (B)