

Global Education of Science

Subject: MathematStandard: 10,9Total Mark: 480	ics, Science MCQ ar	nd MCQ	Paper S Date Time	et : 1 : 26-07-2024 : 0H:20M
Mathema	tics - Section A (MCQ)	both Asha and Nisha. ((A) $4,27$	(in <i>year</i>) (B) 9,	22
(1) Solve the equation	$x^2 - 8x - 21 = 0$ using the formula.	(C) 6,28	(D) 5,	27
(A) $4 - \sqrt{37}$ and $4 - \sqrt{37}$	$-\sqrt{37}$ (B) $4 + \sqrt{37}$ and $4 + \sqrt{37}$	(10) The first term of an A.	P. is denoted	by
(C) $-4+\sqrt{37}$ and	$-4-\sqrt{37}$ (D) $4+\sqrt{37}$ and $4-\sqrt{37}$	(A) d	(B) <i>a</i>	
(2) The two triangles ir	n the figure are congruent using	(C) <i>l</i>	(D) n	
congruence theorem. Here, it is given $OQ = OR$. Which of these conditions alongwith the given condition is sufficient to prove that the two triangles are congruent to each other?		(11) The sum of the zeros c (A) 7 (C) 12	of $x^2 + 7x + 1$ (B) -7 (D) -3	2 is 7 12
		(12) For an <i>A.P.</i> , the first te Then, the sum of first 1	erm is 10 and 1 10 terms is	the 10^{th} term is 100 .
		(A) 500	(B) 55	00
R S		(C) 5000	(D) 55	0
(A) $\angle P = \angle S$	(B) $\angle Q = \angle R$	(13) $\ln \Delta ABC, m \angle B = 90$	and \overline{BM} is an	altitude. If $AM = 12$
(C) $OP = OS$	(D) $PQ = SR$	(A) 36	$u = \dots \dots$ (B) 6	
(3) A train, travelling at taken 48 min less t	t a uniform speed for $360 km$, would have o travel the same distance, if its speed	(C) 7.5	(D) 9	
were $5 km/h$ more.	Find the original speed of the train. (in	(14) is not a quadratic e	equation.	
km/h)		(A) $x(3x+7) = (x+1)$	(x-1)	
(A) 54	(B) 45	(B) $x^2 - 2x + 1 = 0$		
(C) 50	(D) 55	(C) $2x(3x-5) + 1 = 3$	3x(2x+5)+3	}
(4) In $\Delta MNP, \overline{MX}$ is a $MX = 3$, then NP	a median. If $MN^2 + MP^2 = 50$ and $P = \dots$	(D) $4 - 3x - 2x^2 = 0$, ,
(A) 8	(B) 16	(15) Find the roots of the fo	ollowing quad	ratic equations by using
(C) 32	(D) 4	the general formula fo $2u^2 + 5u - 3 = 0$	r the roots, if	they exist :
(5) If the following qua	adratic equations has two equal and real value of $h: h\pi^2 = 2\sqrt{5}\pi + 4 = 0$	(A) $\frac{1}{2}$ and -3	(B) 1/7	and 9
(A) $\frac{5}{4}$	(B) $\frac{15}{2}$	(C) $\frac{1}{2}$ and $\frac{1}{2}$	(D) $\frac{3}{2}$	and 6
(C) $\frac{4}{4}$	(D) $\frac{10}{2}$	(16) $\sqrt{7+2\sqrt{5}}$ -	2	
(6) If a pair of equation	$x = y - \frac{3}{3}$ is $3x + ky - 9 = 0$ and $x + 2y - 3 = 0$ has	(A) does not exist as a binomial surd	(B) √($\bar{5} + 1$
(A) -2	(B) 2	(C) $\sqrt{6} - 1$	(D) √	$\bar{7} + \sqrt{5}$
(C) 6	(D) -6	(17) In a two—digit numbe	r, the digit at i	unit's place is x and the
(7) The number of the	zeros of $p(x) = x^2 - 9$ is	digit at ten's place is y	. then the nun	nber is
(A) 2	(B) 3	(A) $10x + y$	(B) x -	+y
(C) 4	(D) 9	(C) $10(x+y)$	(D) 10	y + x
(8) $\Delta ABC \sim \Delta PQR$ 1 AB: PQ = 3: 4 ar perimeter of ΔAB	for the correspondence $ABC \leftrightarrow PQR$. If nd the perimeter of ΔPQR is 24, find the C.	(18) The product of the dig number obtained by ir the original number. Fi	its of a two-d nterchanging t ind the origina	igit number is 14 . The he digits is 45 more tha al number.
(A) 15	(B) 18	(A) 11	(B) 13	
(C) 20	(D) 25	(C) 32	(D) 27	
(9) At present Asha's a her daughter Nisha	ge (in <i>years</i>) is 2 more than the square of 's age. When Nisha grows to her mother's	(19) The sum of the zeros of $p(x) = x^2 + 3x + 2$ is	of a quadratic	polynomial

present age, Asha's age would be one year less than 10

times the present age of Nisha. Find the present ages of

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(B) −2
(D) −3

(A) 2

(C) 3

(20)	$ \begin{array}{l} \ln\Delta PQR, m \angle Q = 90 \text{ and } T \\ PQ = 6 \text{ and } QR = 8 \text{, then } Q \end{array} $	is the midpoint of \overline{PR} . If $T = \dots$	(
	(A) 12	(B) 9	
	(C) 10	(D) 5	
(21)	$\dots \dots $	(D) 0.00,000,0000	
	(A) $3, 3, 3, 3, \ldots$	(B) 2, 22, 222, 2222,	(
(2.2.)	(C) $5, 15, 25, 35, \ldots$	(D) $4, -4, 4, -4, \dots$	
(22)	Find whether the following e mots exist, find them. $x^2 + 5\sqrt{5}x - 70 = 0$	quations have real roots. If real	
	(A) $3\sqrt{5} - 5\sqrt{7}$	(B) $2\sqrt{3} - 7\sqrt{3}$	(
	(C) $2\sqrt{5} - 7\sqrt{5}$	(D) $2\sqrt{7} - 7\sqrt{7}$	
(23)	$\ln \Delta ABC, m \angle B = 90. \text{ If } a =$	16 and c = 12, then	
	$b = \dots$ (A) 8	(B) 18	(
	(C) 20	(D) 28	
(24)	The 20^{th} term of the A.P. 2.	$-2, -6, -10, \dots$ is	
(= -)	(A) -74	(B) 20	
	(C) 22	(D) 74	
(25)	are not the measures of s	ides of a right angled triangle.	
	(A) 5, 12, 13	(B) 3, 4, 5	
	(C) 7,24,25	(D) 8, 24, 26	
(26)	the zero of $p(x) = x^2 + 6x + $	9 is	
	(A) 3	(B) −3	
	(C) $3 \text{ and } -3 \text{ are the zeros of}$	(D) 9 is the zero of	
(27)	$\Delta PQR \sim \Delta XYZ$ for the contrast The perimeter of ΔPQR is 2 is 60. If $PR = 10$, find XZ .	rrespondence $PQR \leftrightarrow XYZ$. 4 and the perimeter of ΔXYZ	2
	(A) 25	(B) 30	(
	(C) 35	(D) 40	
(28)	In $\triangle ABC$ and $\triangle PQR, \angle A \cong$ correspondence $ABC \leftrightarrow \dots$ (A) PRQ	$\angle P$ and $\angle B \cong \angle R$. Then, the is a similarity. (B) PQR	(
	$(\mathbf{C}) \ BPO$	(D) BOP	
(29)	In pair of equations $a_1x + b_1y$	$y + c_1 = 0$ and	
()	$a_2x + b_2y + c_2 = 0$ ifthe (A) $a_1b_2 \neq a_2b_1$	n it has unique solution. (B) $a_1b_2 = b_1a_2$	(
	(C) $b_1c_2 = c_1b_2$	(D) $c_1 a_2 = a_1 c_2$	
(30)	The solution of $x + y - 1 = 0$) and $2x + 2y - 2 = 0$ is	
	(A) {(1,0)}	(B) {(0,1)}	•••
	(C) an infinite set	(D) an empty set	(
(31)	If $x + 1$ is a factor of $ax^3 + x^3$	$a^2 - 2x + 4a - 9$, find the value	
	(A) -1	(B) 0	
	(C) -2	(D) 2	
(32)	Without actually calculating t each of the following $(21)^3 + (15)^3 + (-36)^3$	the cubes, find the value of	(
	(A) 61280	(B) -34020	(
	(C) 65041	(D) -53120	``
(33)	Find the value of k , if $x - 1$ is	a factor of $p(x)$ in this case :	
	$p(x) = x^2 + x + k.$,
	(A) 0	(B) 3	(
	(C) 2	(D) -2	

(34)	With the help of the remaind when the polynomial $x^3 + x^2$ of the following divisors	er theorem, find the remainder $a^2-26x+24$ is divided by each
	x+6	(D) 0
	(A) 12	(D) 0
(25)	(C) 0	(D) 3
(35)	plane, then, is possible.	ne same point in the coordinate
	(A) $a = 2, b = -2$	(B) $a = -2, b = -2$
	(C) $a = -2, b = 2$	(D) $a = 2, b = \frac{1}{2}$
(36)	Evaluate	
	205×195	(P) 30075
	(A) <u>39136</u>	(D) 09511
(27)	(C) 48974	(D) 93541
(37)	In $Fig.$, coordinates of P are	
	P 4 3	
	2	
	<	\rightarrow X
	-4 - 3 - 2 - 1 - 1 2	3 4
	2	
	3	
	4	
	(A) $(-4,2)$	(B) $(4, -2)$
	(C) (2, -4)	(D) $(-2,4)$
(38)	The linear equation $2x - 5y =$	= 7 has
	(A) A unique solution	
((C) No solution	(D) Infinitely many solutions
(39)	Degree of the polynomial $4x^2$	$(x^{4} + 0x^{3} + 0x^{5} + 5x + 7)$ is
	(A) 7	(B) 3
	(C) 5	(D) 4
(40)	$2\sqrt{3} + \sqrt{3}$ is equal to	
	(A) $2\sqrt{6}$	(B) 6
	(C) $3\sqrt{3}$	(D) $4\sqrt{6}$
	Mathematics - S	Section B (мсq)
(41)	Find the remainder when x^3	$+3x^2+3x+1$ is divided by
. ,	x + 1	-
	(A) 0	(B) 3
	(C) 8	(D) 2
(42)	If $x^2 + kx + 6 = (x+2)(x+3)$	B) for all x , then the value of k is
	(A) 5	(B) 1
	(C) −1	(D) 3
(43)	The line joining ${\cal A}(3,-8)$ and	$B(3,5)$ intersects the \boldsymbol{x} -axis at
	(A) (0, 3)	(B) (0, 5)
	(0, 0)	(D) $(0,0)$
(1 1)	(C) $(-8, 0)$	(D) $(3,0)$
(44)	Reliable the denominator $\frac{2+\sqrt{3}}{2-\sqrt{3}}$	or the following:

(A) $2 + 9\sqrt{2}$ (B) $9 + 4\sqrt{3}$ (C) $7 + 5\sqrt{3}$ (D) $7 + 4\sqrt{3}$ (A) 8 (45) Fill in the blanks so as to make each of the following (C) 4 statements true (Final answer only) $\sqrt{2} \cdot \sqrt{3} \cdot \sqrt{6} = \dots$ (A) 6 **(B)** 8 (A) 1 (C) 4 (D) 15 (C) 3 (46) Abscissa of all the points on the x -axis is (A) 0 (B) any number (C) 1 (D) 2 (47) is one of the factors of $p(x) = x^3 - 3x^2 + 7x - 5$ nature? (A) x - 3**(B)** x + 1(A) *Fe* (C) x - 5(D) x - 1(C) Au (48) Point (-3, 5) lies in the (A) first quadrant (B) second quadrant (C) third quadrant (D) fourth quadrant (49) If the coordinates of the two points are P(-2,3) and Q(-3,5), then (abscissa of P) (abscissa of Q) is (A) −5 (B) −1 (A) 99% (C) −2 (D) 1 (50) Find the value of a: $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a - 6\sqrt{3}$ (A) 11 **(B)** −11 (C) 12 (D) 13 $\frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$ (51) Simplify: $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}}$ **(B)** 0 (A) 10 (C) −1 (D) 1 (52) Every rational number is (A) a natural number (B) a real number (C) an integer (D) a whole number (53) On dividing $16x^2 - 24x + 9$ by 4x - 3, find the remainder. (A) −1 **(B)** 0 (C) 2 (D) 4 (54) Find the value of k, if x - 1 is a factor of p(x) in this case : $p(x) = kx^2 - \sqrt{2}x + 1$ (A) $-\sqrt{2}+1$ (B) $\sqrt{2} - 1$ (D) $-\sqrt{2}-1$ (C) $\sqrt{2} + 1$ (55) The degree of polynomial $5x^2 - 7x - 11$ is..... (A) 2 **(B)** 4 (C) 6 (D) 8 (56) Find the value of m so that 2x - 1 be a factor of $8x^4 + 4x^3 - 16x^2 + 10x + m.$ (A) 2 **(B)** −2 (C) −1 (D) $-\frac{1}{2}$ (57) Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by x. seven (A) 5 **(B)** 4 (D) 0 (C) 1 (58) Write the coefficients of x^2 in each of the following polynomials $4 + 7x + 3x^2$ (A) 11 (B) 6 (A) Fe_3O_4 (C) 3 (D) 1 (C) Fe_2O_3

(59) The value of $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$ is equal to (B) $\sqrt{2}$ (D) 2 (60) If x = 2y + 6, then what is the value of $x^3 - 8y^3 - 36xy - 216?$ **(B)** 0 (D) 4 Science - Section A (MCQ) (61) Which of the following metals is obtained in free state in (B) Al (D) Ca (62) At which value of pH of the inner side of the mouth does the decay of teeth take place? (A) Lower than 6.5(B) Higher than 7.3(C) Lower than 5.5(D) Higher than 5.8(63) About % impurity remains in alumina obtained by Bayer's method. (B) 100% (C) 99.5% (D) 95.5% (64) With which of the following does the element carbon not give reaction? (A) Dichlorine gas (B) Dioxygen gas (C) Dihydrogen gas (D) Dilute hydrochloric acid (65) What is the chemical formula of oleum? (A) H_2SO_3 (B) $H_2S_2O_7$ (C) $H_2Cr_2O_7$ (D) H_3PO_4 (66) Which solution will be basic? (A) $[H_3O^+] = 10^{-5} M$ (B) $[H_3O^+] = 10^{-12} M$ (C) $[H_3O^+] = 10^{-7} M$ (D) $[H_3O^+] = 10^{-4} M$ (67) What is the molecular formula of calcium silicate (slag)? (A) $CaSiO_3$ (B) $CaSiO_2$ (C) Na_2SiO_3 (D) $CaCO_3$ (68) One of the constituents of baking powder is sodium hydrogencarbonate, the other constituent is (A) hydrochloric acid (B) sulphuric acid (C) acetic acid (D) tartaric acid (69) Solid calcium oxide reacts vigorously with water to form calcium hydroxide accompanied by liberation of heat. This process is called slaking of lime. Calcium hydroxide dissolves in water to form its solution called lime water. Which among the following is (are) true about slaking of lime and the solution formed? (i) It is an endothermic reaction (*ii*) It is an exothermic reaction (iii) The pH of the resulting solution will be more than (iv) The pH of the resulting solution will be less than seven (A) (ii) and (iii)(B) (i) and (ii)(C) (i) and (iv)(D) (iii) and (iv)(70) Which of the following is the formula of the iron ore haematite? (B) $FeCO_3$

(D) FeS_2

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(71) Which type of compound is ethyl acetate?(A) Ketone(B) Carboxyl	(A) $Mg(OH)_2$ (B) $Ca(OH)_3$ (C) Al_2O_2 (D) $Ng_2CO_2 + 10H_2O_3$
(C) Ester (D) Halide	
(72) Which of the following pairs will give displacement reactions ?	(80) Buckminsterfullerene is an allotropic form of(A) phosphorus(B) sulphur
(A) $NaCl$ solution and copper metal	(C) tin (D) carbon
(B) $MgCl_2$ solution and aluminium metal	(81) Common salt besides being used in kitchen can also be use
(C) $FeSO_4$ solution and silver metal	as the raw material for making
(D) $AgNO_3$ solution and copper metal	(<i>ii</i>) bleaching powder
(73) Which of the following statements is true for acids ?	(iii) baking soda
(A) Bitter and change red litmus to blue	(<i>iv</i>) stated line (A) (<i>i</i>) and (<i>ii</i>) (B) (<i>i</i>), (<i>ii</i>) and (<i>iv</i>)
(B) Sour and change red litmus to blue	(C) (<i>ii</i>) and (<i>iii</i>) (D) (<i>i</i>) (<i>iii</i>) and (<i>iv</i>)
(C) Bitter and change blue litmus to red	
(D) Sour and change blue litmus to red	(82) Which of the following is acidic in nature ? (A) Lime water (B) Human blood
(74) What happens when calcium is treated with water ?	(A) Lime water (D) Antacid
(<i>i</i>) It does not react with water	
(<i>iii</i>) It reacts less violently with water	(83) Whose acid-base theory can be applied to aqueous and non-aqueous solutions?
(<i>iv</i>) Bubbles of hydrogen gas formed stick to the surface of	(A) Robert Boyle (B) Arrhenius
(A) (i) and (iv) (B) (iii) and (iv)	(C) Bronsted-Lowry (D) Rutherford
(C) (i) and (ii) (D) (ii) and (iv)	(84) Which of the following are not ionic compounds?
(75) The electronic configurations of three elements X, Y and Z	(i) KCl (ii) HCl
$X - \{2, 8\}$; $Y - \{2, 8, 7\}$ and $Z - \{2, 8, 2\}$. Which of the following is correct ?	$(ii) \ ICl_4 \\ (iv) \ NaCl$
(A) X is a metal	(A) (ii) and (iii) (B) (i) and (ii)
(B) Y is a non-metal and Z is a metal	(C) (iii) and (iv) (D) (i) and (iii)
(C) Z is a non-metal	(85) One who is habituated to drinking alcohol, is given medicir
(D) Y is a metal	(A) Diclofenac sodium (B) Aspirin
(76) Which among the following are unsaturated hydrocarbons? (i) $H_3C - CH_2 - CH_2 - CH_3$	(C) Paracetamol (D) Disulfiram
$(ii) H_3C - C \equiv C - CH_3$	(86) What type of substance is NH_2 ?
$H_3C - CH - CH_3$	(A) Strong acid (B) Weak acid
(iii) CH_3	(C) Strong base (D) Weak base
$H_3C - C = CH_2$	(87) Identify the correct representation of reaction occurring
(iv) CH_3	(A) $2NaCl(l) + 2H_2O(l) \rightarrow 2NaOH(l) + Cl_2(q) + H_2(q)$
	(B) $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(q) + H_2(q)$
(A) (<i>i</i>) and (<i>iii</i>) (B) (<i>ii</i>) and (<i>iii</i>)	(C) $2NaCl(aq) + 2H_2O(l) \rightarrow$
(C) (iii) and (iv) (D) (ii) and (iv)	$2NaOH(aq) + \tilde{Cl_2}(aq) + H_2(aq)$
(77) Calcium phosphate is present in tooth enamel. Its nature is(A) acidic(B) basic	(D) $2NaCl(aq) + 2H_2O(aq) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$
(C) neutral (D) amphoteric	(88) Which one of the following processes involve chemical reactions?
(78) Which among the following alloys contain mercury as one of	(A) Storing of oxygen gas under pressure in a gas cylinder
(A) Stainless steel	(B) Liquefaction of air
(B) Alnico	(C) Keeping petrol in a china dish in the open
(C) Solder	(D) Heating copper wire in presence of air at high
(D) Zinc amalgam	temperature
(79) Name the sodium compound which is used for softening	(89) Match the chemical substances given in Column (A) with
hard water.	their appropriate application given in Column (B)

Column (A)	Column (B)				
(A) Bleaching powder	(i) Preparation of glass				
(B) Baking soda	(ii) Production of H_2 and Cl_2				
(C) Washing soda	(iii) Decolourisation				
(D) Sodium chloride	(iv) Antacid				
(A) $A - (iii), B - (iv), C - (i), D - (ii)$					
(B) $A - (iii), B - (ii), C - (iv), D - (i)$					

- (C) A (ii), B (i), C (iv), D (iii)
- (D) A (ii), B (iv), C (i), D (iii)
- (90) If copper is kept open in air, it slowly loses its shining brown surface and gains a green coating. It is due to the formation of

(A) $CuSO_4$	(B) <i>CuO</i>
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- (C) $Cu(NO_3)_2$ (D) $CuCO_3$
- (91) Well defined nucleus is absent in
 - (A) blue green algae (B) diatoms
 - (C) algae (D) yeast
- (92) Find out the false sentences
 - (A) Golgi apparatus is involved with the formation of lysosomes
 - (B) Nucleus, mitochondria and plastid have *DNA*; hence they are able to make their own structural proteins
 - (C) Mitochondria is said to be the power house of the cell as *ATP* is generated in them
 - (D) Cytoplasm is called as protoplasm
- (93) In taxonomic hierarchy family comes between
 - (A) Class and Order (B) Order and Genus
 - (C) Genus and Species (D) Division and Class
- (94) How much momentum will a dumb-bell of mass 10 kg transfer to the floor if it falls from a height of 80 cm? Take its downward acceleration to be $10 m s^{-2}$.
 - (A) $25 kg m s^{-1}$ (B) $49 kg m s^{-1}$
 - (C) $40 kg m s^{-1}$ (D) $45 kg m s^{-1}$
- (95) Which cell organelle plays a crucial role in detoxifying many poisons and drugs in a cell ?
 - (A) Golgi apparatus
 - (B) Lysosomes
 - (C) Smooth endoplasmic reticulum
 - (D) Vacuoles
- (96) Two persons manage to push a motorcar of mass $1200 \, kg$ at a uniform velocity along a level road. The same motorcar can be pushed by three persons to produce an acceleration of $0.2 \, m \, s^{-2}$. With what force(in N) does each person push the motorcar? (Assume that all persons push the motorcar with the same muscular effort.)
 - **(A)** 240 **(B)** 244
 - (C) 248 (D) 225
- (97) Cell arises from pre-existing cell was stated by
 - (A) Haeckel (B) Virchow
 - (C) Hooke (D) Schleiden
- (98) Identify the Mg^{2+} ion from the Fig. where, n and p represent the number of neutrons and protons respectively



- (99) Corals are
 - (A) Poriferans attached to some solid support
 - (B) Cnidarians, that are solitary living
 - (C) Poriferans present at the sea bed
 - (D) Cnidarians that live-in colonies
- (100) An artificial satellite is moving in a circular orbit of radius $42250 \ km$. Calculate its speed (in ms^{-1}) if it takes 24 hours to revolve around the earth.

(D) 4064

- (A) 1026 (B) 3074
- (C) 2096

	Science - Sec	tion B (мсq)		(A)		(B)	
(101)	Mass of one atom of oxygen (A) 8 u	is (B) $\frac{32}{6.023 \times 10^{23}} g$		Distance (m)		Distance (m)	
	(C) $\frac{1}{6.023 \times 10^{33}} g$	(D) $\frac{16}{6.023 \times 10^{23}} g$			Time (s) \longrightarrow		Time (s) \longrightarrow
(102)	Cinnabar (HgS) is a promine grams of mercury are present mass of Hg and S are 200.6 g respectively. (A) 178.53 g	nt ore of mercury. How many t in $225 g$ of pure HgS ? Molar $gmol^{-1}$ and $32 gmol^{-1}$ (B) $155.42 g$		Distance (D)		Distance (C)	
	(C) 190.41 g	(D) 194.04 g					
(103)	Rutherford's α - particle scat (i) electrons have negative c (ii) the mass and positive ch concentrated in the nucleus (iii) neutron exists in the nuc (iv) most of the space in ato statements are correct ? (A) (i) and (iii) (C) (i) and (iv)	tering experiment showed that harge arge of the atom is cleus m is empty Which of the above (B) (<i>iii</i>) and (<i>iv</i>) (D) (<i>ii</i>) and (<i>iv</i>)	(112)) Cell wall of v (A) Bacteria (C) Mango t) The dead ele (A) compani	Time (s)	se is not mad (B) Hydrilla (D) Cactus the phloem i (B) phloem	Time (s) \longrightarrow le up of cellulose ?
(104)	A hammer of mass $500 a$, mo	ving at $50 ms^{-1}$, strikes a nail.		(C) phloem	parenchyma	(D) sieve tu	bes
(10.1)	The nail stops the hammer in What is the force(in <i>N</i>) of the (A) 5000 (C) 3500	a very short time of 0.01 s. e nail on the hammer? (B) 2500 (D) 4500	(114)) Which of the model of atc (i) considere (ii) establish	e following state om are correct ? ed the nucleus as ned that the $\alpha-1$	ments about s positively ch particles are f	Rutherford's narged four times as heavy
(105)	Which of the following does maturity ?	not lose their nucleus at	2	as a hydroge (<i>iii</i>) can be (<i>iv</i>) was in a	en atom compared to sola agreement with 1	ar system Thomson's mo	odel
	(A) Vessel	(B) Red blood cells		(A) (i) and $($	iii)	(B) (<i>ii</i>) and	(iii)
(106)	A train is travelling at a speed applied so as to produce a ur $-0.5 m s^{-2}$. Find how far(in <i>n</i> brought to rest. (A) 625 (C) 500	d of 90 km h ⁻¹ . Brakes are hiform acceleration of n) the train will go before it is (B) 225 (D) 750	(115)	 (C) (i) and (Arun has precedent of the chloride in wrepresents t (a) 0.01 g of (b) 0.11 g of (c) 1.00 g of 	iv) epared 0.01% (by vater. Which of t he composition of NaCl + 99.99 g NaCl + 100 g of NaCl + 100 g of NaCl + 00 g of	(D) only (i) w mass) solution he following of the solution of water f water f water f water	on of sodium correctly ns ?
(107)	Convert the following tempe	rature to celsius scale :		(a) $0.10 \ g$ OI (A) (a)	$Nu \subset i + 99.90 g$	(B) (b)	
	a. 300 K b. 573 K. (A) 27 °C and 300 °C	(B) $270 {}^oC$ and $30 {}^oC$	(116)	(C) (c)) Which amor	ng the following i	(D) (d)	marine ?
	(C) $25 ^oC$ and $330 ^oC$	(D) $40 {}^oC$ and $270 {}^oC$. ,	(A) Echinode	ermata	(B) Porifera	
(108)	Real organs are absent in (A) Mollusca	(B) Arthropoda	(117)	(C) Mollusca	a of an object tend	(D) Pisces	e obiect
	(C) Coelenterata	(D) Echinodermata	()	(A) to increa	ase its speed		
(109)	Elements with valency 1 are			(B) to decre	ase its speed		
	(A) always metals	(B) always metalloids		(C) to decel	erate due to frict	ion	
	(C) always non-metals	(D) either metals or non-metals		(D) to resist	any change in its	s state of mo	tion
(110)	Contractile proteins are foun (A) bones	d in (B) blood	(118)) Which of the tissue of the	e following cells body ?	is found in th	e cartilaginous
	(C) muscles	(D) cartilage		(A) Chondro	ocytes	(B) Basophi	IS II-
(111)	Which of the following figure motion of a moving object co	es (Fig.) represents uniform prrectly ?	(119)	(C) Osteocy) Meristemati	ιes c tissues in plant	ט) Mast ce s are	lis

(A) localised and dividing cells (B) not limited to certain regions (C) localised and permanent (D) growing in volume (120) Which among the following produce seeds? (A) Thallophyta (B) Bryophyta (C) Gymnosperms (D) Pteridophyta Globalt



Global Education of Science

Subject: Mathematics, ScienceStandard: 10,9Total Mark: 480

MCQ and MCQ

(Answer Key)

Paper Set	: 1	
Date	: 26-07-2024	4
Time	: 0H:20M	

Mathematics - Section A (MCQ)

1 - D	2 - C	3 - B	4 - A	5 - A	6 - C	7 - A	8 - B	9 - D	10 - B
11 - B	12 - D	13 - B	14 - C	15 - A	16 - A	17 - D	18 - D	19 - D	20 - D
21 - C	22 - C	23 - C	24 - A	25 - D	26 - B	27 - A	28 - A	29 - A	30 - C
31 - C	32 - B	33 - D	34 - C	35 - B	36 - B	37 - D	38 - D	39 - D	40 - C

Mathematics - Section B (MCQ)

41 - A	42 - A	43 - D	44 - D	45 - A	46 - B	47 - D	48 - B	49 - D	50 - A
51 - D	52 - B	53 - B	54 - B	55 - A	56 - B	57 - C	58 - C	59 - D	60 - B

Science - Section A (MCQ)

61 - C	62 - C	63 - C	64 - D	65 - B	66 - B	67 - A	68 - D	69 - A	70 - C
71 - C	72 - D	73 - D	74 - B	75 - B	76 - D	77 - B	78 - D	79 - D	80 - D
81 - C	82 - C	83 - C	84 - A	85 - D	86 - D	87 - B	88 - D	89 - A	90 - D
91 - A	92 - A	93 - B	94 - C	95 - C	96 - A	97 - B	98 - B	99 - D	100 - B

Science - Section B (MCQ)

	101 - D	102 - D	103 - D	104 - B	105 - C	106 - A	107 - A	108 - C	109 - D	110 - C
	111 - A	112 - A	113 - B	114 - A	115 - A	116 - A	117 - D	118 - A	119 - A	120 - C



Global Education of Science

Subject: Mathematics, ScienceStandard: 10,9Total Mark: 480

MCQ and **MCQ**

(Solutions)

 Paper Set
 : 1

 Date
 : 26-07-2024

 Time
 : 0H:20M

Mathematics - Section A (MCQ) ...

(1) Solve the equation $x^2 - 8x - 21 = 0$ using the formula. (A) $4 - \sqrt{37}$ and $4 - \sqrt{37}$ (B) $4 + \sqrt{37}$ and $4 + \sqrt{37}$ (C) $-4 + \sqrt{37}$ and $-4 - \sqrt{37}$ (D) $4 + \sqrt{37}$ and $4 - \sqrt{37}$

Solution:(Correct Answer:D)

Comparing $x^2 - 8x - 21 = 0$ with $ax^{2} + bx + c = 0, a = 1, b = -8, c = -21$ Discriminant $D = b^2 - 4ac$ $= (-8)^2 - 4(1)(-21)$ = 64 + 84= 148 > 0D > 0 but not a perfect square. ... The equation has distinct irrational roots. If α and β are the roots of the equation. then $\alpha = \frac{-b + \sqrt{D}}{2a}$ $(-8) + \sqrt{148}$ 2(1) $8 + 2\sqrt{37}$ $= 4 + \sqrt{37}$ $\beta = \frac{-b - \sqrt{D}}{2}$ $-(-8)^{-}\sqrt{148}$ $= \frac{8-2\sqrt{37}}{2}$ $= 4 - \sqrt{37}$

The roots of the given quadratic equation are $4 + \sqrt{37}$ and $4 - \sqrt{37}$.

(2) The two triangles in the figure are congruent using congruence theorem. Here, it is given OQ = OR. Which of these conditions alongwith the given condition is sufficient to prove that the two triangles are congruent to each other?



Solution:(Correct Answer:C)

(3) A train, travelling at a uniform speed for 360 km, would have taken $48 \min$ less to travel the same distance, if its speed were 5 km/h more. Find the original speed of the train. (in km/h)

(A)	54	(B) 45
(C)	50	(D) 55

Solution:(Correct Answer:B)

Let the original speed of the train $= x \, km/h$ Then, the increased speed of the train $= (x + 5) \, km/h$ [by

given condition] and distance $= 360 \, km$ According to the question, $\Rightarrow \frac{360}{x} - \frac{360}{x+5} = \frac{4}{5}$ [: time = $\frac{\text{Distance}}{\text{Speed}}$ and $\begin{array}{l} x & x + 3 \\ 48min &= \frac{48}{60}h = \frac{4}{5}h] \\ \Rightarrow \frac{360(x+5)-360x}{x(x+5)} &= \frac{4}{5} \left[\because 48\ min = \frac{48}{60}\ h = \frac{4}{5}\ h \right] \\ \Rightarrow \frac{360x+1800-360x}{x^2+5x} &= \frac{4}{5} \end{array}$ $\Rightarrow \frac{1800}{x^2 + 5x} = \frac{4}{5}$ $\Rightarrow x^2 + 5x = \frac{1800 \times 5}{4} = 2250$ $\Rightarrow x^2 + 5x - 2250 = 0$ $\Rightarrow x^2 + (50x - 45x) - 2250 = 0$ $\Rightarrow x^2 + 50x - 45x - 2250 = 0$ [by factorisation method] $\Rightarrow x(x+50) - 45(x+50) = 0$ $\Rightarrow (x+50)(x-45) = 0$ Now, $x + 50 = 0 \Rightarrow x = -50$ which is not possible because speed cannot be negative and $x - 45 = 0 \Rightarrow x = 45$. Hence, the original speed of the train = $45 \, km/h$ (4) In $\Delta MNP, \overline{MX}$ is a median. If $MN^2 + MP^2 = 50$ and MX = 3, then $NP = \dots$ **(A)** 8 **(B)** 16 (C) 32 (D) 4 Solution:(Correct Answer:A) (5) If the following quadratic equations has two equal and real roots then find the value of $k: kx^2 - 2\sqrt{5}x + 4 = 0$ (B) $\frac{15}{3}$ (A) $\frac{5}{4}$ (D) $\frac{10}{2}$ (C) $\frac{4}{1}$ Solution:(Correct Answer:A) $\frac{5}{4}$ (6) If a pair of equations 3x + ky - 9 = 0 and x + 2y - 3 = 0 has infinite solutions. then $k = \dots \dots$ (A) −2 **(B)** 2 **(C)** 6 (D) −6 Solution:(Correct Answer:C) (7) The number of the zeros of $p(x) = x^2 - 9$ is..... **(A)** 2 **(B)** 3 (C) 4 (D) 9 Solution:(Correct Answer:A) (8) $\Delta ABC \sim \Delta PQR$ for the correspondence $ABC \leftrightarrow PQR$. If AB: PQ = 3: 4 and the perimeter of ΔPQR is 24, find the perimeter of ΔABC . (A) 15 **(B)** 18 (C) 20 (D) 25

Solution:(Correct Answer:B)

18

(9) At present Asha's age (in years) is 2 more than the square of her daughter Nisha's age. When Nisha grows to her mother's present age, Asha's age would be one year less than 10 times the present age of Nisha. Find the present ages of both Asha and Nisha. (in year)

(A) 4,27	(B) 9,22
(C) 6,28	(D) 5,27

Solution:(Correct Answer:D)

Let Nisha's present age be x yr. Then, Asha's present age $= x^2 + 2$ [by given condition] Now, when Nisha grows to her mother's present age i.e., after $[(x^2+2)-x]$ yr. Then, Asha's age also increased by $[(x^2+2)-x]$ yr Again by given condition, Age of Asha = One years less than 10 times the present age of Nisha $(x^{2}+2) + \{(x^{2}+2) - x\} = 10x - 1$ $\Rightarrow 2x^2 - x + 4 = 10x - 1$ $\Rightarrow 2x^2 - 11x + 5 = 0$ $\Rightarrow 2x^2 - 10x - x + 5 = 0$ $\Rightarrow 2x(x-5) - 1(x-5) = 0$ $\Rightarrow (x-5)(2x-1) = 0$ $\therefore x = 5$ [nere, $x = \frac{1}{2}$ cannot be possible, because at $x = \frac{1}{2}$, Asha's age is $2\frac{1}{4}y\bar{r}$ which is not possible] Hence, required age of Nisha = 5 yrand required age of Asha = $x^2 + 2 = (5)^2 + 2 = 25 + 2 = 27$ yr

(10) The first term of an *A*.*P*. is denoted by
 (A) *d* (B) *a* (C) *l* (D) *n*

Solution:(Correct Answer:B)

(11) The sum of the ze	ros of $x^2 + 7x + 12$ is
(A) 7	(B) -7
(C) 12	(D) -12

Solution:(Correct Answer:B)

-7

Solution:(Correct Answer:D)

(13) In ∆ABC, m∠B = 90 and BM is an altitude. If AM = 12 and CM = 3, then BM =
(A) 36
(B) 6
(C) 7.5
(D) 9

Solution:(Correct Answer:B)

(14) is not a quadratic equation. (A) x(3x + 7) = (x + 1)(x - 1)

(B)
$$x^2 - 2x + 1 = 0$$

(C)
$$2x(3x-5) + 1 = 3x(2x+5) + 3$$

(D) $4 - 3x - 2x^2 = 0$

Solution:(Correct Answer:C) null

(15) Find the roots of the following quadratic equations by using the general formula for the roots, if they exist : $2u^2 + 5u - 3 = 0$

(A)
$$\frac{1}{2}$$
 and -3 (B) $\frac{1}{7}$ and 9

(C)
$$\frac{1}{2}$$
 and $\frac{1}{2}$ (D) $\frac{3}{2}$ and 6

Solution:(Correct Answer:A)

Comparing $2y^2 + 5y - 3 = 0$ with $ay^2 + by + c = 0; a = 2, b = 5, c = -3$ Discriminant $D = b^2 - 4ac$ $= (5)^2 - 4(2)(-3)$ = 25 + 24 = 49 > 0Since, D > 0 and a square of a rational number with $a, b, c \in Q$, the equation has distinct rational roots. $\alpha = \frac{-b + \sqrt{D}}{2a}$ $= \frac{-5 + \sqrt{49}}{2(2)}$ $= \frac{-5 - \sqrt{D}}{2a}$ $\beta = \frac{-b - \sqrt{D}}{2(2)}$ $= \frac{-5 - \sqrt{49}}{2(2)}$ $= \frac{-5 - 7}{4} = \frac{-12}{4} = -3$ Thus, the roots of the given equation are $\frac{1}{2}$ and -3.

(A) does not exist as a	(B) $\sqrt{6} + 1$
binomial surd	
(C) $\sqrt{6} - 1$	(D) $\sqrt{7} + \sqrt{5}$

Solution:(Correct Answer:A)

(17) In a two-digit number, the digit at unit's place is x and the digit at ten's place is y. then the number is

(A) $10x + y$	(B) $x + y$
(C) $10(x+y)$	(D) $10y + x$

Solution:(Correct Answer:D)

- (18) The product of the digits of a two-digit number is 14. The number obtained by interchanging the digits is 45 more than the original number. Find the original number.
 - (A) 11 (B) 13
 - (C) 32 (D) 27

Solution:(Correct Answer:D)

- 27
- (19) The sum of the zeros of a quadratic polynomial $p(x) = x^2 + 3x + 2$ is......

(A) 2 (B) -2

(C) 3 (D) -3

Solution:(Correct Answer:D)

The sum of the zeros $=-rac{b}{a}=rac{-3}{1}=-3$

(20) In $\Delta PQR, m \angle Q = 90$ and T is the midpoint of \overline{PR} . If PQ = 6 and QR = 8, then $QT = \dots$ (A) 12 (B) 9 (C) 10 (D) 5

Solution:(Correct Answer:D)

(21)is an <i>A</i> . <i>P</i> .		(28) In ΔAB
(A) $3, 3, 3, 3, \ldots$	(B) 2, 22, 222, 2222,	correspo (A) PR
(C) 5, 15, 25, 35,	(D) $4, -4, 4, -4, \ldots$	(C) RP
Solution:(Correct Answer:	:C)	Solutio
(22) Find whether the following mots exist, find them. $x^2 + 5\sqrt{5}x - 70 = 0$ (A) $3\sqrt{5} - 5\sqrt{7}$ (C) $2\sqrt{5} - 7\sqrt{5}$	g equations have real roots. If real (B) $2\sqrt{3} - 7\sqrt{3}$ (D) $2\sqrt{7} - 7\sqrt{7}$	(29) In pair o $a_2x + b_2$ (A) a_1b_2 (C) b_1c_2
Solution:(Correct Answer	:C)	Solutio
Given equation is $x^2 + 5\sqrt{3}$ On comparing with $ax^2 + 6$ $a = 1, b = 5\sqrt{5}$ and $c = -7$ \therefore Discriminant, $D = b^2 - 4$ = 125 + 280 = 405 > 0 Therefore, the equation x^2 distinct real roots. Roots, $x = \frac{-b\pm\sqrt{D}}{2a}$ $= \frac{-5\sqrt{5}\pm\sqrt{405}}{2(1)} = \frac{-5\sqrt{5}\pm9\sqrt{5}}{2}$ $= \frac{-5\sqrt{5}\pm9\sqrt{5}}{2}, \frac{-5\sqrt{5}-9\sqrt{5}}{2}$ $= \frac{-5\sqrt{5}+9\sqrt{5}}{2}, \frac{-5\sqrt{5}-9\sqrt{5}}{2}$	5x - 70 = 0 5x - 70 = 0 bx + c = 0, we get 70 $4ac = (5\sqrt{5})^2 - 4(1)(-70)$ $4 + 5\sqrt{5}x - 70 = 0$ has two 5z	 (30) The solu (A) {(1, (C) an ir Solution (31) If x + 1 of a. (A) -1 (C) -2 Solution
$= \frac{1}{2}, -\frac{1}{2} = 2\sqrt{3} - 1\sqrt{3}$ (23) In $\triangle ABC, m \angle B = 90$. If a	= 16 and $c = 12$, then	Let $p(x)$ As $(x + theorem)$
$b = \dots \dots$ (A) 8	(B) 18	$\Rightarrow a($
(C) 20	(D) 28	$\Rightarrow a()$ $\Rightarrow -a()$
Solution:(Correct Answer	:C)	\Rightarrow 3a
 (24) The 20th term of the A.P. 2 (A) -74 (C) 22 	2, -2, -6, -10, is (B) 20 (D) 74	(32) Without each of $(21)^3 +$ (A) 6128
Solution:(Correct Answer:	:A)	Solution
(25)are not the measures o (A) 5, 12, 13	f sides of a right angled triangle. (B) 3,4,5	Taking a a + b + = 36 -
(C) 7,24,25	(D) 8, 24, 26	Now, if $a^3 + b^3$
Solution:(Correct Answer: $5^2 + 12^2 = 13^2, 3^2 + 4^2 = 4^2$ But, $8^2 + 24^2 \neq 26^2$ Hence 8, 24, 26 are not the	:D) 5^2 and $7^2 + 24^2 = 25^2$	$\begin{array}{c} a^{+} + b^{\circ} \\ \therefore (21)^{3} \\ = 63 \times \\ = -340 \end{array}$
angled triangle.		(33) Find the $p(x) = x$ (A) 0
(26) the zero of $p(x) = x^2 + 6x^2$ (A) 3	+ 9 IS	(C) 2
(C) $3 \text{ and } -3 \text{ are the zeros}$	of (D) 9 is the zero of	Solutio
Solution:(Correct Answer:	:B)	Here $p(x)$ For $x - We$ hav
(27) $\Delta PQR \sim \Delta XYZ$ for the or The perimeter of ΔPQR is is 60. If $PR = 10$, find XZ . (A) 25	correspondence $PQR \leftrightarrow XYZ$. s 24 and the perimeter of ΔXYZ (B) 30	(34) With the when the of the formula (34)
(C) 35	(D) 40	x+6 (A) 12
Solution:(Correct Answer:	:A)	(C) 0

)	In $\triangle ABC$ and $\triangle PQR, \angle A \cong$ correspondence $ABC \leftrightarrow \ldots$	$\angle P$ and $\angle B \cong \angle R$. Then, the is a similarity.
	(A) PRQ	(B) <i>PQR</i>
	(C) <i>RPQ</i>	(D) <i>RQP</i>
	Solution:(Correct Answer:A))
)	In pair of equations $a_1x + b_1y$	$r + c_1 = 0$ and
	$a_2x + b_2y + c_2 = 0$ ifthe	n it has unique solution.
	(A) $a_1 b_2 \neq a_2 b_1$	(b) $a_1 b_2 = b_1 a_2$
	(C) $b_1 c_2 = c_1 b_2$	(D) $c_1 a_2 = a_1 c_2$
	Solution:(Correct Answer:A)	
)	The solution of $x + y - 1 = 0$	and $2x + 2y - 2 = 0$ is
	(A) {(1,0)}	(B) {(0,1)}
	(C) an infinite set	(D) an empty set
	Solution:(Correct Answer:C)	
)	If $x + 1$ is a factor of $ax^3 + x^2$ of a	$x^2 - 2x + 4a - 9$, find the value
	(A) -1	(B) 0
	(C) -2	(D) 2
	Solution:(Correct Answer:C)	
	Let $p(x) = ax^3 + x^2 - 2x + 4$	4a-9
	As $(x + 1)$ is a factor of $p(x)$. theorem]	$\therefore p(-1) = 0$ [By factor
	$\Rightarrow a(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} - 2(-1)^{3} + (-1)^{2} $) + 4a - 9 = 0
	$\Rightarrow a(-1) + 1 + 2 + 4a - 9$ $\Rightarrow -a + 4a - 6 = 0$	- 0
	$\Rightarrow 3a-6=0 \Rightarrow 3a=6 \Rightarrow$	a = 2
)	Without actually calculating t each of the following $(21)^3 + (15)^3 + (-36)^3$	he cubes, find the value of
	(A) 61280	(B) -34020
	(C) 65041	(D) -53120
	Solution:(Correct Answer:B)	
	Taking $a = 21; b = 15; c = a + b + c = 21 + 15 + (-36)$	(-36), we get
	= 36 - 36 = 0 Now, if $a + b + c = 0$, then	
	$a^3 + b^3 + c^3 = 3abc$	
	$\therefore (21)^3 + (15)^3 + (-36)^3 = 3$	B(21)(15)(-36)
	= -34020	
)	Find the value of k, if $x - 1$ is $p(x) = x^2 + x + k$	a factor of $p(x)$ in this case :
	(A) 0	(B) 3
	(C) 2	(D) -2
	Solution:(Correct Answer:D)	
	Here $p(x) = x^2 + x + k$	
	For $x - 1$ be a factor of $p(x)$, We have $p(1) = (1)^2 + 1 + k$ $\therefore k + 2 = 0 \Rightarrow k = -2$	p(1) should be equal to 0. or $p(1) = 1 + 1 + k = k + 2$
)	With the help of the remaind when the polynomial $x^3 + x^2$ of the following divisors x + 6	er theorem, find the remainder $-26x+24$ is divided by each
	(A) 12	(B) 8
	(C) 0	(D) 3

Solution:(Correct Answer	:C)	Solu	ition:(Correct Answer:	c)
0		Give	$2\sqrt{3} + \sqrt{3} = (2+1)\sqrt{3}$	$\sqrt{3} = 3\sqrt{3}$
(35) If (a, b) and (b, a) represent	the same point in the coordinate	Hen	ce, (c) is the correct and	swer.
plane, then, is possible $(\Delta) = 2$ $h = -2$	(R) $a = -2$ $b = -2$		Mathematics -	Section B (мсq)
(A) $a = 2, b = -2$ (C) $a = -2, b = 2$	(D) $a = 2, b = \frac{1}{2}$	(41) Find	the remainder when x^3	$x^3 + 3x^2 + 3x + 1$ is divided by
$\begin{array}{c} (c) \ u = -2, \ v = 2 \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	$(D) \ u = 2, \ 0 = \frac{1}{2}$	x +	1	
a = -2, b = -2	נס	(A) ()	(B) 3
(26) Evoluato		(C) 8	8	(D) 2
205×195		Solu	ition:(Correct Answer:/	A) $(m+1-0 \rightarrow m-1)$
(A) 39758	(B) 39975	And	by remainder theorem,	$x + 1 = 0 \Rightarrow x = -1$ when
(C) 48974	(D) 93541	p(x)	$x = x^3 + 3x^2 + 3x + 1$ is an ender is $n(-1)$	s divided by $x + 1$, then
Solution:(Correct Answer:	:B)	$\therefore p($	$(-1) = (-1)^3 + 3(-1)^2$	+3(-1)+1
39975		= Thu:	$(1 + (3 \times 1) + (-3) + 1)$	= -1 + 3 - 3 + 1 = 0
(37) In $Fig.$, coordinates of P a	re	ind.	s, the required remainde	
Y 1		(42) If x^2	+kx+6 = (x+2)(x+5)	(B) for all x, then the value of k is
P 4		, (A) (C)	_1	(D) 3
- 3		(C) ·	-1	(D) 5
0		5010	ition.(Correct Answer./	R)
	X	(43) The	line joining $A(3,-8)$ and	d $B(3,5)$ intersects the x -axis at
-4-3-2-1 1 2	3 4	(A)	(0,3)	(B) (0,5)
2		(C)	(-8,0)	(D) (3,0)
3		Solu	ition:(Correct Answer:I	D)
4		(3,0))	
(A) (-4,2)	(B) (4, -2)	(44) Ratio	onalise the denominator $\frac{3}{3}$	r of the following:
(C) (2, -4)	(D) (-2,4)	$\frac{1}{2-\sqrt{2}}$	$\frac{1}{3}$	(D) $0 + 4\sqrt{2}$
Solution:(Correct Answer:	:D)	(A) 2 (C) 2	$z + 9\sqrt{2}$	(b) $9 + 4\sqrt{3}$
Point P lies in the second c and r -axes are -2 and 4	quadrant and its distances from y	(C) Solu	$1 + 5\sqrt{5}$	
So, its coordinates are (-2)	,4).	$\frac{2+\sqrt{2}}{2+\sqrt{2}}$		נט
(38) The linear equation $2x - 5y$	q = 7 has	2- $=\frac{2}{2}$	$\frac{\sqrt{3}}{\sqrt{2}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}}$	
(A) A unique solution	(B) Two solutions	$=\frac{2}{\pi}$	$-\sqrt{3}$ 2+ $\sqrt{3}$ $(2+\sqrt{3})^2$	
(C) No solution	(D) Infinitely many solutions	$=\frac{4}{4}$	$\frac{4}{4} = -(\sqrt{3})^{2}$	
Solution:(Correct Answer:	:D)	$=\frac{7}{2}$	$\frac{+4\sqrt{3}}{1}$ _	
2x - 5 = 7 is a linear equation in two variables k	tion in two variables. A linear	=7	$+4\sqrt{3}$	
	las infinitely many solution.	(45) Fill i	n the blanks so as to ma	ke each of the following
(39) Degree of the polynomial 4	$4x^4 + 0x^3 + 0x^5 + 5x + 7$ is	state $\sqrt{2}$ ·	ements true (Final answ $\sqrt{3}\cdot\sqrt{6}=\ldots\ldots$	er only)
(A) 7 (C) 5	(B) 3	(A) (3	(B) 8
C) 5	(U) 4 (U) 4	(C)	1	(D) 15
The height power of the va	ariable in a polynomial is called	Solu	ition:(Correct Answer:/	A)
the degree of the polynom	ial.	6		
Highest power of x is 4, so	the degree of the given	(46) Abs	cissa of all the points on	the x -axis is
polynomial is 4		(A) ()	(B) any number
(40) $2\sqrt{3} + \sqrt{3}$ is equal to		(C)	1	(D) 2
(A) $2\sqrt{6}$	(B) 6	Solu	ition:(Correct Answer:	B)
(C) 3√3	(D) $4\sqrt{6}$	Abs	cissa of all the points on	I the x -axis is any number.

(47) is one of the factors of $p(x) = x^3 - 3x^2 + 7x - 5$ (A) −1 (A) x - 3(B) x + 1(C) x - 5(D) x - 1(C) 2 Solution:(Correct Answer:D) x - 1(48) Point (-3, 5) lies in the (A) first quadrant (B) second quadrant (A) $-\sqrt{2}+1$ (C) third quadrant (D) fourth quadrant (C) $\sqrt{2} + 1$ Solution:(Correct Answer:B) In the point (-3, 5) abscissa is negative and ordinate is positive. So, it lies in the second quadrant. or (49) If the coordinates of the two points are P(-2,3) and Q(-3,5), then (abscissa of P) (abscissa of Q) is \Rightarrow (A) −5 (B) −1 (C) −2 **(D)** 1 **(A)** 2 (C) 6 Solution:(Correct Answer:D) Abscissa of P(-2,3) = -2Abscissa of Q(-3, 5) = -3 \therefore (Abscissa of P) – (Abscissa of Q) = -2 - (-3) = -2 + 3 = 1(50) Find the value of a: (A) 2 $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a - 6\sqrt{3}$ (C) -1 **(A)** 11 (B) −11 (D) 13 (C) 12 Solution:(Correct Answer:A) $L.H.S. = \frac{5+2\sqrt{3}}{7+4\sqrt{3}} = \frac{5+2\sqrt{3}}{7+4\sqrt{3}} \times \frac{7-4\sqrt{3}}{7-4\sqrt{3}}$ $=\frac{(5+2\sqrt{3})(7-4\sqrt{3})}{(7-4\sqrt{3})}$ $(7)^2 - (4\sqrt{3})^2$ \Rightarrow $=\frac{35-20\sqrt{3}+14\sqrt{3}-24}{2}$ 49 - 48 $=\frac{11-6\sqrt{3}}{1}=11-6\sqrt{3}$ Now, $11 - 6\sqrt{3} = a - 6\sqrt{3}$ (A) 5 a = 11(C) 1 (51) Simplify: $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$ (A) 10 **(B)** 0 (C) −1 **(D)** 1 Solution:(Correct Answer:D) $3\sqrt{2}$ $7\sqrt{3}$ $2\sqrt{5}$ $\frac{1}{\sqrt{15}+3\sqrt{2}}$ $\overline{\sqrt{10}} + \sqrt{3}$ $\overline{\sqrt{6}+\sqrt{5}}$ polynomials $= \frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} \times \frac{\sqrt{10}+\sqrt{3}}{\sqrt{10}-\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} \times \frac{\sqrt{6}-\sqrt{5}}{\sqrt{6}-\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}} \times \frac{\sqrt{15}-3\sqrt{2}}{\sqrt{15}-3\sqrt{2}} \times \frac{\sqrt{15}-3\sqrt{2}}{\sqrt{15}-3\sqrt{2}}$ $4 + 7x + 3x^2$ $=\frac{7\sqrt{3}(\sqrt{10}-\sqrt{3})}{10-3}-\frac{2\sqrt{5}(\sqrt{6}-\sqrt{5})}{6-5}=\frac{3\sqrt{2}(\sqrt{15}-3\sqrt{2})}{15-18}$ (A) 11 $=\sqrt{3}(\sqrt{10}-\sqrt{3})-2\sqrt{5}(\sqrt{6}-\sqrt{5})+\sqrt{2}(\sqrt{15}-3\sqrt{2})$ **(C)** 3 $=\sqrt{30-3}-2\sqrt{30}+10+\sqrt{30}-6$ $=2\sqrt{30}-9-2\sqrt{30}+10=1$ 3 (52) Every rational number is (A) a natural number (B) a real number (A) 8 (C) an integer (D) a whole number (C) 4 Solution:(Correct Answer:B) We know that rational and irrational numbers taken $\sqrt{8} + \sqrt{12}$ together are known as real numbers. Therefore, every real $=\frac{4\sqrt{2}+4\sqrt{3}}{2\sqrt{2}+2\sqrt{3}}=\frac{4(\sqrt{2}+\sqrt{3})}{(2\sqrt{2}+\sqrt{3})}=\frac{4}{2}=2$ number is either a rational number or an irrational number.

Hence, every rational number is a real number.

(53) On dividing $16x^2 - 24x + 9$ by 4x - 3, find the remainder. **(B)** 0 (D) 4 Solution:(Correct Answer:B) (54) Find the value of k, if x - 1 is a factor of p(x) in this case : $p(x) = kx^2 - \sqrt{2}x + 1$ **(B)** $\sqrt{2} - 1$ (D) $-\sqrt{2}-1$ Solution:(Correct Answer:B) Here $p(x) = kx^2 - \sqrt{2}x + 1$ and g(x) = x - 1 \therefore For (x-1) be a factor of p(x), p(1) should be equal to 0. since $p(1) = k(1)^2 - \sqrt{2}(1) + 1$ or $p(1) = k - \sqrt{2} + 1$ $p(1) = k - \sqrt{2} + 1$ $\therefore k - \sqrt{2} + 1 = 0$ $k = \sqrt{2} - 1$ (55) The degree of polynomial $5x^2 - 7x - 11$ is..... **(B)** 4 (D) 8 Solution:(Correct Answer:A) (56) Find the value of m so that 2x - 1 be a factor of $8x^4 + 4x^3 - 16x^2 + 10x + m.$ **(B)** -2 (D) $-\frac{1}{2}$ Solution:(Correct Answer:B) Let $p(x) = 8x^4 + 4x^3 - 16x^2 + 10x + m$. As (2x-1) is a factor of p(x) $p\left(\frac{1}{2}\right) = 0$ [By factor theorem] $8\left(\frac{1}{2}\right)^4 + 4\left(\frac{1}{2}\right)^3 - 16\left(\frac{1}{2}\right)^2 + 10\left(\frac{1}{2}\right) + m = 0$ $8\left(\frac{1}{16}\right) + 4\left(\frac{1}{8}\right) - 16\left(\frac{1}{4}\right) + 5 + m = 0$ $\frac{1}{2} + \frac{1}{2} - 4 + 5 + m = 0$ $\tilde{2} + \tilde{m} = 0 \Rightarrow m = -2$ (57) Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by x. **(B)** 4 (D) 0 Solution:(Correct Answer:C) We have $p(x) = x^3 + 3x^2 + 3x + 1$ and the zero of x is 0. $\therefore p(0) = (0)^3 + 3(0)^2 + 3(0) + 1 = 0 + 0 + 0 + 1 = 1$ Thus, the required remainder = 1. (58) Write the coefficients of x^2 in each of the following **(B)** 6 (D) 1 Solution:(Correct Answer:C) (59) The value of $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$ is equal to (B) $\sqrt{2}$ **(D)** 2 Solution:(Correct Answer:D) $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}} = \frac{\sqrt{16\times2}+\sqrt{16\times3}}{\sqrt{4\times2}+\sqrt{16\times3}}$ $\sqrt{4\times 2} + \sqrt{4\times 3}$

Hence, (d) is the correct answer.

(60)	If $x = 2y + 6$, then what is $x^3 - 8y^3 - 36xy - 216?$	the value of	(69)	Solid calcium oxide re	eacts vigorously with water to form companied by liberation of heat. This
	(A) 1	(B) 0		process is called slaking	ng of lime. Calcium hydroxide dissolves
	(C) 3	(D) 4		in water to form its so the following is (are)	olution called lime water. Which among true about slaking of lime and the
	Solution:(Correct Answei	r:B)		solution formed?	
	0			(<i>i</i>) It is an endotherm	c reaction
	Science - Se	ection A (MCO)		(iii) The pH of the re	sulting solution will be more than
				(iv) The pH of the res	sulting solution will be less than seven
(61)	Which of the following me nature?	etals is obtained in free state in		(A) (ii) and (iii)	(B) (i) and (ii)
	(A) Fe	(B) Al		(C) (i) and (iv)	(D) (iii) and (iv)
	(C) Au	(D) <i>Ca</i>		Solution:(Correct An	swer:A)
	Solution:(Correct Answei	r:C)	(70)	Which of the followin	ng is the formula of the iron ore
(62)	At which value of nH of the	he inner side of the mouth does	(70)	haematite?	
(02)	the decay of teeth take pla	ace?		(A) Fe_3O_4	(B) <i>FeCO</i> ₃
	(A) Lower than 6.5	(B) Higher than 7.3		(C) Fe_2O_3	(D) FeS_2
	(C) Lower than 5.5	(D) Higher than 5.8		Solution:(Correct An	swer:C)
	Solution:(Correct Answer	r:C)	(71)	Which type of compo	ound is ethyl acetate?
(63)	About % impurity ren	nains in alumina obtained by		(A) Ketone	(B) Carboxyl
()	Bayer's method.			(C) Ester	(D) Halide
	(A) 99%	(B) 100%		Solution:(Correct An	swer:C)
	(C) 99.5%	(D) 95.5%	(72)	Which of the followin	a pairs will give displacement
	Solution:(Correct Answer	r:C)	(72)	reactions ?	ig pairs will give displacement
(64)	With which of the followir	ng does the element carbon not	()	(A) $NaCl$ solution an	d copper metal
	give reaction?			(B) $MgCl_2$ solution a	nd aluminium metal
	(A) Dictionite gas	(B) Dioxygen gas		(C) $FeSO_4$ solution a	nd silver metal
				(D) $AgNO_3$ solution a	and copper metal
	Solution:(Correct Answei	r:D)		Solution:(Correct An	swer:D)
(65)	What is the chemical form	ula of oleum?		$AgNO_3$ solution and	copper metal
	(A) H_2SO_3	(B) $H_2S_2O_7$	(73)	Which of the followin	ng statements is true for acids ?
	(C) $H_2Cr_2O_7$	(D) H_3PO_4		(A) Bitter and change	e red litmus to blue
	Solution:(Correct Answei	r:B)		(B) Sour and change I	red litmus to blue
(66)	Which solution will be bas	ic?		(C) Bitter and change	blue litmus to red
	(A) $[H_3O^+] = 10^{-5} M$	(B) $[H_3O^+] = 10^{-12} M$		(D) Sour and change I	blue litmus to red
	(C) $[H_3O^+] = 10^{-7} M$	(D) $[H_3O^+] = 10^{-4} M$		Solution:(Correct An	iswer:D)
	Solution:(Correct Answei	r:B)	(74)	What happons when	calcium is treated with water 2
(67)	What is the molecular form	nula of calcium silicate (slag)?	(74)	(i) It does not react w	vith water
(07)	(A) $CaSiO_3$	(B) $CaSiO_2$		(<i>iii</i>) It reacts violently	with water
	(C) <i>Na</i> ₂ <i>SiO</i> ₃	(D) <i>CaCO</i> ₃		(iv) Bubbles of hydro	ogen gas formed stick to the surface of
	Solution:(Correct Answei	r:A)		calcium (A) (i) and (in)	(B) $(iiii)$ and (iii)
		-		(C) (i) and (ii)	(D) (ii) and (iv)
(68)	One of the constituents of hydrogencarbonate, the o	t baking powder is sodium ther constituent is			
	(A) hydrochloric acid	(B) sulphuric acid		solution:(Correct An	iswal: p)
	(C) acetic acid	(D) tartaric acid	(75)	The electronic configu	urations of three elements X, Y and Z
	Solution:(Correct Answei	r:D)		are $X - \{2, 8\} : Y - \{2, 5\}$	8, 7} and $Z - \{2, 8, 2\}$. Which of the
	-		21	(-, ~, / , (- ,)	, ,

	following is correct ?			So
	(A) X is a metal		(02)	14/
	(B) Y is a non-metal and Z	is a metal	(82)	(A)
	(C) Z is a non-metal			(C)
	(D) Y is a metal			5
	Solution:(Correct Answer:	B)		30
(76) Which among the following (i) $H_3C - CH_2 - CH_2 - C$ (ii) $H_3C - C \equiv C - CH_3$ $H_3C - CH - CH_3$ ()	are unsaturated hydrocarbons ? $^{2}H_{3}$	(83)	WI no (A) (C)
	(iii) CH_3			So
	$H_3C - C = CH_2$		(0.4)	14/
	(iv) CH_3		(84)	(i) (ii)
	(A) (i) and (iii)	(B) (ii) and (iii)		(ii)
	(C) (iii) and (iv)	(D) (ii) and (iv)		(A)
	Solution:(Correct Answer:	D)		(C)
(77) Calcium phosphate is preser (A) acidic	nt in tooth enamel. Its nature is (B) basic		So
	(C) neutral	(D) amphoteric	(85)	Or
	Solution:(Correct Answer:	B)		ca (A)
(78) Which among the following	allovs contain mercury as one of	\mathbf{X}	(C)
(its constituents ? (A) Stainless steel	0		So
	(B) Alnico	10	(86)	W
	(C) Solder			(A)
	(D) Zinc amalgam			(C)
	Solution:(Correct Answer:	D)		So
(79) Name the sodium compoun hard water.	d which is used for softening	(87)	lde
	(A) $Mg(OH)_2$	(B) $Ca(OH)_3$		(A)
	(C) Al_2O_3	(D) $Na_2CO_3 \cdot 10H_2O$		(B)
	Solution:(Correct Answer: Washing soda $(Na_2CO_3 \cdot 1)$ water.	D) $0H_2O)$ is used for softening hard		(C)
(80) Buckminsterfullerene is an a (A) phosphorus	llotropic form of (B) sulphur		(D) So
	(C) tin	(D) carbon		
	Solution:(Correct Answer:	D)	(88)	W
(81) Common salt besides being as the raw material for maki (i) washing soda (ii) bleaching powder (iii) baking soda	used in kitchen can also be used ng		(A) (B) (C) (D)
	(iv) slaked lime (A) (i) and (ii)	(B) (<i>i</i>), (<i>ii</i>) and (<i>iv</i>)		

(C) (*ii*) and (*iii*)

lution:(Correct Answer:C) hich of the following is acidic in nature ? Lime water (B) Human blood Lime juice (D) Antacid lution:(Correct Answer:C) hose acid-base theory can be applied to aqueous and n-aqueous solutions? **Robert Boyle** (B) Arrhenius Bronsted-Lowry (D) Rutherford lution:(Correct Answer:C) hich of the following are not ionic compounds? KCl) HCl $i) CCl_4$ v) NaCl(*ii*) and (*iii*) (B) (i) and (ii)(iii) and (iv)(D) (i) and (iii)lution:(Correct Answer:A) e who is habituated to drinking alcohol, is given medicine lled Diclofenac sodium (B) Aspirin Paracetamol (D) Disulfiram lution:(Correct Answer:D) hat type of substance is NH_3 ? Strong acid (B) Weak acid Strong base (D) Weak base lution:(Correct Answer:D) entify the correct representation of reaction occurring ring chloralkali process $2NaCl(l) + 2H_2O(l) \rightarrow 2NaOH(l) + Cl_2(g) + H_2(g)$ $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$ $2NaCl(aq) + 2H_2O(l) \rightarrow$ $2NaOH(aq) + Cl_2(aq) + H_2(aq)$ $2NaCl(aq)+2H_2O(aq) \rightarrow 2NaOH(aq)+Cl_2(g)+H_2(g)$ lution:(Correct Answer:B) hich one of the following processes involve chemical actions? Storing of oxygen gas under pressure in a gas cylinder Liquefaction of air Keeping petrol in a china dish in the open Heating copper wire in presence of air at high temperature

Solution:(Correct Answer:D)

(D) (i), (iii) and (iv)

(89) Match the chemical substances given in Column (A) with their appropriate application given in Column (B)

and abbieburge abbuernen 3 en miesenni			
$Column\left(A ight)$	Column (B)		
(A) Bleaching powder	(i) Preparation of glass		
(B) Baking soda	(ii) Production of H_2 and Cl_2		
(C) Washing soda	(iii) Decolourisation		
(D) Sodium chloride	(iv) Antacid		

(A) A - (iii), B - (iv), C - (i), D - (ii)(B) A - (iii), B - (ii), C - (iv), D - (i)

(C) A - (ii), B - (i), C - (iv), D - (iii)

(D) A - (ii), B - (iv), C - (i), D - (iii)

Solution:(Correct Answer:A)

(90) If copper is kept open in air, it slowly loses its shining brown surface and gains a green coating. It is due to the formation of

(A) CuS0	O ₄ ((B)	CuO
(C) Cu(N	$(NO_3)_2$ (D)	$CuCO_3$

Solution:(Correct Answer:D)

(91) Well defined nucleus is absent in

(A) blue green algae	(B) diatoms

(C) algae (D) yeast

Solution:(Correct Answer:A)

Blue green algae belong to monera which are prokaryotes and hence welldefined nucleus in absent in them.

- (92) Find out the false sentences
 - (A) Golgi apparatus is involved with the formation of lysosomes
 - (B) Nucleus, mitochondria and plastid have DNA; hence they are able to make their own structural proteins
 - (C) Mitochondria is said to be the power house of the cell as ATP is generated in them
 - (D) Cytoplasm is called as protoplasm

Solution:(Correct Answer:A)

Golgi apparatus is involved in synthesis and storage of certain biomolecules and has no role to play in the formation of lysosomes.

- (93) In taxonomic hierarchy family comes between
 - (A) Class and Order (B) Order and Genus
 - (C) Genus and Species

(D) Division and Class

(D) $45 kg m s^{-1}$

Solution:(Correct Answer:B)

The sequence is : Division \rightarrow Class \rightarrow Order \rightarrow Family \rightarrow Genus \rightarrow Species.

(94) How much momentum will a dumb-bell of mass 10 kgtransfer to the floor if it falls from a height of $80 \, cm$? Take its downward acceleration to be $10 \, m \, s^{-2}$. (A) $25 kg m s^{-1}$

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(B) 49 kg m s^{-1}
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(C) $40 \, kg \, m \, s^{-1}$

Solution:(Correct Answer:C)

Mass of the dumbbell, m = 10 kgDistance covered by the dumbbell, $s = 80 \ cm = 0.8 \ m$ Acceleration in the downward direction, $a = 10 m/s^2$ Initial velocity of the dumbbell, u = 0Final velocity of the dumbbell (when it was about to hit the floor) = vAccording to the third equation of motion: $v^2 = u^2 + 2as$ $v^2 = 0 + 2(10)0.8$ v = 4 m/sHence, the momentum with which the dumbbell hits the floor is = mv $= 10 \times 4\,kg\,m\,s^{-1}$

 $=40 \, kg \, m \, s^{-1}$

- (95) Which cell organelle plays a crucial role in detoxifying many poisons and drugs in a cell?
 - (A) Golgi apparatus
 - (B) Lysosomes
 - (C) Smooth endoplasmic reticulum
 - (D) Vacuoles

Solution:(Correct Answer:C)

In the river cells of vertebrate, SER plays an important role in detoxifying many poisons and drugs.

(96) Two persons manage to push a motorcar of mass $1200 \, kg$ at a uniform velocity along a level road. The same motorcar can be pushed by three persons to produce an acceleration of $0.2 m s^{-2}$. With what force(in N) does each person push the motorcar? (Assume that all persons push the motorcar with the same muscular effort.)

(A) 240	(B) 244
(C) 248	(D) 225

Solution:(Correct Answer:A)

Mass of the motor car = 1200 kqOnly two persons manage to push the car. Hence, the acceleration acquired by the car is given by the third person alone.

Acceleration produced by the car, when it is pushed by the third person,

 $a = 0.2 \, m/s^2$

(A) Haeckel

Let the force applied by the third person be F. From Newton's second law of motion:

Force = Mass \times Acceleration

 $F = 1200 \times 0.2 = 240 N$

Thus, the third person applies a force of magnitude 240 N. Hence, each person applies a force of 240 N to push the motor car.

- (97) Cell arises from pre-existing cell was stated by
 - (B) Virchow
 - (C) Hooke (D) Schleiden

Solution:(Correct Answer:B)

This postulation of Virchow made an addition to the earlier cell theory.



(105)	Which of the following doe: maturity ? (A) Vessel	s not lose their nucleus at	(111) Which of the f motion of a m (A)
	(C) Companion cells	(D) Sieve tube cells	
	Solution:(Correct Answer: Companion cells		Distance (m)
(106)	A train is travelling at a spee applied so as to produce a u $-0.5 m s^{-2}$. Find how far(in brought to rest. (A) 625	ed of 90 km h ⁻¹ . Brakes are iniform acceleration of m) the train will go before it is (B) 225	Distance (D)
		(U) 750	
	Solution:(Correct Answer:/ Initial speed of the train, $u =$ Final speed of the train, $v =$ Acceleration $= -0.5 ms^{-2}$	A) = $90 \ km/h = 25 \ m/s$ 0 (finally the train comes to rest)	
	According to third equation $v^2 = u^2 + 2as$ $(0)^2 = (25)^2 + 2(-0.5) s$ Where, <i>s</i> is the distance cover $s = \frac{25^2}{2} = 625 m$	of motion: vered by the train	Solution:(Corr Distance is inc slanting straig motion.
	The train will cover a distan rest.	ce of $625m$ before it comes to	(112) Cell wall of wh (A) Bacteria
(107) Convert the following temp a. 300 K b. 573 K		erature to celsius scale :	(C) Mango tre Solution:(Corr
	(A) $27^{\circ}C$ and $300^{\circ}C$	(B) $270 {}^oC$ and $30 {}^oC$	cellulose. But
(C) $25 ^oC$ and $330 ^oC$	(C) $25 {}^{o}C$ and $330 {}^{o}C$	(D) $40 {}^{o}C$ and $270 {}^{o}C$	(113) The dead elem
	Solution:(Correct Answer:/ By the use of given formula temperature to Celsius. $T \ K - 273 = t \ ^oC$ (a) $300 \ K - 273 = 27 \ ^oC$ (b) $573 \ K - 273 = 300 \ ^oC$	A) , we can convert the Kelvin	(A) companion (C) phloem pa Solution:(Cor phloem fibres
(100)	Pool organs are absont in		(114) Which of the f
 (A) Mollusca (C) Coelenterata Solution:(Correct Answer Coelenterates show tis real organs are absent is 	(A) Mollusca	(B) Arthropoda	(<i>i</i>) considered (<i>ii</i>) establishe
	(C) Coelenterata	(D) Echinodermata	as a hydrogen
	Solution:(Correct Answer: Coelenterates show tissue I real organs are absent in the	C) evel of organization and hence em.	(<i>iv</i>) vas in ag (<i>iv</i>) was in ag (A) (<i>i</i>) and (<i>ii</i>)
(109)	Elements with valency 1 are		(C) (i) and (iv
(105) Ele (A) (C) So	(A) always metals	(B) always metalloids	Solution:(Cor
	(C) always non-metals	(D) either metals or non-metals	deflected by t positively cha
	Solution:(Correct Answer:	D)	electrons are a
	If an element show positive otherwise it is a nonmetal.	valency then it is a metal;	(115) Arun has prep
(110)	Contractile proteins are fou	nd in	represents the
	(A) bones	(B) blood	(a) $0.01 g$ of N (b) $0.11 a$ of N
	(C) muscles Solution:(Correct Answer:	(D) cartilage C)	$(c) 0.11 g \text{ of } N \\ (c) 1.00 g \text{ of } N \\ (d) 0.10 g \text{ of } N$
	Muscles have the ability of contractile proteins are four	contraction and hence nd in them.	(A) (a) (C) (c)

(111) Which of the following figures (Fig.) represents uniform motion of a moving object correctly ?



(C) Mango tree (D) Cactus

olution:(Correct Answer:A)

Other options show plants in which cell wall is made of cellulose. But cell wall of bacteria is made of peptidoglycan.

- (113) The dead element present in the phloem is
 - companion cells (B) phloem fibres
 - (C) phloem parenchyma (D) sieve tubes

Solution:(Correct Answer:B)

- (114) Which of the following statements about Rutherford's model of atom are correct ?
 - (i) considered the nucleus as positively charged
 - $\widetilde{(ii)}$ established that the lpha- particles are four times as heavy as a hydrogen atom
 - *iii)* can be compared to solar system
 - *(iv)* was in agreement with Thomson's model

(C) (i) and (iv) (D) only (i)

Solution:(Correct Answer:A)

Alpha particles are positively charged and hence were deflected by the nucleus. This showed that nucleus is positively charged. Rutherford also postulated that electrons are arranged around the nucleus; the way planets are arranged around the sun.

(115) Arun has prepared 0.01% (by mass) solution of sodium chloride in water. Which of the following correctly represents the composition of the solutions? (a) 0.01 g of NaCl + 99.99 g of water (b) 0.11 g of NaCl + 100 g of water (c) 1.00 g of NaCl + 100 g of water (d) 0.10 g of NaCl + 99.90 g of water (d) 0.10 g of NaCl + 99.90 g of water (A) (a) (B) (b)

(c) (D) (d)

Solution:(Correct Answer:A)

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\begin{array}{l} \text{Mass \%} = \frac{\text{mass of solute}}{\text{mass of solute + mass of solvent}} \times 100 \\ = \frac{0.01}{0.01+99.99} \times 100 \end{array}
 =\frac{0.01}{100} \times 100
 = 0.01 g
```

- (116) Which among the following is exclusively marine?
 - (A) Echinodermata (B) Porifera
 - (C) Mollusca (D) Pisces

Solution:(Correct Answer:A)

Porifera, Mollusca and pisces are found in freshwater also.

- (117) The inertia of an object tends to cause the object
 - (A) to increase its speed
 - (B) to decrease its speed
 - (C) to decelerate due to friction
 - (D) to resist any change in its state of motion

Solution:(Correct Answer:D)

Inertia is the property because of which an object resists any change in its state of motion.

- (118) Which of the following cells is found in the cartilaginous tissue of the body?
 - (A) Chondrocytes (B) Basophils
 - (C) Osteocytes (D) Mast cells

Solution:(Correct Answer:A)

Mast cells are found in areolar tissue, basophils are found in blood and osteocytes are found in bone.

- (119) Meristematic tissues in plants are
 - (A) localised and dividing cells
 - (B) not limited to certain regions
 - (C) localised and permanent
 - (D) growing in volume

Solution:(Correct Answer:A)

Cells of meristematic tissue are dividing cells. Meristematic tissue is present only in those parts which needs to grow.

- (120) Which among the following produce seeds?
 - (A) Thallophyta (B) Bryophyta
 - (C) Gymnosperms (D) Pteridophyta

Solution:(Correct Answer:C)

Gymnosperms and angiosperms are seed bearing plants, but plants of lower groups do not bear seeds.