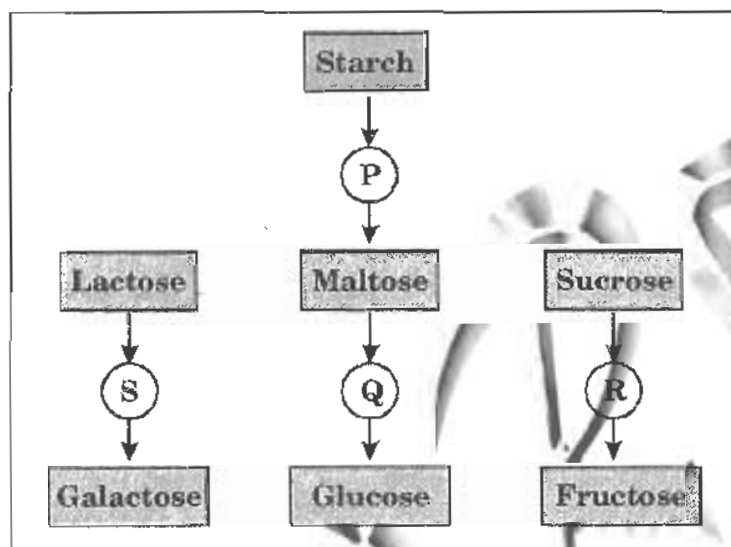


- 1 The following is a schematic diagram showing the fate of carbohydrates during digestion in the human alimentary canal.



Identify the enzymes P, Q, R and S.

- (A) P-Amylase, Q-Maltase, R-Lactase, S-Invertase
 (B) P-Amylase, Q-Maltase, R-Invertase, S-Lactase
 (C) P-Amylase, Q-Lactase, R-Invertase, S-Maltase
 (D) P-Amylase Q-Lactase, R-Maltase, S-Invertase

- 2 Which of the following features is common to leech, cockroach and scorpion?

- (A) Nephridia (B) Ventral nerve cord
 (C) Cephalization (D) Antennae

- 3 Which of the following cell organelles is rich in hydrolysing enzymes?

- (A) Ribosomes (B) Mitochondria
 (C) Lysosomes (D) Golgi complex

4 Gastric juice secreted in human digestive system contains the enzymes:

- (A) trypsin, renin and lipase
- (B) pepsin, trypsin and renin
- (C) pepsin, renin and lipase
- (D) gastric, pepsin and renin

5 Which of the following does not have control on the heart beat?

- (A) Vagus
- (B) Epinephrine
- (C) Norepinephrine
- (D) Glossopharyngeal nerve

6 Which of the following neurotransmitters are synthesised in brain when milk is taken before bed time to induce sleep?

- (A) Dopamine
- (B) Serotonin
- (C) Glycine
- (D) Acetylcholine

7 Which of the following are the components of ornithine cycle?

- (A) Ornithine, citrulline and alanine
- (B) Ornithine, citrulline and arginine
- (C) Ornithine, alanine and fumaric acid
- (D) Ornithine, citrulline and fumaric acid

8 Which of the following hormone is secreted during stress or danger?

- (A) Aldosterone
- (B) Thyroxine
- (C) Adrenaline
- (D) Calcitonin

9 The leaves are modified into tendrils, hooks, pitcher and bladder in the following plants respectively:

- (A) sweet pea, cat's nail, nepenthes, utricularia
- (B) sweet pea, cat's nail, utricularia, nepenthes
- (C) nepenthes, cat's nail, sweet pea, utricularia
- (D) utricularia, nepenthes, cat's nail, sweet pea

10 Which of the following plant parts can respire even in the absence of oxygen?

- (A) Seeds
- (B) Roots
- (C) Stems
- (D) Leaves

11 Identify the group of organisms that contains only Invertebrates?

- (A) Crabs, turtles, tortoises
- (B) Fish, spiders, rat,
- (C) Sponges, scorpions, crabs
- (D) Centipedes, earthworms, crocodiles.

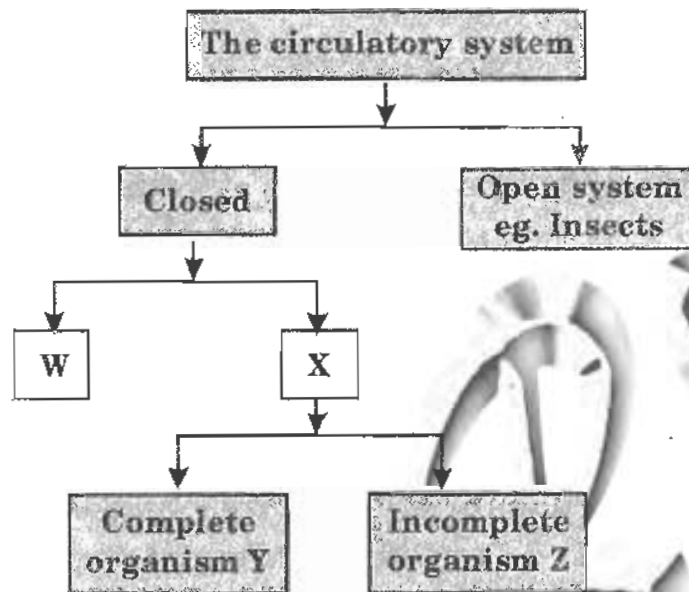
12 Which of the following is a true fish?

- (A) Jelly fish
- (B) Flying fish
- (C) Cuttle fish
- (D) Devil fish

13 Where are the granulocytes formed?

- (A) In kidney
- (B) In liver
- (C) In red bone marrow
- (D) In small intestine

- 14 Figure given below shows the circulatory system in animals.



Which of the following represents W, X, Y and Z ?

	W	X	Y	Z
(A)	Double	Single	Rabbit	Frog
(B)	Single	Double	Frog	Rabbit
(C)	Single	Double	Rabbit	Frog
(D)	Single	Double	Toad	Fish

- 15 Root hairs of a plant are important because they:

- (A) connect with xylem tissue in the root for the efficient transport of water
- (B) provide a habitat for rhizobium bacteria to live and fix nitrogen
- (C) help to regulate the amounts of sugar available to the root for metabolism
- (D) increase the surface area of the root for water and nutrient absorption

- 16** The light energy absorbed by green plants during photosynthesis is used for:
- (A) building chlorophyll in the leaves
 - (B) forming proteins in the leaves
 - (C) breaking up carbon dioxide into carbon and oxygen
 - (D) splitting of water into hydrogen and oxygen
- 17** Which of the following elements play a key role in closing and opening of stomata?
- (A) Sodium
 - (B) Potassium
 - (C) Calcium
 - (D) Magnesium.
- 18** Two cross-sections of stem and root appear simple, when viewed by naked eye. But under microscope, they can be differentiated by :
- (A) Exarch condition of root and stem
 - (B) Endarch condition of stem and root
 - (C) Endarch condition of root and exarch condition of stem
 - (D) Endarch condition of stem and exarch condition of root
- 19** Angiosperm with largest flower belongs to:
- (A) total stem parasite
 - (B) total root parasite
 - (C) partial stem parasite
 - (D) an independent tree
- 20** Which of the following is NOT regulated by auxins?
- (A) Plant growth movements
 - (B) Parthenocarpy
 - (C) Seed germination
 - (D) Respiration

21 Which one of the following equations represent photophosphorylation?

- (A) $ADP + AMP \xrightarrow{\text{light energy}} ATP$
- (B) $ADP + \text{Inorganic Phosphate} \xrightarrow{\text{light energy}} ATP$
- (C) $ADP + \text{Inorganic Phosphate} \xrightarrow{\text{Enzymes}} ATP$
- (D) $AMP + \text{Phosphate} \xrightarrow{\text{light energy}} ATP$

22 Which of the following tissues of plants have dimorphic chloroplasts?

- (A) Bundle sheath cells of C_3 plants
- (B) Mesophyll cells of C_3 plants
- (C) Bundle sheath cells of C_4 plants
- (D) Mesophyll cells of all plants

23 A farmer noticed that some lettuce plants wilted badly and could be successfully grown only if transferred to a very humid greenhouse. What is the most likely cause of wilting?

- (A) Inadequate stomatal density
- (B) Auxin deficiency
- (C) ABA deficiency
- (D) Glyophytic incipient plasmolysis

24 Grafting is successful in dicots but not in monocots because the dicots have:

- (A) vascular cambium
- (B) ground tissue system
- (C) epidermal tissue system
- (D) cork cambium

- (B) they make their own food through photosynthesis
- (C) they produce flower and seeds
- (D) they depends upon others for their food

30 Which of the following characteristics does monocotyledons plants typically have?

- I. 4 or 5 petals on each flower
- II. Parallel leaf veins
- III. Fibrous root system

- (A) I only
- (B) I and II only
- (C) I and III only
- (D) II and III only

31 A child had difficulty in breathing and was suspected of having severe asthma. An elevated number of which cells in a routine blood panel might support this diagnosis?

- (A) Basophils
- (B) Eosinophils
- (C) Monocytes
- (D) Neutrophils

32 In which of the following animals, respiration occurs without any respiratory organ?

- (A) Frog
- (B) Fish
- (C) Cockroach
- (D) Earthworm

33 Chloragogen cells of earthworm are similar to:

- (A) Liver of vertebrates
- (B) Lung of vertebrates
- (C) Kidney of vertebrates
- (D) Spleen of vertebrates

34 If parathyroid gland degenerates, then which of the following substances concentration is disturbed?

- (A) Carbon dioxide
- (B) Calcium
- (C) Potassium
- (D) Sodium

35 The rate of heart beat per minute is the highest in the case of:

- (A) elephant (B) whale (C) man (D) mouse

36 Protein present in the matrix of cartilage is:

- (A) chondrin (B) casein
(C) actin (D) ossein

37 Heart wood helps in:

- (A) mechanical support (B) circulation of solutes
(C) ascent of sap (D) translocation of food

38 In a dicotyledonous stem, the sequence of tissues from the outside to the inside is:

- (A) phellem - pericycle - endodermis - phloem
(B) phellem - phloem - endodermis - pericycle
(C) phellem - endodermis - pericycle - phloem
(D) pericycle - phellem - endodermis - phloem

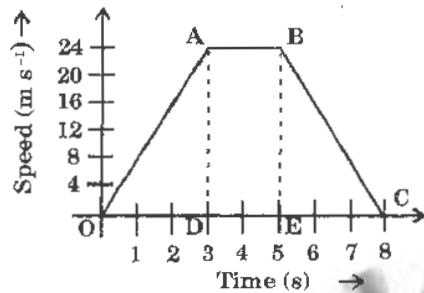
39 Which factor would contribute the most to increase the rate of water movement upward in the xylem?

- (A) Rate of auxin synthesis
(B) Rate of carbohydrate loading
(C) Rate of transpiration from the leaves
(D) Availability of soil water

40 Otorhinolaryngology is the study of:

- (A) brain cells and spinal cord
(B) bird anatomy
(C) ear, nose and tongue
(D) larynx and thorax

- 41 Look at the speed-time graph of the motion of a scooter:



What is the ratio of distance travelled by scooter during the last 3 seconds to the total distance travelled in 8 seconds?

- (A) 1 : 2 (B) 3 : 10 (C) 1 : 4 (D) 1 : 5

- 42 The length and breadth of a metal sheet are 4.321 and 4.055 m respectively. The area of this sheet upto four correct significant figures is:

- (A) 17.5217 m² (B) 17.52 m² (C) 17.521 m² (D) 17.5216 m²

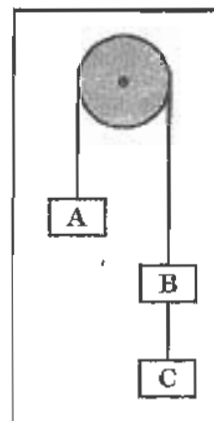
- 43 A particle of mass m at rest is acted upon by a force ' p ' for a time ' t ' its kinetic energy after an interval ' t ' is:

- (A) $\frac{p^2 t^2}{m}$ (B) $\frac{p^2 t^2}{2m}$ (C) $\frac{p^2 t^2}{3m}$ (D) $\frac{pt}{2m}$

- 44 Three equal weights A, B, C each of mass 2 kg are hanging on a string passing over a fixed frictionless pulley as shown in figure.

The tension in the string connecting weights B and C approximately is:

- (A) Zero
(B) 13.0 newton
(C) 3.3 newton
(D) 19.6 newton



45 One goes from the centre of the earth to an altitude half the radius of the earth, where will the 'g' be the greatest?

- (A) Centre of the earth
- (B) At a depth half the radius of the earth
- (C) At the surface of the earth
- (D) At an altitude equal to half the radius of the earth

46 A mass is whirled in a circular path with constant angular velocity and its angular momentum is L . If the string is now halved keeping the angular velocity the same, then the angular momentum is:

- (A) $\frac{L}{4}$
- (B) $\frac{L}{2}$
- (C) L
- (D) $2L$

47 If a gas is heated at constant pressure, then what percentage of total heat supplied is used up for doing external work? *(Given: γ for gas = 4/3)*

- (A) 25%
- (B) 50%
- (C) 75%
- (D) 80%

48 Velocity of a body moving with simple harmonic motion is:

- (A) $\omega^2 \sqrt{a^2 + y^2}$
- (B) $\omega \sqrt{a^2 - y^2}$
- (C) $\omega \sqrt{a^2 + y^2}$
- (D) $\omega^2 \sqrt{a^2 - y^2}$

49 At a given place where acceleration due to gravity is g , a lead sphere of density d is gently released into a column of liquid of density ρ . If $d > \rho$, the acceleration with which the sphere will fall, will be:

- (A) g
- (B) $\frac{g \cdot \rho}{d}$
- (C) $\frac{g(d + \rho)}{d}$
- (D) $\frac{g(d - \rho)}{d}$

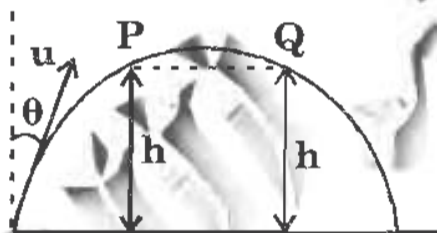
50 If S is stress and Y is Young's modulus of material of a wire, then what is the energy stored in the wire per unit volume?

- (A) $\frac{S^2}{2Y}$ (B) $\frac{2Y}{S^2}$ (C) $\frac{S}{2Y}$ (D) $2S^2Y$

51 Surface tension of water is 0.072 N m^{-1} . Find the excess pressure inside a water drop of diameter 1.2 mm ?

- (A) 240 N m^{-2} (B) 120 N m^{-2}
(C) 0.06 N m^{-2} (D) 72 N m^{-2}

52 A particle is thrown with velocity u making an angle ' θ ' with the vertical. It just crosses the top of two poles each of height ' h ' after 1 s and 3 s respectively. Find the maximum height of the projectile ?



- (A) 9.8 m (B) 19.6 m (C) 39.2 m (D) 4.9 m

53 In the relation $y = 2A \sin(\omega t + \phi_0)$, the dimensional formula for $(\omega t + \phi_0)$ is:

- (A) MLT (B) MLT^0 (C) ML^0T^0 (D) $M^0L^0T^0$

54 A block released from rest from the top of a smooth inclined plane of angle ' θ_1 ' reaches the bottom in time ' t_1 '. The same block released from rest from the top of another smooth inclined plane of angle ' θ_2 ', reaches the bottom in time ' t_2 '. If the two inclined planes have the same height, the relation between t_1 and t_2 is:

$$(A) \frac{t_2}{t_1} = \left(\frac{\sin \theta_1}{\sin \theta_2} \right)^{1/2}$$

$$(B) \frac{t_2}{t_1} = 1$$

$$(C) \frac{t_2}{t_1} = \frac{\sin \theta_1}{\sin \theta_2}$$

$$(D) \frac{t_2}{t_1} = \frac{\sin^2 \theta_1}{\sin^2 \theta_2}$$

55 X is the point of contact of a wheel and the ground. The radius of the wheel is 2 m. The wheel rolls on the ground without slipping. Find the displacement of point X when the wheel completes half rotation.

- (A) 2 m (B) $2\sqrt{\pi^2 + 4}$ m (C) π m (D) $\sqrt{\pi^2 + 4}$ m

56 Rakesh lifts a heavy book from the floor of the room and puts it in the book shelf having a height 2 m. In this process, he takes 5 seconds. On which of the following does the work done by him will depend upon?

- (A) Mass of the book and time taken
 (B) Weight of the book and the height of the book shelf
 (C) Height of the book shelf and the time taken
 (D) Mass of the book, height of the book shelf and the time taken

57 **Assertion:** The period of satellite in a circular orbit around a planet is independent of mass of the satellite.

Reason: This follows from the relation $T = 2\pi \sqrt{\frac{R}{g}}$, where

R is the radius of the orbit, T is time period and g is acceleration due to gravity.

- (A) Both assertion and reason are true and reason is the correct explanation of assertion.
 (B) Both assertion and reason are true, but reason is not the correct explanation of assertion.
 (C) Assertion is true, reason is false.
 (D) Assertion is false, reason is true.

- 58 Two masses m_a and m_b moving with velocities V_a and V_b in opposite direction collide elastically and after the collision m_a and m_b move with velocities V_b and V_a respectively. Find the ratio m_a/m_b .

(A) $\frac{v_a - v_b}{v_a + v_b}$

(B) $\frac{v_a + v_b}{v_a - v_b}$

(C) 1

(D) $\frac{1}{2}$

- 59 Moment of inertia of a uniform rod of length L and mass M , about an axes passing through $L/4$ from one end and perpendicular to its length is:

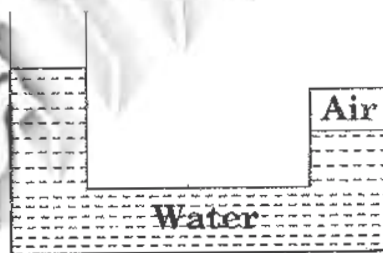
(A) $\frac{7}{36}ML^2$

(B) $\frac{7}{48}ML^2$

(C) $\frac{11}{48}ML^2$

(D) $\frac{ML^2}{12}$

- 60 Look at the figure given below:



The pressure of confined air is P_1 and that of atmosphere is P_2 . Find the relation between P_1 and P_2 .

(A) $P_1 = P_2$

(B) $P_1 < P_2$

(C) $P_2 < P_1$

(D) $P_1 \leq P_2$

- 61 **Assertion:** The specific heat at constant pressure is more than that at constant volume.

Reason: At constant pressure, molecular oscillations are moderate.

- (A) Both assertion and reason are true and reason is the correct explanation of assertion.
- (B) Both assertion and reason are true, but reason is not the correct explanation of assertion.
- (C) Assertion is true, reason is false.
- (D) Assertion is false, reason is true.

62 A metallic sphere of volume V falls through glycerine with a terminal velocity 1 m s^{-1} . If we drop a ball of volume $8V$ of same metal into a column of glycerine, then what would be the terminal velocity of the ball?

- (A) 2 m s^{-1} (B) 4 m s^{-1} (C) 8 m s^{-1} (D) 16 m s^{-1}

63 How many grams of ice at 0°C should be mixed with 160 g of water at 20°C so that the ice completely melts and the final temperature is 0°C ?

- (A) 40 g (B) 120 g (C) 360 g (D) 80 g

64 What is the ratio of the relative rise in pressure for adiabatic compression to that for isothermal compression?

- (A) γ (B) $\frac{1}{\gamma}$ (C) $1 - \gamma$ (D) $\frac{1}{1 - \gamma}$

65 There are 26 tuning forks arranged in the decreasing order of their frequencies. Each tuning fork gives 3 beats with the next. The first one is octave of the last. What is the frequency of 18th tuning fork?

- (A) 100 Hz (B) 99 Hz (C) 96 Hz (D) 103 Hz

66 The melting point of CsCl is lower than that of NaCl . What does this mean?

- (A) Compounds NaCl and CsCl have different ionic nature.
- (B) Compounds NaCl and CsCl have different polarising power.
- (C) The lattice arrangements of NaCl and CsCl are different.
- (D) The binding energy of Cs is less than that of Na .

67 For a given gas, which of the following relationships amongst the speeds is correct at a given temperature?

- (A) $u_{rms} > u_{av} > u_{mp}$ (B) $u_{rms} < u_{av} < u_{mp}$
 (C) $u_{rms} > u_{av} < u_{mp}$ (D) $u_{rms} < u_{av} > u_{mp}$

68 Two oxides of a metal contain 50% and 40% of metal M respectively. If the formula of first oxide is MO, then what could be the probable formula of 2nd oxide?

- (A) MO_2 (B) M_2O_3 (C) M_2O (D) M_2O_5

69 Which of the following factors given below influences the enthalpy of a reaction?

- I. Temperature of the reaction
 II. Condition such as constant volume or constant pressure
 III. The method by which change is brought about

- (A) I and II only (B) II and III only
 (C) III and I only (D) I, II and III

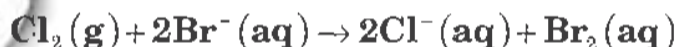
70 When a molten ionic hydride is electrolysed:

- (A) H^+ ions produced move to the cathode.
 (B) H^+ ions produced move to the anode.
 (C) H_2 gas is liberated at cathode.
 (D) H_2 gas is liberated at anode.

71 Identify from the following the electronic species that can produce the shortest wavelength for the electronic transition from $n = 2$ to $n = 1$.

- (A) H-atom (B) D-atom (C) He^+ ion (D) Li^{2+} ion

72 Study the given reaction below:



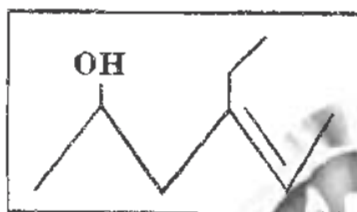
Identify the correct statement from the following.

- (A) Br^- is the oxidant (B) Br^- is the reductant
 (C) Cl_2 is the oxidant (D) Both (B) and (C)

73 In the Solvay process, when CO_2 is passed into a conc. solution of brine saturated with ammonia, then what is the final product obtained ?

- (A) Ammonium chloride (B) Sodium carbonate
(C) Ammonium carbonate (D) Sodium chloride

74 Identify the IUPAC name of the given compound.

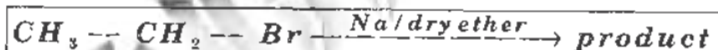


- (A) 2-ethyl hex-2-en-4-ol (B) 2-ethyl hept-4-en-4-ol
(C) 4-ethyl hept-4-en-2-ol (D) 4-ethyl hex-4-en-2-ol

75 What is the nature of aqueous solution of borax?

- (A) Acidic (B) Basic
(C) Neutral (D) May be acidic or neutral

76 Study the given reaction below:



Identify the product formed.

- (A) Pure *n*-propane
(B) Mixture of butane and hydrogen
(C) Mixture of butane, ethene and ethane
(D) Mixture of ethene and ethane

77 Why does carbon tetrachloride has zero dipole moment?

- (A) CCl_4 has planar structure
(B) CCl_4 has symmetrical tetrahedral structure
(C) Size of carbon atoms and chlorine atoms are similar
(D) Electron affinities of carbon and chlorine are similar

78 If ammonia is added to pure water, then the concentration of which of the following chemical species already present will decrease?

- (A) O^{2-} (B) OH^- (C) H_3O^+ (D) H_2O

79 X mL of He gas effuses through a hole in a container in 5 seconds. Find the time taken for the effusion of the same volume of the gas specified below under identical conditions.

- (A) 10 seconds: H_2 (B) 20 seconds: SO_2
 (C) 25 seconds: CO (D) 55 seconds: CO_2

80 For the adiabatic expansion of an ideal gas:

- (A) $PV^\gamma = \text{constant}$ (B) $TV^{\gamma-1} = \text{constant}$
 (C) $T^\gamma P^{1-\gamma} = \text{constant}$ (D) All of the above

81 X is sparingly soluble in water on heating it carefully at $100^\circ C$, it partially loses water of crystallisation and becomes $CaSO_4 \cdot \frac{1}{2}H_2O$. Identify X.

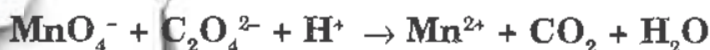
- (A) Glass (B) Cement (C) Gypsum (D) Plaster of Paris

82 Study the information given below:

- X is a metal derivative of silicic acid which contains $[SiO_4]^{4-}$ as anion
- Y is a synthetic organo - silicon polymer, which contains R, SiO as repeat unit

	X	Y
(A)	Silica	Silicone
(B)	Silica	Silicate
(C)	Silicate	Silicone
(D)	Silicone	Silicate

83 Study the redox reaction given below.



Identify the correct coefficients of the reactants for the balanced equation.

	MnO_4^-	$C_2O_4^{2-}$	H^+
(A)	2	5	16
(B)	16	5	2
(C)	5	16	2
(D)	2	16	5

- 84 Which one of the following does not have hydrogen bond?
(A) Phenol (C_6H_5OH) (B) Liquid NH_3
(C) Water (H_2O) (D) Liquid HCl
- 85 How many g atoms of S are present in 4.9 g H_2SO_4 ?
(A) 9.8 g atoms (B) 4.9 g atoms (C) 0.1 g atoms (D) 0.05 g atoms
- 86 Which of the following alkali metal carbonate is the least soluble?
(A) Li_2CO_3 (B) Na_2CO_3 (C) K_2CO_3 (D) Cs_2CO_3
- 87 Identify the compound that is most reactive towards electrophilic nitration.
(A) Toulene (B) Benzene (C) Benzoic acid (D) Nitrobenzene
- 88 Identify the subshell having the least energy represented by the following set of quantum numbers.
(A) $n = 4, l = 0, m = 0, s = +1/2$ (B) $n = 3, l = 1, m = 1, s = -1/2$
(C) $n = 3, l = 2, m = 0, s = +1/2$ (D) $n = 3, l = 0, m = 0, s = -1/2$
- 89 If one third of HI decomposes at a particular temperature, then what will be the value of K_c for $2HI \rightleftharpoons H_2 + I_2$?
(A) 1/16 (B) 1/4 (C) 1/6 (D) 1/2
- 90 Which gases given below rise to photochemical smog?
(A) Oxides of sulphur (B) Oxides of nitrogen
(C) Oxides of carbon (D) Oxygen

CLASS : XI

GENERAL QUESTIONS

- 91 If TOUR is written in a certain code as 1234, CLEAR as 56784 and SPARE as 90847. What will be the 5th digit for SCULPTURE in the same code?
(A) 3 (B) 6 (C) 0 (D) 4
- 92 Which of the following is the most modern multitarget surface-to-air missile?
(A) Prithvi (B) Nag (C) Agni (D) Akash

93 Which of the following electronic components is used in the second generation computers?

- (A) Vacuum tubes (B) Transistors
(C) LSI/VLSI (D) Integrated circuits

94 Which letter would complete the given series?

A, B, D, G, ?, P

- (A) J (B) I (C) K (D) L

95 Which of the following honour is given by UNESCO?

- (A) The Kalinga (B) Magasay Award
(C) Pulitzer Prize (D) Order of the Golden Ark Award

96 Which river is called 'Bengal's Sorrow'?

- (A) Hugli (B) Ganga (C) Damodar (D) Koshi

97 A man-made tunnel in India transfers water from which one river to another?

- (A) Narmada to Tapti (B) Betwa to Sone
(C) Beas to Sutlej (D) Godavari to Krishna

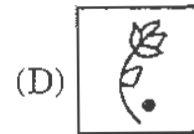
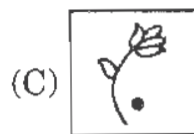
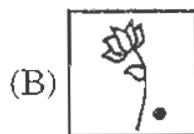
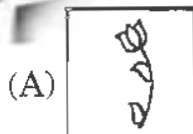
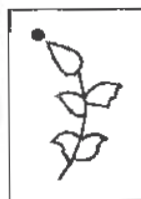
98 Who is the writer of "Daughter of East" ?

- (A) Indira Gandhi (B) Benazir Bhutto
(C) Amrita Pritam (D) Marget Thatcher

99 Which of the following is one of the two days when the sun rises exactly in the east?

- (A) 14th January (B) 21st March
(C) 21st June (D) 23rd December

100 Which figure will come next in the figure series given below?



KEY FOR THE Q.P.-2011

1. B	2. B	3. C	4. C	5. D	6. B	7. B	8. C
9. A	10. A	11. C	12. B	13. C	14. C	15. D	16. D
17. B	18. D	19. B	20. C	21. B	22. C	23. C	24. A
25. C	26. D	27. C	28. B	29. B	30. D	31. B	32. D
33. A	34. B	35. D	36. A	37. A	38. C	39. C	40. C
41. B	42. B	43. B	44. B	45. C	46. A	47. A	48. B
49. D	50. A	51. A	52. B	53. D	54. C	55. B	56. B
57. A	58. C	59. B	60. C	61. C	62. B	63. A	64. A
65. B	66. C	67. A	68. B	69. A	70. D	71. D	72. D
73. B	74. D	75. B	76. C	77. B	78. C	79. B	80. D
81. C	82. C	83. A	84. D	85. D	86. A	87. A	88. D
89. A	90. B	91. C	92. D	93. B	94. C	95. A	96. C
97. C	98. B	99. B	100. C				