

B - SECTION - III  
SCIENCE (CBZ)  
CHEMISTRY

41. 50 ml of  $H_2$  diffuses out through a small hole from a vessel in 20 mins. The time needed for 40 ml of  $O_2$  to diffuse out from the same vessel is :

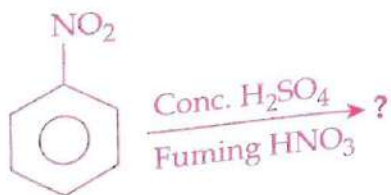
- (A) 12 min
- (B) 64 min
- (C) 8 min
- (D) 32 min ✓

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42. Which of the following shows positive inductive effect ?

- (A)  $-NO_2$
- (B)  $-COOH$  ✓
- (C)  $-OCH_3$
- (D)  $-CN$

43. What will be the product of the following reaction ?



- (A) m-dinitrobenzene
- (B) o-dinitrobenzene
- (C) p-dinitrobenzene
- (D) Both o- and p-dinitrobenzene ✓

44. The set of quantum numbers for 19<sup>th</sup> electron of Chromium atom is :

	n	l	m	s
(A)	3	0	0	1/2
(B)	3	2	-2	1/2
(C)	4	0	0	1/2
(D) ✓	4	1	0	1/2

45. Among the following covalent compounds, the compound having more polar character is :

- (A) HI ✓
- (B) HCl ✓
- (C) HBr
- (D) HF

46. The refining of Nickel metal is done by :

- (A) Van Arkel Method
- (B) Mond process
- (C) Vapour-phase refining ✓
- (D) Zone refining

47. When acetylene is passed through dil.  $H_2SO_4$  in presence of  $HgSO_4$  at  $60^\circ C$ , the organic compound formed is :

- (A) Dimethylether ✓
- (B) Acetone
- (C) Acetic acid
- (D) Acetaldehyde

48. The ore containing two different metals is :
- (A) Haematite ✓  
(B) Galena  
(C) Copper pyrite  
(D) Magnetite
49. Which of the following ion is the smallest in size ?
- (A)  $N^{3-}$  ✓  
(B)  $Na^+$   
(C)  $F^-$   
(D)  $O^{2-}$
50. The relative lowering in vapour pressure of an ideal solution containing the non-volatile solute is equal to the mole fraction of the solute at a given temperature. This law is known as :
- (A) Henry's law  
(B) Van't Hoff's law  
(C) Raoult's law  
(D) Ostwald's dilution law ✓
51. The oxide of a metal contains 40% oxygen. If the valency of the metal is 3, its atomic mass will be :
- (A) 8 ✓  
(B) 16 ✓  
(C) 36  
(D) 24
52. The volume of 0.05 N  $H_2SO_4$  solution needed to completely neutralise 25 ml of 0.1 N NaOH solution is :
- (A) 25 ml ✓  
(B) 50 ml  
(C) 100 ml  
(D) 12.5 ml
53. According to Le-Chatelier's principle maximum yield of ammonia is obtained at :
- (A) High temperature and low pressure  
(B) High pressure  
(C) Low temperature  
(D) Low temperature and High pressure ✓
54. One drop of water weighs 0.018 g. Number of water molecules present in one drop of water is :
- (A)  $1 \times 10^{-3}$  ✓  
(B)  $6.02 \times 10^{20}$  ✓  
(C)  $22.4 \times 10^{-3}$  ✓  
(D)  $6.02 \times 3 \times 10^2$

55. ZnS is not precipitated by passing  $H_2S$  through acidified  $ZnCl_2$  solution, but CuS is precipitated by passing  $H_2S$  through acidified  $CuSO_4$  solution. The reason for this is :
- (A)  $K_{sp} CuS \gg K_{sp} ZnS$
- (B)  $K_{sp} CuS = K_{sp} ZnS$
- (C)  $K_{sp} CuS \ll K_{sp} ZnS$
- (D) None of these ✓
56. The correct order of electron gain enthalpy among the following is :
- (A)  $F > Cl > Br$  ✓
- (B)  $Br > Cl > F$
- (C)  $Cl > F > Br$
- (D)  $F > Br > Cl$
57. According to VSEPR theory the shape of  $SF_6$  molecule is :
- (A) Trigonal bipyramidal
- (B) Regular octahedral
- (C) Pentagonal bipyramidal ✓
- (D) Tetrahedral
58. The uncertainty in the momentum of an electron is  $1 \times 10^{-5} \text{ kg m/s}$ . The uncertainty in its position will be ( $h = 6.62 \times 10^{-34} \text{ kg m}^2/\text{s}$ ) :
- (A)  $1.05 \times 10^{-28} \text{ m}$
- (B)  $1.05 \times 10^{-26} \text{ m}$  ✓
- (C)  $5.27 \times 10^{-30} \text{ m}$
- (D)  $5.27 \times 10^{-28} \text{ m}$
59. Which of the following is an electrophile ?
- (A)  $H_2O$  ✓
- (B)  $NH_3$
- (C)  $AlCl_3$  ✓
- (D)  $CH_3NH_2$
60. In the standardisation of  $Na_2S_2O_3$  using  $K_2Cr_2O_7$  by iodometry, the equivalent mass of  $K_2Cr_2O_7$  is :
- (A)  $\frac{\text{Mol.Mass}}{2}$
- (B)  $\frac{\text{Mol.Mass}}{3}$
- (C)  $\frac{\text{Mol.Mass}}{6}$
- (D) Same as molecular mass ✓

**B - SECTION - III**  
**SCIENCE (CBZ)**  
**BOTANY**

61. Where can the maximum biodiversity be seen ?  
 (A) Tropical Rain Forest ✓  
 (B) Temperate Rain Forest ✓  
 (C) Alpine Forest  
 (D) Mediterranean Forest
62. Seedless vascular cryptogams are :  
 (A) Monocots  
 (B) Ferns  
 (C) Liverworts  
 (D) Gymnosperms ✓
63. The maiden-hair tree is :  
 (A) Adiantum  
 (B) Pinus ✓  
 (C) Ginkgo biloba  
 (D) Gnetum ula
64. The phylogenetic basis of classification proposed by John Hutchinson was presented in the book :  
 (A) Systema nature  
 (B) Introduction to the natural orders of plants ✓  
 (C) Fundamental botanica  
 (D) The families of flowering plants
65. Which is not an element of phloem tissue ?  
 (A) Sieve tubes  
 (B) Companion cells  
 (C) Bast fibres  
 (D) Wood parenchyma ✓
66. Sapwood is synonymous with :  
 (A) Bark  
 (B) Periderm  
 (C) Inner layers of secondary xylem ✓  
 (D) Outer layers of secondary xylem
67. Indicate the features of a dicot stem :  
 (A) Vascular bundles closed, collateral and exarch  
 (B) Vascular bundles scattered, more towards the periphery  
 (C) Vascular bundles with bundles radial, exarch and closed  
 (D) ✓ Vascular bundles are conjoint, collateral, open and endarch
68. Which are the products of cyclic photophosphorylation during photosynthesis ?  
 (A) ATP + O<sub>2</sub>  
 (B) NADH + O<sub>2</sub>  
 (C) ATP + NADH  
 (D) ATP + NADH + O<sub>2</sub> ✓
69. Which organelle does not participate in photorespiration ?  
 (A) Peroxisome ✓  
 (B) Mitochondria  
 (C) Golgi bodies  
 (D) Chloroplast
70. The structure of chlorophyll molecule shows a porphyrin head and phytol tail. Porphyrin is a cyclic-tetra pyrrole ring to which phytol tail is attached. To which ring of porphyrin is the phytol tail attached ?  
 (A) I  
 (B) II ✓  
 (C) III  
 (D) IV

71. The entry of pollen tube through the micropyle is :  
 (A) Allogamy  
 (B) Geitonogamy  
 (C) Porogamy  
 (D) Chalazogamy ✓
72. Which disease of wheat is caused by Ustilago ?  
 (A) Rust  
 (B) Leaf spot ✓  
 (C) Smut  
 (D) Blast
73. To determine homozygosity or heterozygosity, a plant must be crossed with :  
 (A) Dominant parent ✓  
 (B) Recessive parent  
 (C) Homozygous dominant  
 (D) Heterozygous dominant
74. Micropropagation is :  
 (A) Production of plants from Zoospores  
 (B) Propagation of microorganisms  
 (C) Technique of obtaining new plants by growing cells or tissues in culture medium  
 (D) Technique of obtaining small plants
75. Exogenously borne non-motile asexual reproductive units in Ascomycetes are called :  
 (A) Conidia ✓  
 (B) Ascospore  
 (C) Basidiospore  
 (D) Zoospores
76. After fertilization the seed coat of a seed develops from :  
 (A) Embryo sac  
 (B) Integuments  
 (C) Nucellus  
 (D) Chalaza ✓
77. Which fungus was responsible for the great Irish famine ?  
 (A) Leaf spot of rice  
 (B) Rust of wheat  
 (C) Powdery mildew of peas  
 (D) Late blight of potato ✓
78. Which effect does treatment of gibberellins have on cabbage leaves ?  
 (A) Abscission  
 (B) Bolting ✓  
 (C) Delayed senescence  
 (D) Early senescence
79. Which is unrelated pair ?  
 (A) Gibberellins - *Gibberalla fujikuroi*  
 (B) Ethylene - Methionine  
 (C) Auxin - Indole-3-acetic acid  
 (D) Cytokinin - Violaxanthin
80. The phenomenon of single gene contributing to multiple phenotypic traits is called :  
 (A) Pleiotropy  
 (B) Multiple allelism  
 (C) Co-dominance  
 (D) Polygenic inheritance ✓

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SCIENCE (CBZ)  
ZOOLOGY

81. To which class does Protopterus belong ?
- (A) Aves
  - (B) Reptilia ✓
  - (C) Amphibia
  - (D) Pisces
82. Which stage of mitosis is regarded as the phase of reconstruction and reorganization of nucleus ?
- (A) Prophase
  - (B) Metaphase
  - (C) Anaphase ✓
  - (D) Telophase
83. In which type of linkage, chromosomes do not undergo any breakage during gametogenesis and no independent assortment occurs between the pairs of genes ?
- (A) Sex-linkage
  - (B) Inter-chromosomal linkage ✓
  - (C) Incomplete linkage
  - (D) Complete linkage ✓
84. In humans the chromosomal composition of zygote destined to form a female is :
- (A) 22 + X
  - (B) 22 + Y
  - (C) 44 + XX ✓
  - (D) 44 + XY
85. Where are the t-RNAs transcribed in the eukaryotes ?
- (A) Ribosome ✓
  - (B) Nucleolus
  - (C) ER
  - (D) Golgi body
86. The walls and roof of a greenhouse out-door laboratory is made up of :
- (A) Asbestos ✗
  - (B) GI sheet ✗
  - (C) Glass ✓
  - (D) Green grass

87. Which type of nutrition is seen in the animals who feed on their own faecal matter ?
- (A) Coprozoic  
(B) Mesotrophic  
(C) Osmotrophic  
(D) Saprozoic ✓
88. Which one is not a factor for formation of new species according to modern synthetic theory of evolution ?
- (A) Isolation ✓  
(B) Sexual selection  
(C) Variation  
(D) Natural selection
89. The phenomenon of industrial melanism was first observed in :
- (A) USA  
(B) United Kingdom ✓  
(C) Kenya  
(D) Italy
90. Which one was responsible for Bhopal gas tragedy ?
- (A) Methane ✓  
(B) Methyl carbide  
(C) Methyl isocyanate  
(D) Melathion
91. The SA node is located in the :
- (A) Right atrium  
(B) Right ventricle ✓  
(C) Left atrium  
(D) Left ventricle
92. In man, aerobic respiration is completed in :
- (A) Nucleus  
(B) Mitochondria ✓  
(C) Nucleolus  
(D) Dictyosome
93. Which of the following statement, is true ?
- (A) All veins carry deoxygenated blood  
(B) All arteries carry oxygenated blood ✓  
(C) All veins except one carry oxygenated blood  
(D) All arteries except one carry oxygenated blood

94. Which physiological process does occur inside the cytoplasm of a cell ?
- (A) Krebs Cycle ~~⊗~~  
 (B) Electron Transport  
 (C) Citric acid Cycle ✓  
 (D) Glycolysis
95. The pressure build up at the glomerular capillary network is called :
- (A) Intrarenal pressure  
 (B) Hydrostatic pressure  
 (C) Osmotic pressure  
 (D) Interstitial pressure ✓
96. Which one is an inhibitory neurotransmitter ?
- (A) Acetylcholine  
 (B) Histamine dopamine ✓  
 (C) Gamma-aminobutyric acid  
 (D) Glutamate
97. Ammonia is converted to urea through which cycle ?
- (A) Citric acid Cycle ✓  
 (B) Cardiac Cycle  
 (C) Ornithine Cycle  
 (D) Sodium Co-transport
98. Which hormone is called 'love hormone' ?
- (A) Oxytocin  
 (B) Vasopressin ✓  
 (C) Testosterone  
 (D) Melatonin
99. Which one of the following enzymes is present in the acrosome of sperm head ?
- (A) Pepsinogen ✓  
 (B) Trypsin ✓  
 (C) Hyaluronidase  
 (D) Isomerase
100. An abnormal condition in man where the testes fail to descend into scrotum and is retained in the condition called :
- (A) Gubernaculum  
 (B) Cretinism  
 (C) Lorain dwarfism ✓  
 (D) Cryptorchism