

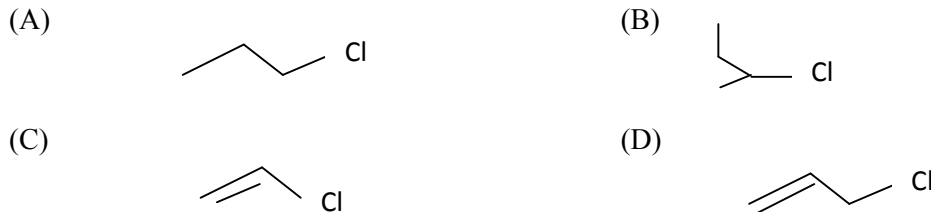
Sr. No.	Question
1.	A genome/ nucleoid consists of (A) Histone and RNA (B) A single double stranded DNA (C) A single stranded DNA (D) Histone and non-histone
2.	A bivalent consists of (A) Two chromatids and one chromosome (B) Four chromatids and two centromeres (C) Two chromatids and two centromeres (D) Four chromatids and four centromeres
3.	The mechanism of ATP formation both in chloroplast and mitochondria is explained in (A) Chemiosmotic theory (B) Munch's hypothesis (C) Relay pump theory (D) Cholodny-Wont's model
4.	Algae differs from Riccia and Marchantia in having (A) Multicellular body (B) Multicellular sex organs (C) Pyrenoids in the cell (D) Thalloid body
5.	Fern stele is a (A) Protostele (B) Dictyostele (C) Sphino-stele (D) None of these
6.	The protonema is a stage in the life cycle of (A) Riccia (B) Funaria (C) Bryophytes (D) Cycas
7.	Urcein dye is obtained from the lichen (A) Lasallia (B) Cladonia (C) Ramalin (D) Lecanora
8.	Schizolysigenous cavity is present in (A) Maize stem (B) Nymphaea root (C) Sunflower root (D) None of these
9.	An embryo may sometimes develop from cell of an embryo sac other than egg (A) Apospory (B) Partheogenesis (C) Parthenocarpy (D) Apogamy
10.	Systematic deals with (A) Identification of organisms (B) Classification of organisms (C) Diversity of all organisms and existing relationships amongst themselves (D) Identification, naming and classification of both plants and animals
11.	Plants need one of the following for ATP formation (A) N, P (B) N, Ca (C) K (D) N, Cu
12.	The overall goal of glycolysis, Krebs cycle and electron transport system is the formation of (A) Sugars (B) Nucleic acids (C) ATP in stepwise units (D) ATP in one large oxidation reaction
13.	A sudden change from anaerobic to aerobic process produces (A) Emerson effect (B) Hill reaction (C) Pasteur effect (D) Blackman's Law
14.	Root pressure occurs when there is: (A) More transpiration and more absorption (B) Less transpiration and more absorption (C) Less transpiration and less absorption (D) More transpiration and less absorption
15.	At which times there is no net gaseous exchange between leaves and the atmosphere (A) Day time (B) Night time (C) Dawn and Dusk (D) Midnight

16. NADPH<sup>+</sup> is reduced to NADPH in:  
 (A) PSI (B) PSII  
 (C) Non-cyclic photophosphorylation (D) Calvin cycle
17. A competitive inhibitor of succinate dehydrogenase is:  
 (A) Malate (B) Oxaloacetate  
 (C)  $\alpha$ -ketoglutarate (D) Malonate
18. How many stomata cover the leaf surface?  
 (A) 0.03-0.04% (B) 10%  
 (C) 1-2% (D) 50%
19. Phytohormone which induces triple response is:  
 (A) ABA (B) C<sub>2</sub>H<sub>4</sub>  
 (C) IAA (D) GA<sub>3</sub>
20. The pH of a solution is 8.3 what is the [OH]?  
 (A)  $5 \times 10^{-9}$  (B)  $1 \times 10^{-7}$   
 (C)  $2 \times 10^{-6}$  (D)  $5 \times 10^{-6}$
21. The electrophoresis technique that uses isoelectric focusing is:  
 (A) AGE (B) PFGE  
 (C) 2D-PAGE (D) SDS-PAGE
22. In infrared spectroscopy, which frequency range is known as fingerprint region:  
 (A) 400-1400 cm<sup>-1</sup> (B) 1400-900 cm<sup>-1</sup>  
 (C) 900-600 cm<sup>-1</sup> (D) 600-250 cm<sup>-1</sup>
23. Vaccination is an example of  
 (A) Naturally acquired active immunity (B) Artificially acquired active immunity  
 (C) Naturally acquired passive immunity (D) Artificially acquired passive immunity
24. Synthetic seed is produced by encapsulating somatic embryo with:  
 (A) Sodium chloride (B) Sodium alginate  
 (C) Calcium acetate (D) Sodium nitrate
25. In tissue culture medium, the embryoids formed from pollen grains are due to:  
 (A) Cellular totipotency (B) Organogenesis  
 (C) Double fertilization (D) Test tube culture
26. The phenomenon of the reversion of mature cells to meristematic state leading to formation of callus:  
 (A) Redifferentiation (B) Dedifferentiation  
 (C) Either (A) or (B) (D) None of these
27. In tomato, fruit is a:  
 (A) Drupe (B) Berry  
 (C) Pepo (D) Achene
28. The final phase of development is:  
 (A) Juvenile (B) Maturity  
 (C) Seedling (D) Senescence
29. The water potential of pure water at atmospheric pressure is:  
 (A) -2.3 bar (B) +2.3 bar  
 (C) zero bar (D) one bar
30. Synchronization of reproductive behavior of plants with their environment is done by:  
 (A) Photoperiod and vernalization (B) Respiration and vernalization  
 (C) Transpiration and photoperiodism (D) Respiration and transpiration
31. National Science Day is celebrated on:  
 (A) 5 June (B) 21 June  
 (C) 28 February (D) 16 October

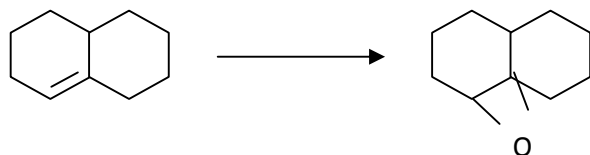
32. Which among the following monsoon is mainly responsible for rains in India?  
 (A) South-East (B) North-West  
 (C) South-West (D) North-East
33. Which gas is generally used in cold stores?  
 (A) Ethylene (B) Oxygen  
 (C) Methane (D) Acetelene
34. Growing of coconut, black pepper and ginger simultaneously in the same field is an example of:  
 (A) Relay cropping (B) Intercropping  
 (C) Multiple cropping (D) Multistoried\_cropping
35. In pulses, limiting amino acids is:  
 (A) Methionine (B) Valine  
 (C) Lysine (D) Cystein
36. When a compressed gas is allowed to expand through a porous plug at a temperature above its inversion temperature, then  
 (A) A fall in temperature is observed (B) A rise in temperature is observed  
 (C) A rise after an initial fall in temperature is observed (D) No change in temperature is noticed
37. Gas A can be liquefied at room temperature by applying pressure but gas B cannot. This reflects  
 (A) Critical temperature of B is less than that of A (B) Critical temperature of B is greater than that of A  
 (C) Critical temperature of both A and B are greater than room temperature (D) No conclusion can be drawn on the critical temperature of A and B
38. Clausius-Clapeyron's equation gives the variation of  
 (A) Boiling point of liquid with temperature (B) Vapour pressure of a liquid with temperature  
 (C) Coefficient of viscosity of a liquid with pressure (D) Surface tension of a liquid with temperature
39. At any temperature T, the entropy of a solid substance ( $S_T$ ) is given by the expression  
 (A)  $C_p dT$  (B)  $C_p / T$   
 (C)  $\int_0^T C_p dT / T$  (D)  $(C_p - C_v) / T$
40. The value of equilibrium constant for an endothermic reaction  
 (A) Increases with increase in temperature (B) Decreases with increase in temperature  
 (C) Is independent of temperature (D) Information not sufficient to draw any conclusion
41. Which of the following statement is not correct?  
 (A) Fast reactions have low activation energy (B) Activation energy of a reaction depends on the chemical nature of reactants and products  
 (C) A catalyst increases the rate of reaction by decreasing the activation energy of the reaction (D) With increase in temperature, the rate of reaction decreases in case of exothermic reactions
42. Which formula cannot be used to calculate the molar mass of a solute?  
 (A)  $\frac{K_b \times W_b \times 10^3}{\Delta T_b \times W_A}$  (B)  $\frac{W_B RT}{\pi V}$   
 (C)  $\frac{\Delta T_b \times W_B \times 10^3}{K_b \times W_A}$  (D)  $\frac{p_A^0 \times W_B \times M_A}{(p_A^0 - p) \times W_A}$

43. The EMF of the cell,  $\text{Zn}|\text{Zn}^{2+}||\text{Ag}^+|\text{Ag}$  is independent of  
 (A) The volume of  $\text{Zn}^{2+}$  and  $\text{Ag}^+$  solutions (B) The molarity of  $\text{Zn}^{2+}$  ions in the solution  
 (C) The molarity of  $\text{Ag}^+$  ions in the solution (D) Temperature
44. What happens when electric current is passed through aqueous of sodium chloride  
 (A)  $\text{O}^2$  is evolved at cathode (B)  $\text{O}^2$  is evolved at anode  
 (C) pH of the solution gradually decreases (D) pH of the solution gradually increases
45. The dimensions of rate constant for a first order reaction involve  
 (A) Time and concentration (B) Time only  
 (C) Concentration only (D) Neither time nor concentration
46. The  $t_{1/2}$  of a first order reaction is found to be 2 minutes. The percentage of the reactant left after 360 seconds is  
 (A) 12.5 (B) 25  
 (C) 15 (D) 7.5
47. The net energy change in a reversible, cyclic process is  
 (A)  $3/2 RT$  (B) Zero  
 (C) Always  $>0$  (D) Always  $<0$
48. The magnetic quantum number for the last electron in the sodium atom (atomic number  $z=11$ ) is  
 (A) 3 (B) 2  
 (C) 1 (D) 0
49. The octahedral molecular shape is associated with -----hybridisation.  
 (A)  $sp^3d$  (B)  $sp^3d^2$   
 (C)  $sp^3d^3$  (D)  $sp^3$
50. Which of the following is the strongest acid  
 (A) Acetic acid (B) Propionic acid  
 (C) Butanoic acid (D) Chloroacetic acid
51. An example of natural semi conductor is  
 (A) boron (B) silicon  
 (C) aluminium (D) Phosphorous
52. The ionic strength of a solution containing 0.02 M  $\text{Na}_2\text{SO}_4$  and 0.01 M  $\text{MgCl}_2$  is  
 (A) 0.03 (B) 0.06  
 (C) 0.09 (D) 0.1
53. Balmer series consists of lines in the spectral range  
 (A) 100-180 nm (B) 230-340 nm  
 (C) 400-700 nm (D) 900-1100 nm
54. Aluminium chloride is a/an  
 (A) Lewis acid (B) Lewis base  
 (C) Bronsted-Lowry acid (D) Arrhenius acid
55. The pH of  $10^{-8}$  N HCl is approximately  
 (A) 8 (B) 7.02  
 (C) 7 (D) 6.96
56. Covalent character of the bond is maximum in the case of  
 (A) LiCl (B) NaCl  
 (C) KCl (D)  $\text{CaCl}_2$
57. This species generally act as Bronsted acid and base  
 (A)  $\text{HSO}_4^-$  (B)  $\text{Na}^2\text{CO}_3$   
 (C)  $\text{NH}_3$  (D)  $\text{OH}^-$
58. This serves as a differentiating solvent for HCl,  $\text{H}_2\text{SO}_4$  and  $\text{HNO}_3$   
 (A) Liquid  $\text{NH}_3$  (B)  $\text{H}_2\text{O}$   
 (C) Liquid  $\text{CH}_3\text{COOH}$  (D)  $\text{C}_6\text{H}_6$

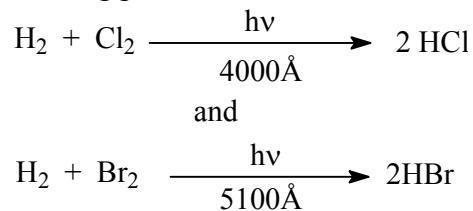
59. Silicon carbide widely used as an abrasive called carborundum belongs to the class of carbides known as
- (A) Ionic carbides (B) Interstitial carbides  
(C) Covalent carbides (D) Silicates
60. Which of the following statement concerning probability density ( $\Psi^2$ ) and radial distribution function ( $4\pi r^2\Psi^2$ ) for s-orbital of H-like species is correct?
- (A)  $\Psi^2$  is minimum at nucleus but  $4\pi r^2\Psi^2$  is maximum at nucleus (B)  $\Psi^2$  is maximum at nucleus but  $4\pi r^2\Psi^2$  is minimum at nucleus  
(C) Both  $\Psi^2$  and  $4\pi r^2\Psi^2$  are maximum at nucleus (D) Both  $\Psi^2$  and  $4\pi r^2\Psi^2$  are minimum at nucleus
61. Which conformer among the following is most unstable
- (A) (a,e) 1,2 - dimethyl cyclohexane (B) (a,e) 1,3 - dimethyl cyclohexane  
(C) (a,a) 1,3 - dimethylcyclohexane (D) (a,a) 1,4 - dimethylcyclohexane
62. Which of the following compounds readily undergoes  $S_N1$  reactions owing to the stability of its carbonium ion



63. Which reagent effects the following conversion?



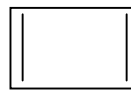
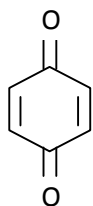
- (A) m- chloroperbenzoic acid (B) Acetic anhydride  
(C) NaOH/ $Br_2$  (D) Acetic acid
64. Consider the following photochemical reactions:



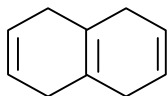
These reactions are the examples of which of the following?

- (A) Reactions of high and low quantum yields, respectively (B) Reactions of low and high quantum yields, respectively  
(C) Reactions of quantum yields equal to one (D) Reactions of equal quantum yields but not equal to one

65. Which molecule is anti-aromatic among the following:  
 (A) (B)



- (C) (D)



66. Acid strength of oxo-acids of halogens is in order

- (A)  $\text{HOI} > \text{HOBr} > \text{HOCl} > \text{HOF}$  (B)  $\text{HOF} > \text{HOCl} > \text{HOBr} > \text{HOI}$   
 (C)  $\text{HOCl} > \text{HOBr} > \text{HOI} > \text{HOF}$  (D)  $\text{HOI} > \text{HOF} > \text{HOBr} > \text{HOCl}$

67. Teflon is synthesized by

- (A) Free radical polymerization of tetrafluoro ethylene ( $\text{C}_2\text{F}_4$ ) (B) Condensation of hexane -1, 6- diamine and adipic acid  
 (C) Condensation of E-amino caproic acid (D) Polymerization of Cyano ethylene

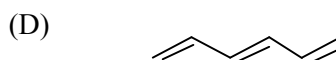
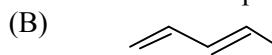
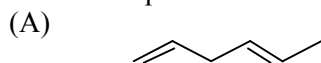
68. High resolution  $^1\text{H}$ NMR spectrum of 1,3 – dichloropropane has \_\_\_\_\_ signals.

- (A) One triplet and one quintet (B) One triplet and one quartet  
 (C) One triplet and two doublets (D) Two triplets and one quartet

69. Which heterocyclic compound is least aromatic among the following?

- (A) Furan (B) Pyrrole  
 (C) Thiophene (D) Pyridine

70. Which compound will show the longest wavelength maxima in its UV spectrum?



71. Viroids differ from viruses for having:

- (A) Naked DNA molecule (B) Naked DNA molecule with viral genome  
 (C) Naked RNA molecule (D) Satellite RNA molecule with viral genome

72. The character not chosen by Mendel for his work was:

- (A) Location of flower (B) Location of pod  
 (C) Colour of flower (D) Colour of pod

73. Sickle cell anemia is an example of:

- (A) Missense mutation (B) Nonsense mutation  
 (C) Silent mutation (D) Frame shift mutation

74. Constitutive genes are applicable to:

- (A) Operator genes (B) Overlapping genes  
 (C) Housekeeping genes (D) Selfish genes

75. Multiple alleles are present:  
 (A) At different loci on same chromosome (B) At same locus of the chromosome  
 (C) On non-sister chromatids (D) On different chromosomes
76. Which one of the following is the basic structural and functional unit of ecology?  
 (A) Ecotone (B) Ecosystem  
 (C) Ecosphere (D) Ecotype
77. A type of behaviour in which animals learn to ignore stimulus which is repeated, is known as:  
 (A) Habituation (B) Imprinting  
 (C) Motivation (D) Sensitization
78. The ultimate source of organic evolution is:  
 (A) Use and disuse of organs (B) Natural selection  
 (C) Mutation (D) Isolation
79. PCR and Restricted Fragment Length Polymorphism are the methods of:  
 (A) DNA Sequencing (B) Study of enzymes  
 (C) Genetic fingerprinting (D) Genomic transformation
80. Which of the following is symbiotic nitrogen fixer?  
 (A) *Azoll* (B) *Azotobacter*  
 (C) *Glomus* (D) *Frankia*
81. Archenteron begins forming in:  
 (A) Early gastrula (B) Late gastrula  
 (C) Early morula (D) Blastula
82. Microbe used for biocontrol of pest butterfly caterpillars is:  
 (A) *Trichoderma sp.* (B) *Saccharomyces cerevisiae*  
 (C) *Bacillus thuringiensis* (D) *Streptococcus sp.*
83. The adults are radially symmetrical but larvae exhibit bilateral symmetry in:  
 (A) Mollusca (B) Echinodermata  
 (C) Hemichordata (D) Cephalochordata
84. A nerve has  $K^+$  concentration:  
 (A) More on the outside (B) Less on the outside  
 (C) More on the inside (D) Equal on both sides of membrane
85. Amino acids proline, glycine, valine and threonine are coded by four codons each. It shows that the genetic code is:  
 (A) Overlapping (B) Degenerate  
 (C) Ambiguous (D) Universal
86. The frequency of 'O' blood group in children of parents belonging to blood group 'AB' is:  
 (A) 0 per cent (B) 25 per cent  
 (C) 50 per cent (D) 75 per cent
87. If a population becomes stagnant after exponential growth, its growth curve is:  
 (A) Z-shaped (B) S-shaped  
 (C) J-shaped (D) O-shaped
88. The era which includes maximum periods is:  
 (A) Cenozoic (B) Proterozoic  
 (C) Mesozoic (D) Palaeozoic
89. The commonly used vector (s) for human genome sequencing are:  
 (A) T-DNA (B) BAC and YAC  
 (C) Expression vectors (D) T&A cloning vectors
90. In earthworms, the fertilization takes place in:  
 (A) Oviduct (B) Spermatheca  
 (C) Clitellum (D) Cocoon

91. Whenever expression of a trait is limited to one sex, it is known as:  
(A) Sex linked trait (B) Sex influenced trait  
(C) Sex limited trait (D) None of these
92. Hirudin can be extracted from transgenic plant:  
(A) *Brassica napus* (B) *Bacillus napus*  
(C) *Bt* brinjal (D) *Bt Brassica napus*
93. Which of the following is not a bacterial disease:  
(A) Leprosy (B) Infantile paralysis  
(C) Diphtheria (D) Cholera
94. Complete linkage has been reported in:  
(A) Human male (B) Human female  
(C) Male *Drosophila* (D) Female *Drosophila*
95. Enzyme used in formation of cDNA from mRNA is:  
(A) RNA polymerase (B) DNA polymerase  
(C) Reverse transcriptase (D) Gyrase
96. Example of a digenetic parasite is:  
(A) *Entamoeba* (B) *Enterobium*  
(C) *Planaria* (D) *Schistosoma*
97. If the total amount of adenine and thymine in a double stranded DNA is 45%, the amount of Guanine in this DNA will be:  
(A) 22.5% (B) 27.5%  
(C) 45% (D) 55%
98. Modern classification is based on:  
(A) Physiology (B) Fossils  
(C) Phylogeny (D) Morphology
99. Considering fermentation at industrial level, micro-organism *Bacillus* is used to form:  
(A) Ethanol (B) Formic acid  
(C) Acrylic acid (D) Glycerol
100. Production of transgenic animals requires transfections of:  
(A) Egg or embryo (B) Stem cells  
(C) Red blood cells (D) All of these