HARVIN ACADEMY

HFT – 1

Physics – Motion in a Straight Line & Vector
Chemistry – Some Basic Concept of Chemistry & Redox Reaction
Botany – Living World, Biological Classification
Zoology – Biomolecules

Time : 2 hrs. MM : 480

General Instructions :

1. This paper carries 120 multiple choice questions; 30 each in Physics, Chemistry, Botany and Zoology.
2. The test is of 2 hr duration. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, 1 mark will be deducted from the total scores.
3. Each question is followed by four alternatives as suggested answers. Mark the most appropriate alternative as your answer.
4. Only one alternative is to be selected.

1. A force of 5 *N* acts on a particle along a direction making an angle of 60° with vertical. Its vertical component be

   (1) 10 *N* (2) 3 *N* (3) 4 *N* (4) 2.5 *N*

2. A hall has the dimensions 10m x 12m x 14m. A fly starting at one corner ends up at a diametrically opposite corner. What is the magnitude of its displacement

   (1) 17 *m* (2) 26 *m* (3) 36 *m* (4) 20 *m*

3. Any vector in an arbitrary direction can always be replaced by two (or three)

   (1) Parallel vectors which have the original vector as their resultant

   (2) Mutually perpendicular vectors which have the original vector as their resultant

   (3) Arbitrary vectors which have the original vector as their resultant

   (4) It is not possible to resolve a vector

4. The angle between the two vectors $\vec{A} = 3\hat{i} + 4\hat{j} + 5\hat{k}$ and $\vec{B} = 3\hat{i} + 4\hat{j} - 5\hat{k}$ will be

   (1) 90° (2) 0° (3) 60° (4) 45°

5. If the sum of two unit vectors is a unit vector, then magnitude of difference is

   (1) $\sqrt{2}$ (2) $\sqrt{3}$ (3) $1/\sqrt{2}$ (4) $\sqrt{5}$

6. A particle has displacement of 12 *m* towards east and 5 *m* towards north then 6 *m* vertically upward. The sum of these displacements is

   (1) 12 (2) 10.04 *m* (3) 14.31 *m* (4) None of these

7. If vectors *P, Q* and *R* have magnitude 5, 12 and 13 units and $\vec{P}+\vec{Q}=\vec{R},$ the angle between *Q* and *R* is

(1) $\cos^{-1}\frac{5}{12}$ (2) $\cos^{-1}\frac{5}{13}$ (3) $\cos^{-1}\frac{12}{13}$ (4) $\cos^{-1}\frac{7}{13}$

8. The magnitudes of vectors $\vec{A},\vec{B}$ and $\vec{C}$ are 3, 4 and 5 units respectively. If $\vec{A}+\vec{B}=\vec{C}$, the angle between $\vec{A}$ and $\vec{B}$ is

(1) $\frac{\pi}{2}$ (2) $\cos^{-1}(0.6)$ (3) $\tan^{-1}\left(\frac{7}{5}\right)$ (4) $\frac{\pi}{4}$

9. While travelling from one station to another, a car travels 75 *km* North, 60 *km* North-east and 20 *km* East. The minimum distance between the two stations is

(1) 72 *km* (2) 112 *km* (3) 132 *km* (4) 155 *km*

10. If two vectors $2\hat{i}+3\hat{j}-\hat{k}$ and $-4\hat{i}-6\hat{j}-\lambda\hat{k}$ are parallel to each other then value of λ be

(1) 0 (2) 2 (3) 3 (4) 4

11. A force $\vec{F}=(5\hat{i}+3\hat{j})$ Newton is applied over a particle which displaces it from its origin to the point $\vec{r}=(2\hat{i}-1\hat{j})$ *metres*. The work done on the particle is

(1) – 7 *J* (2) +13 *J* (3) +7 *J* (4) +11 *J*

12. A particle moves with a velocity $6\hat{i}-4\hat{j}+3\hat{k}\,m/s$ under the influence of a constant force $\vec{F}=20\hat{i}+15\hat{j}-5\hat{k}\,N.$ The instantaneous power applied to the particle is

(1) 35 *J/s* (2) 45 *J/s* (3) 25 *J/s* (4) 195 *J/s*

13. A particle moves in the *x-y* plane under the action of a force $\vec{F}$ such that the value of its linear momentum $(\vec{P})$ at anytime *t* is $P_x=2\cos t, p_y=2\sin t.$ The angle θ between $\vec{F}$ and $\vec{P}$ at a given time *t.* will be

(1) $\theta=0°$ (2) $\theta=30°$ (3) $\theta=90°$ (4) $\theta=180°$

14. A vector $\vec{F}_1$ is along the positive *X*-axis. If its vector product with another vector $\vec{F}_2$ is zero then $\vec{F}_2$ could be

(1) $4\hat{j}$ (2) $-(\hat{i}+\hat{j})$ (3) $(\hat{j}+\hat{k})$ (4) $(-4\hat{i})$

15. An aeroplane flies 400 *m* north and 300 *m* south and then flies 1200 *m* upwards then net displacement is

(1) 1200 *m* (2) 1300 *m* (3) 1400 *m* (4) 1500 *m*

16. An athlete completes one round of a circular track of radius *R* in 40 *sec*. What will be his displacement at the end of 2 min. 20 *sec*

(1) Zero (2) 2*R* (3) $2\pi R$ (4) $7\pi R$

17. A man walks on a straight road from his home to a market 2.5 *km* away with a speed of 5 *km/h*. Finding the market closed, he instantly turns and walks back home with a speed of 7.5 *km/h*. The average speed of the man over the interval of time 0 to 40 *min*. is equal to

(1) 5 *km/h* (2) $\frac{25}{4}$ *km/h* (3) $\frac{30}{4}$ *km/h* (4) $\frac{45}{8}$ *km/h*

18. The ratio of the numerical values of the average velocity and average speed of a body is always

(1) Unity (2) Unity or less (3) Unity or more (4) Less than unity

19. The coordinates of a moving particle at any time are given by $x = at^2$ and $y = bt^2$. The speed of the particle at any moment is

(1) $2t(a+b)$ (2) $2t\sqrt{(a^2-b^2)}$ (3) $t\sqrt{a^2+b^2}$ (4) $2t\sqrt{(a^2+b^2)}$

20. The displacement of a body is given to be proportional to the cube of time elapsed. The magnitude of the acceleration of the body is

(1) Increasing with time (2) Decreasing with time

(3) Constant but not zero (4) Zero

21. A particle moves along a straight line such that its displacement at any time *t* is given by $S = t^3 - 6t^2 + 3t + 4$ *metres.* The velocity when the acceleration is zero is

(1) $3ms^{-1}$ (2) $-12ms^{-1}$ (3) $42\,ms^{-1}$ (4) $-9\,ms^{-1}$

22. A boat is sent across a river with a velocity of 8 *km/hr.* If the resultant velocity of boat is 10 *km/hr,* then velocity of the river is :

(1) 10 *km/hr* (2) 8 *km/hr* (3) 6 *km/hr* (4) 4 *km/hr*

23. The distance between two particles is decreasing at the rate of 6 *m/sec*. If these particles travel with same speeds and in the same direction, then the separation increase at the rate of 4 *m/sec*. The particles have speeds as

(1) 5 *m/sec* ; 1 *m/sec* (2) 4 *m/sec* ; 1 *m/sec*

(3) 4 *m/sec* ; 2 *m/sec* (4) 5 *m/sec* ; 2 *m/sec*

24. A body is released from a great height and falls freely towards the earth. Another body is released from the same height exactly one second later. The separation between the two bodies, two seconds after the release of the second body is

(1) 4.9 m (2) 9.8 m (3) 19.6 m (4) 24.5 m

25. A balloon is at a height of 81 *m* and is ascending upwards with a velocity of 12 *m/s*. A body of 2 kg weight is dropped from it. If g = 10 m/s^2, the body will reach the surface of the earth in

(1) 1.5 *s* (2) 4.025 *s* (3) 5.4 *s* (4) 6.75 *s*

26. An aeroplane is moving with a velocity *u*. It drops a packet from a height *h*. The time *t* taken by the packet in reaching the ground will be

(1) $\sqrt{\left(\frac{2g}{h}\right)}$ (2) $\sqrt{\left(\frac{2u}{g}\right)}$ (3) $\sqrt{\left(\frac{h}{2g}\right)}$ (4) $\sqrt{\left(\frac{2h}{g}\right)}$

27. A body projected vertically upwards with a velocity *u* returns to the starting point in 4 seconds. If g = 10 *m/sec*^{2}, the value of *u* is

(1) 5 *m/sec* (2) 10 *m/sec* (3) 15 *m/sec* (4) 20 *m/sec*

28. Time taken by an object falling from rest to cover the height of h_1 and h_2 is respectively t_1 and t_2 then the ratio of t_1 to t_2 is

(1) $h_1 : h_2$ (2) $\sqrt{h_1} : \sqrt{h_2}$ (3) $h_1 : 2h_2$ (4) $2\mathrm{h}_1 : \mathrm{h}_2$

29. A particle moving in a straight line covers half the distance with speed of 3 *m/s*. The other half of the distance is covered in two equal time intervals with speed of 4.5 *m/s* and 7.5 *m/s* respectively. The average speed of the particle during this motion is

(1) 4.0 *m/s* (2) 5.0 *m/s* (3) 5.5 *m/s* (4) 4.8 *m/s*

30. The acceleration of a particle is increasing linearly with time *t* as *bt*. The particle starts from the origin with an initial velocity v_0. The distance travelled by the particle in time *t* will be

(1) $v_0 t + \frac{1}{3}bt^2$ (2) $v_0 t + \frac{1}{3}bt^3$ (3) $v_0 t + \frac{1}{6}bt^3$ (4) $v_0 t + \frac{1}{2}bt^2$

31. Which contains greatest number of oxygen atoms?

(1) 1 g of O (2) $1\text{ g of }\mathrm{O}_2$

(3) $1\text{ g of }\mathrm{O}_3$ (4) All have the same number of atoms

32. The density (in g mL^{-1}) of a 3.60 M $\mathrm{H_2SO_4}$ solution having 29% by mass of $\mathrm{H_2SO_4}$ (molar mass 98) will be:

(1) 1.45 (2) 1.64 (3) 1.88 (4) 1.22

33. 1.0 g of pure calcium carbonate was found to require 50 mL of dilute HCl for complete reactions. The strength of the HCl solution is given by:

(1) 4 N (2) 2 N (3) 0.4 N (4) 0.2 N

34. $\mathrm{KMnO_4}$ reacts with oxalic acid according to the equation

$2\mathrm{MnO_4^-} + 5\mathrm{C_2O_4^{2-}} + 16\mathrm{H^+} \rightarrow 2\mathrm{Mn^{2+}} + 10\mathrm{CO_2} + 8\mathrm{H_2O}$

Here, 20 mL of 0.1 M $\mathrm{KMnO_4}$ is equivalent to

(1) $20\text{ mL of }0.5\text{ M }\mathrm{H_2C_2O_4}$

(2) $50\text{ mL of }0.1\text{ M }\mathrm{H_2C_2O_4}$

(3) $30\text{ mL of }0.1\text{ M }\mathrm{H_2C_2O_4}$

(4) $20\text{ mL of }0.1\text{ M }\mathrm{H_2C_2O_4}$

35. The maximum amount of $\mathrm{BaSO_4}$ precipitated on mixing 20 mL of 0.5 M $\mathrm{BaCl_2}$ with 20 mL of 1 $M\mathrm{H_2SO_4}$ is:

(1) 0.25 mole (2) 0.5 mole (3) 1 mole (4) 0.01 mole

36. An element forms an oxide, in which the oxygen is 20% of the oxide by weight , the equivalent weight of the given element will be:

(1) 32 (2) 40 (3) 60 (4) 128

37. The dehydration yield of cyclohexanol to cyclohexene is 75%. What would be the yield, if 100 g of cyclohexanol is dehydrated?

(1) 61.7 g (2) 16.5 g (3) 6.15 g (4) 615 g

38. Equal volumes of 0.1 M $\mathrm{AgNO_3}$ and 0.2 M NaCl are mixed. The concentration of $\mathrm{NO_3^-}$ ions in the mixture will be:

(1) 0.1 M (2) 0.05 M (3) 0.2 M (4) 0.15 M

39. How many moles of lead (II) chloride will be formed from a reaction between 6.5 g of PbO and 3.2 g of HCl? Mol Mass of Lead : 206

(1) 0.333 (2) 0.011 (3) 0.029 (4) 0.044

40. 10 mL of gaseous hydrocarbon on combustion gives 40 mL of $\mathrm{CO_2}$(g) and 50 mL of $\mathrm{H_2O}$ (vap). The hydrocarbon is:

(1) $\mathrm{C_4H_5}$ (2) $\mathrm{C_8H_{10}}$ (3) $\mathrm{C_4H_8}$ (4) $\mathrm{C_4H_{10}}$

41. Vapour density of a metal chloride is 66. Its oxide contains 53% metal. The atomic weight of the metal is:
(1) 21 (2) 54 (3) 27.06 (4) 2.706

42. The percentage of P_2O_5 in diammonium hydrogen phosphate, $(NH_4)_2HPO_4$ is
(1) 23.48 (2) 46.96 (3) 53.78 (4) 71.00

43. The haemoglobin from the red blood corpuscles of most mammals contains approximately 0.33% of iron by weight. The molecular weight of haemoglobin as 67,200. The number of iron atoms in each molecule of haemoglobin is
(atomic weight of iron = 56):
(1) 2 (2) 3 (3) 4 (4) 5

44. The normality of 4% (wt./vol.) NaOH is:
(1) 0.1 (2) 1.0 (3) 0.05 (4) 0.01

45. 25.3 g solution carbonate, Na_2CO_3 was dissolved in enough water to make 250 mL of solution. If sodium carbonate dissociates completely, molar concentration of Na^+ and carbonate ions are respectively.
$(\text{mol. mass of } Na_2CO_3 = 106 \text{ g mol}^{-1})$
(1) 0.9555 M and 1.910 M
(2) 1.910 M and 0.955 M
(3) 1.90 M and 1.1910 M
(4) 0.477 M and 0.477 M

46. 2.76 g of silver carbonate on being strongly heated yield a residue weighing
(1) 2.16 g (2) 2.48 g (3) 2.64 g (4) 2.32 g

47. 100 mL of 0.1 N hypo decolourised iodine by the addition of x gram of crystalline copper sulphate to excess of KI. The value of *'x'* is (molecular wt. of $CuSO_4, 5H_2O$ is 250)
(1) 5.0 g (2) 1.25 g (3) 2.5 g (4) 4 g

48. 1.5 litre of a solution of normality N and 2.5 litres of 2 M HCl are mixed together. The resultant solution had a normality 5. The value of N is:
(1) 6 (2) 10 (3) 8 (4) 4

49. Versene, a chelating agent having chemical formula $C_2H_4N_2(C_2H_2O_2Na)_4$. If each mole of this compound could bind 1 mole of
$Ca^{2}+$, then the rating of pure versene expressed as mg of $CaCO_3$ bound per g of chelating agent is:
(1) 100 mg (2) 163 mg (3) 200 mg (4) 263 mg

50. How many g of NaOH will be needed to prepare 250 mL of 0.1 M solution?
(1) 1 g (2) 10 g (3) 4 g (4) 6 g

51. In $C + H_2O \longrightarrow CO + H_2$; H_2O acts as :
(1) Oxidant (2) Reductant (3) Both (a) and (b) (4) None of these

52. 2 mole of $FeSO_4$ are oxidized by 'X' mole of $KMnO_4$ whereas 2 mole of FeC_2O_4 are oxidized by 'Y' mole of $KMnO_4$. The ration of 'X' and 'Y' is :
(1) 1 : 3 (2) 1 : 2 (3) 1 : 4 (2) 1 : 5

53. The ox.no. of S in $Na_2S_4O_6$ is :
(1) + 2.5
(2) +2 and +3 (two S have +2 and other two have +3)
(3) +2 and +3 (three S have +2 and one S has +3)
(4) +5 and 0 (two S have +5 and the other two S have 0)

54. Which is the best description of behaviour of bromine in the reaction given below?
$H_2O + Br_2 \longrightarrow HBr + HOBr$
(1) Proton accepted only
(2) Both oxidised and reduced
(3) Oxidised only
(4) Reduced only

55. 25 mL of 0.50 M H_2O_2 solution is added to 50 mL of 0.20 M $KMnO_4$ in acidic solution. Which of the following statements is true?
(1) 0.010 mole of oxygen is liberated
(2) 0.005 mole of $KMnO_4$ are left
(3) 0.030 g atom of oxygen gas is evolved
(4) 0.0025 mole H_2O_2 does not react with $KMnO_4$

56. A compound contains atoms X, Y, Z. The oxidation number of X is +2, Y is +5 and Z is −2. The possible formula of the compound is :
(1) XY_1Z_2 (2) $Y_2(XZ_3)_2$
(3) $X_3(YZ_4)_2$ (4) $X_3(Y_4Z)_2$

57. The oxidation number of Cr in CrO_5 is
(1) +3 (2) +5 (3) +6 (4) 0

58. If equal volumes of $1\ MKMnO_4$ and $1M\ K_2Cr_2O_7$ solutions are allowed to oxidize Fe^{2+} to Fe^{3+} in acidic medium volume of oxidant required for one mole of Fe^{2+} will be :
(1) $V_{KMnO_4} > V_{K_2Cr_2O_7}$
(2) $V_{KMnO_4} < V_{K_2Cr_2O_7}$
(3) $V_{KMnO_4} = V_{K_2Cr_2O_7}$
(4) Nothing can be predicted

59. Oxidation number of sulphur in Caro's acid is
(1) +6 (b) +4 (3) +8 (d) +7

60. The number of mole of $KMnO_4$ that will be needed to react with one mole of sulphite ion in acidic solution is :
(1) 2/5 (b) 3/5 (3) 4/5 (d) 1

61. Which of the following statement for fungi is false ?
(1) They show a great diversity in morphology and metabolism
(2) Some are the source of antibiotics
(3) Fungi are cosmopolitan and occur in air, water, soil and on animals and plants.
(4) The fungi constitute a unique kingdom of heterotrophic organisms

62. Which of the following statement for fungi is false ?
(1) White spots seen on mustard leaves are due to a saprophytic fungus.
(2) network of hyphae is known as mycelium
(3) yeast are used to make bread
(4) mushroom and toadstools are fungi.

63. Which of the following statements concerning prokaryotes is / are true?
    (1) Because prokaryotes do not contain organelles, they cannot photosynthesize or carry out cellular respiration
    (2) Prokaryotes have no chromosomes and therefore lack DNA
    (3) Prokaryotic flagella are dissimilar in structure to eukaryotic flagella
    (4) None of the above
64. All of the following statements are correct about plasmids except -
    (1) they are extrachromosomal DNA
    (2) They are smaller, circular, double stranded naked DNA that confer certain unique phenotypic characters to some bacteria like resistance to antibiotics
    (3) They are used in genetic engineering
    (4) It helps in the replication of nucleoid
65. Which of the following pairs is mismatched ?.
    (1) Glycocalyx - may be capsule or slime layer
    (2) Pili - Reproduction
    (3) Cell wall- Protective, determines shape, prevents from bursting
    (4) Flagella, Pilli and Fimbriae - Surface structures of bacterial cell
66. Which is mismatched pair ?
    (1) Capsule - Thick and tough glycocalyx
    (2) Slime layer - Loose glycocalyx
    (3) Pili - Motility organ
    (4) Bacterial cells-Motile or nonmotile
67. Glassy and sculptured cell wall is a feature of
    (1) Diatoms (2) Fire algae (3) Euglenoids (4) All of these
68. Cell wall is present in
    (1) *Euglena* (2) Slime mold in vegetative phase
    (3) Mycoplasma (4) Dinoflagellates
69. Protein rich layer i.e. pellicle over the body is present in
    (1) Diatom (2) *Euglena* (3) Dinoflagellates (4) All of these
70. ‘‘Red tide" appears due to over growth of
    (1) Red diatoms (2) *Gonyaulax* (3) Desmids (4) All of these
71. Concept of 3- domains was give by
    (1) Whittaker (2) Linnaeus (3) Copeland (4) Carl Woese
72. Which of the following was not a kingdom in 4-Kingdom system of classification
    (1) Monera (2) Protista (3) Fungi (4) Plantae

73. According to Whittaker's five kingdom classification the unicellular, non-nucleated organisms are placed in

(1) Monera (2) Protista (3) Plantae (4) Animalia

74. 'Taxa' differs from 'taxon' due to

(1) this being a higher taxonomic category than taxon

(2) this being lower taxonomic category than taxon

(3) this being the plural of taxon

(4) this being the singular of taxon

75. A group of related genera, with still less number of similarities as compared to the genus and species, constitutes

(1) Order (2) Class (3) Family (4) Division

76. Which of the following statement for fungi is false ?

(1) wheat rust is caused by *Puccinia*

(2) yeasts are unicellular

(3) fungi cause diseases in plants and animals

(4) They prefer to grow in cool and humid places.

77. Which of the following statement for fungi is false ?

(1) all fungi are filamentous.

(2) Some hyphae are called coenocytic hyphae.

(3) They show a great diversity in morphology and habitat.

(4) toadstools are fungi

78. Most common mode of reproduction in bacteria is

(1) endospore formation (2) binary fission

(3) sexual reproduction (4) conjugation

79. Fill in the blanks and choose the correct option.

A. _____ are the sole members of kingdom monera.

B. Majority of bacteria shows _____ mode of nutrition.

(1) A – *Amoeba;* B - Autotrophic

(2) A - Bacteria; B - Heterotrophic

(3) A - Protozoans; B - Chemosynthetic

(4) A - Bacteria; B - Photosynthetic

80. Select an incorrect statement for virus

(1) In the five kingdom classification of Whittaker there is no mention of viruses

(2) Viruses did not find a place in classification since they are not truly 'living'

(3) The name virus that means venom or poisonous fluid was given by Pasteur

(4) D.J. Ivanowsky (demonstrated that the extract of the infected plants of tobacco could cause infection in healthy plants

81. Match the items given in Column I with those in Column II and select the correct option given below:

	Column I	Column II
a.	Herbarium	(i) It is a place having a collection of preserved plants and animals
b.	Key	(ii) A list that enumerates methodically all the species found in an area with brief description aiding identification
c.	Museum	(iii) Is a place where dried and pressed plant specimens mounted on sheets are kept
d.	Catalogue	(iv) A booklet containing a list of characters and their alternates which are helpful in identification of various taxa.

	a	B	c	d
(1)	(ii)	(ii)	(i)	(iv)
(2)	(ii)	(iv)	(iii)	(i)
(3)	(i)	(iv)	(iii)	(ii)
(4)	(iii)	(iv)	(i)	(ii)

82. Select an incorrect statement for lichen
    (1) Fungi provide shelter and absorb mineral nutrients and water
    (2) Lichens grow in polluted areas
    (3) The fungal component is called mycobiont
    (4) The algal component is known as phycobiont
83. Which of the following statement for fungi is false ?
    (1) Reproduction in fungi can take place by vegetative means
    (2) Most fungi absorb soluble organic matter from dead substrates
    (3) some fungi have septae or cross walls in their hyphae
    (4) They prefer to grow in warm and dry places
84. Which of the following statement for fungi is false ?
    (1) Fusion of protoplasms between two motile or non-motile gametes called plasmogamy
    (2) Fusion of two nuclei called karyogamy.
    (3) Meiosis in zygote resulting in haploid spores
    (4) Most fungi are parasites
85. Which of the following statement for fungi is false ?
    (1) both saprophytic and parasitic fungi can also live as symbionts
    (2) sexual reproduction is by oospores, ascospores and basidiospores
    (3) Asexual reproduction is by spores called conidia
    (4) Members of phycomycetes are found in aquatic habitats
86. The sexual cycle in fungi does not involves
    (1) Fusion of protoplasms between two gametes called
    (2) Fusion of two nuclei
    (3) Meiosis in zygote
    (4) formation of fruit

87. Study the four statements (A-D) given below and select the two correct ones out of them

A. Definition of biological species was given by Ernst Mayr.

B. Photoperiod does not affect reproduction in plants

C. Binomial nomenclature system was given by R.H. Whittaker.

D. In unicellular organisms, reproduction is synonymous with growth

The two correct statements are

(1) B and C (2) C and D

(3) A and D (4) A and B

88. Match column I with column II for housefly classification and select the correct option using the codes given below

	Column - I		Column - II
A.	Family	(i)	Diptera
B.	Order	(ii)	Arthropoda
C.	Class	(iii)	Muscidae
D.	Phylum	(iv)	Insecta

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

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

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

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

89. Which of the following statement for fungi is false ?

(1) In some fungi the fusion of two haploid cells immediately results in diploid cells

(2) in ascomycetes and basidiomycetes, an dikaryotic stage occurs

(3) mode of spore formation form the basis for the division of the kingdom into various classes.

(4) sexual reproduction is by oospores, ascospores and sporangiospores

90. Which of the following statement for fungi is false ?

(1) Meiosis in zygote resulting in haploid spores

(2) Fusion of two nuclei called plasmogamy

(3) Fusion of protoplasms between two motile or non-motile gametes called karyogamy

(4) both (2) and (3)

91. What will be the correct sequence of % weight of elements in human body?

(1) Na > K > O > C (2) C > H > O > N

(3) H > N > Na > S (4) O > C > N > S

92. Identify the incorrect statement:

(1) All the carbon compounds obtained from a living tissue are termed as bio-molecules

(2) In human body, S is less abundant than Ca

(3) In a cell, carbohydrates are more abundant than proteins

(4) Lipids are found in acid insoluble fraction

93. Correct sequence of % mass of components in a cell is:
    (1) Water > Lipids > Nucleic acid > Carbohydrates
    (2) Lipids > Water > Carbohydrates > Proteins
    (3) Water > Carbohydrates > Proteins > Nucleic Acids
    (4) Water > Proteins > Nucleic acids > Carbohydrates
94. Which of the following polysaccharide is wrongly matched with its monomer?
    (1) Starch : Glucose
    (2) Chitin : N-Acetyl glucosamine (NAG)
    (3) Inulin : Mannose
    (4) Mucopolysaccharide : Amino sugars and other chemically modified sugars
95. In a typical polysaccharide molecule, a long chain with branches is present. Its right end in termed as:
    (1) N-terminal (2) C-terminal
    (3) Reducing end (4) Non-reducing end
96. Lecithin a compound found in cell membrane is chemically :
    (1) Simple fatty acid (2) Complex fatty acid
    (3) Lipoprotein (4) Phospholipid
97. For being functional, a protein has to acquire at least :
    (1) Primary structure (2) Secondary structure
    (3) Tertiary structure (4) Quaternary structure
98. Which of the following is not the component of nucleotide ?
    (1) Nitrogenous base (2) Phosphate (3) Pentose sugar (4) None of these
99. Which protein is responsible for transport of glucose into the cells?
    (1) Collagen (2) Insulin (3) GLUT-4 (4) Glucagon
100. Which set of secondary metabolites belong to category-alkaloids ?
    (1) Rubber, Gums (2) Morphine, Codeine
    (3) Anthocyanins, Carotenoids (4) Abrin, Ricin
101. Lemon grass oil belongs to which category of secondary metabolites ?
    (1) Alkaloids (2) Lectins (3) Essential oils (4) Toxins
102. Backbone of DNA is formed by:
    (1) H-bonds (2) Gluycosidic bonds
    (3) Amide bonds (4) Phosphodiester bonds
103. Usually the concentration of hormones is measured in:
    (1) Picograms / ml of blood (2) Nanograms / ml of blood
    (3) Micrograms / ml of blood (4) Milligrams / ml of blood
104. Which of the following does not act as cofactor?
    (1) Prosthetic group (2) Metal ions (3) Apoenzyme (4) coenzyme

105. Select the correct pair :
(1) Haem-Prosthetic group for peroxidase
(2) Ligases-Hydrolysis of bonds
(3) Pyrimidines-Important component of proteins
(4) Zn-Coenzyme for carboxypeptidase

106. Carbonic anhydrase enzyme is abundant in:
(1) RBC (2) WBC (3) Platelets (4) Mast cells

107. Taq polymerase enzyme is obtained from:
(1) Bacteria (2) Fungi (3) Algae (4) Diatoms

108. Chitin is:
(1) Homopolymer of glucose (2) Homopolymer of NAG
(3) Heteropolymer of amino sugars (4) Heteropolymer of glucose and NAG

109. Cofactor is a …1… constituent that bound ….2… to become active …3…
(1) 1-protein, 2-apoenzyme, 3-coenzyme
(2) 1-protein, 2-holoenzyme, 3-apoenzyme
(3) 1-non protein, 2-homoenzyme, 3-coenzyme
(4) 1-non-protein, 2-apoenzyme, 3-holoenzyme

110. Select the wrong statement ?
(1) Ester bound is formed between –OH group of glycerol and –COOH group off acids
(2) Cellulose is a polymeric primary metabolite
(3) Phosphate is absent in nucleoside
(4) Melting point of gingely oil is low

111. Organic compound firmly bound to an apoenzyme to make it catalytically active:
(1) Coenzyme (2) Metal ion (3) Prosthetic group (4) Holoenzyme

112. Among the following metabolites, how many are secondary metabolites ? (Lipids, Diterpenes, Abrin, Curcumin, Amino acids, Gums, Celllulose, Concanavalin A, Carotenoids, Nucleotides, Protein, Morphine, Carbohydrates)
(1) 4 (2) 5 (3) 6 (4) 8

113. In which macromolecule glycosidic bond is present ?
(1) Carbohydrate (2) Lipids (3) Nucleic acids (4) Proteins

114. Match the compound (Column I) with its correct chemical identity (Column II)

	Column I	Column II
(1)	Inulin	Heteropolymer of fructose and glucose
(2)	Lecithin	Complex fatty acid
(3)	Chitin	Homoplymer polysaccharide
(4)	Gingely oil	Simple fatty acid

115. Which of the following is most abundant animal protein?

(1) Trypsin (2) Myosin (3) Pepsin (4) Collulose

116. Which of the following is an essential amino acid ?

(1) Leusine (2) Alanine (3) Aspartic acid (4) Glycine

117. Which of the following is not correctly matched with its category ?

(1) Chitin-Carbohydrates (2) Glut-4-Protein

(3) Lecithin-Glycoprotein (4) Adenylic acid-Nucleotide

118. DNA lacks following nucleotide :

(1) Cytidylic acid (2) Guanylic acid (3) Adenylic acid (4) Uridylic acid

119. Length of each turn of DNA is:

(1) 2Å (2) 3.4Å (3) 34Å (4) 20Å

120. Cech and Altman received Nobel prize in 1989 for the discovery of catalytic properties of:

(1) Taq polymerase (2) RNA

(3) Myoglobin (4) Carbonic anhydrase

XXX