M.Sc. Biotech / M.Sc. Applied Microbiology

BIOLOGY

1. Which of the following types of cell division leads to reduction in the chromosome number

   (A) Mitosis (B) Amitosis

   (C) Meiosis (D) None

2. What is the site of photorespiration in plants

   (A) Chloroplast (B) Mitochondria

   (C) Peroxisome (D) All of the above

3. Given below is the pH of different parts of a cell actively engaged in photosynthesis:

   i. Cytosol 6.8

   ii. Chloroplast stroma 8.0

   iii. Thylakoid lumen 4.8

   Which of the above is correct?

   (A) i and ii (B) ii and iii (C) i and iii (D) i, ii and iii

4. Pectin is present in

   (A) Middle lamella of plant cell wall

   (B) Animal cell wall

   (C) Animal cell membrane

   (D) Plant secondary thickening

5. Which of the following is a commonly used second messenger in cells

   (A) Magnesium (B) Calcium

   (C) Nitric oxide (D) Both B and C

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CHEMISTRY

51. The shape of s orbital is

(A) Pyramidal (B) Spherical

(C) Tetrahedral (D) Dumb bell shaped

52. Which of the following does not characterizes X-rays?

(A) The radiation can ionize gases

(B) It causes ZnS to fluoresce

(C) Deflected by electric and magnetic field

(D) Have wave lengths shorter than ultra-violet rays

53. Which of the following is paramagnetic ?

(A) O_2^- (B) CN^- (C) CO (D) NO^+

54. The bond present in N_2O_5 are

(A) Only ionic

(B) Covalent and coordinate

(C) Only covalent

(D) Covalent and ionic

55. Which one is electron deficient compound?

(A) ICl_3 (B) NH_3 (C) BCl_3 (D) PCl_3

56. The hydrogen bond is strongest in

(A) H_2O (B) NH_3 (C) HF (D) CH_3COOH

57. Density is highest for

(A) Mg (B) Ca (C) Sr (D) Ba

58. Which one has the lowest boiling point

(A) NH_3 (B) PH_3 (C) AsH_3 (D) SbH_3

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MATHEMATICS

81. Let A and B be two sets in the same universal set. Then A – B =

(A) $A \cap B$ (B) $A' \cap B$

(C) $A \cap B'$ (D) none of these

82. If $f(x) = (a + x^n)^{\frac{1}{n}}$, where $a \neq 0$ and $n \in N$, then f of (x) is equal to

(A) a (B) x (C) x^n (D) a^n

83. The least positive integer n for which is real, is

(A) 2 (B) 4

(C) 8 (D) none of these

84. If three positive real numbers a, b, c are in A.P. such that, abc = 4, then the minimum value of b is

(A) $2^{\frac{1}{3}}$ (B) $2^{\frac{2}{3}}$ (C) $2^{\frac{1}{2}}$ (D)none of these

85. If $a \in Z$ and the equation $(x – a)(x – 10) + 1 = 0$ has integral roots, then the values of a are

(A) 10,8 (B) 10, 12

(C) 12, 8 (D) none of these

86. A polygon has 44 diagonals, the number of its sides is

(A) 12 (B) 10 (C) 9 (D) 11

87. If all permutations of the letters of the word AGAIN are arranged as in dictionary, then 50th word is

(A) NAAGI (B) NAGAI

(C) NAAIG (D) none of these

88. $\lim_{n \to \infty} \frac{n^2}{n!}$ is equal to

(A) 2e (B) 3e

(C) e (D) none of these

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PHYSICS

101. The dimension of impulse are equal to that of

(A) Force (B) Angular Momentum

(C) Pressure (D) Linear momentum

102. A body allowed to fall from the top of a tower h meters high takes *t* sec to reach the ground. At what height is the body after *t*/2 sec?

(A) h/2 meters above the ground

(B) 3h/4 meters above the ground

(C) h/4 meters above the ground

(D) Depends on the size of body

103. If R is the maximum horizontal range of a particle, then the greatest height attained by it is

(A) R (B) 2R (C) R/2 (D) R/4

104. Masses of two substances are 1 g and 9 g respectively. If their kinetic energies are same, then the ratio of their momentum will be

(A) 1 : 9 (B) 9 : 1 (C) 3 : 1 (D) 1 : 3

105. One litre of O_2 at a pressure of 1 atmosphere and 2 litres of N_2 at pressure of 0.5 atmospheres are introduced in the vessel of capacity 1 litre without any change in temperature. The total pressure is

(A) 1.5 atmosphere (B) 1 atmosphere

(C) 0.5 atmosphere (D) 2 atmosphere

106. A point object is placed at a distance of 12 cm from a convex lens of focal length 10 cm. On the other side of the lens, a convex mirror is placed at a distance of 10 cm from the lens such that image formed by the combination coincides with the object itself. The focal length of the convex mirror is

(A) 20 cm (B) 25 cm (C) 15 cm (D) 30 cm

107. In a hydrogen atom, the electron and proton are bound to each other at a distance of 0.53 A➡. What is the potential energy in eV?

(A) 13.6 eV (B) 6.8 eV

(C) -27.2 eV (D) -13.6 eV

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