Monthly Progressive Test

Class: X (S)

Subject: PCMB

Academic Excellence Programme TECHNO ACE

Test Booklet No.: MPT07(S) **Test Date:** 22112024

Time: 120 mins **Full Marks: 200**

Important Instructions :

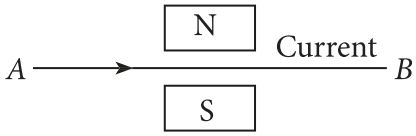
1. The Test is of 120 mins duration and the Test Booklet contains 100 multiple choice questions of single correct option only. There are four sections with four subjects. You have to attempt all 100 questions (Candidates are advised to read all 100 questions). Questions 1 to 25 contain Physics, Questions 26 to 50 contain Chemistry, Questions 51 to 75 contain Mathematics, Questions 76 to 100 contain Biology.
2. Each question carries 2 marks. For each correct response, the candidate will get 2 marks. There is no negative mark for wrong response. The maximum mark is 200.
3. Use Blue / Black Ball point Pen only for writing particulars marking responses on Answer Sheet.
4. Rough work is to be done in the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must handover the Answer Sheet to the invigilator before leaving the Room / Hall. The candidates are allowed to take away this Test Booklet with them.
6. The CODE for this Booklet is Off Line MPT07(S)22112024.
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your UID No. anywhere else except in the specified space. Use of white fluid for correction is NOT permissible on the Answer Sheet. **Do not scribble or write on or beyond discrete bars of OMR sheet at both sides**.
8. Each candidate must show on-demand his/her Registration document to the Invigilator.
9. No candidate, without special permission of the Centre Superintendent or Invigilator, would leave his/her seat.
10. Use of Electronic Calculator/Cellphone is prohibited.
11. The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of this examination.
12. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
13. There is no scope for altering response mark in Answer Sheet.

Space For Rough Works

Physics

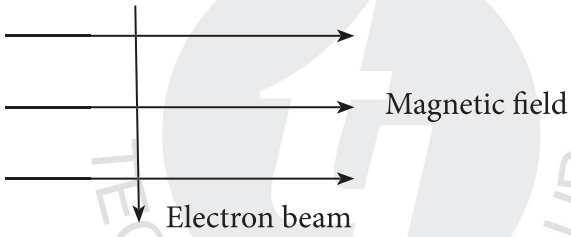
1. A magnetic field exerts no force on
   Ⓐ an electric charge moving perpendicular to its direction
   Ⓑ an unmagnetised iron bar
   Ⓒ a stationary electric charge
   Ⓓ a magnet

2. Which way does the current carrying wire in the diagram below tend to move

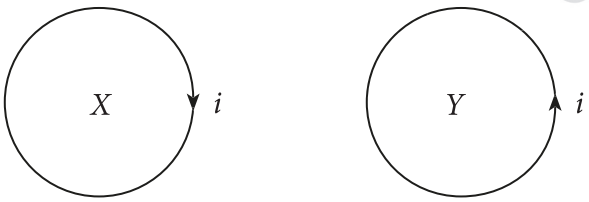


   Ⓐ Upward Ⓑ Downward Ⓒ No movement Ⓓ Rotates clockwise

3. An electron beam enters a magnetic field at right angles to it as shown in figure



   The direction of force acting on the electron beam will be—
   Ⓐ to the right Ⓑ to the left Ⓒ into the page Ⓓ out of the page

4. 

   Ⓐ Polarity of coil X is N and polarity of coil Y is N
   Ⓑ Polarity of coil X is S and polarity of coil Y is N
   Ⓒ Polarity of coil X is S and polarity of coil Y is S
   Ⓓ Polarity of coil X is N and polarity of coil Y is S

5. The core of electromagnet is
   Ⓐ soft iron Ⓑ hard iron Ⓒ rusted iron Ⓓ none of these

6. A long solenoid of 50 cm length having 100 turns carries a current of 2.5 A. The magnetic field at the centre of solenoid is [$\mu_0 = 4\pi \times 10^{-7}$ T mA^{-1}]
   Ⓐ 3.14×10^{-4} T Ⓑ 6.28×10^{-5} T Ⓒ 3.14×10^{-5} T Ⓓ 6.28×10^{-4}

7. Current is flowing in a coil of area A and number of turns N, then magnetic moment of the coil, M is equal to

Ⓐ NiA Ⓑ $\frac{Ni}{A}$ Ⓒ $\frac{Ni}{\sqrt{A}}$ Ⓓ N^2Ai

Assertion and Reason type:

A. If assertion and Reason both are true, Reason is the correct explanation of assertion.
B. If assertion and Reason both are true,but reason is not correct explanation of assertion.
C. Assertion is true but reason is false.
D. Assertion is false but reason is true.

8. **Assertion:** Pattern of field lines outside the solenoid is similar to that of a bar magnet.

Reason: A current carrying solenoid behaves like a bar magnet.

9. **Assertion:** An iron bolt will not attract other iron nail

Reason: When one iron nail placed in side the current carrying solenoid can attract an iron bolt placed near it.

10. If we reverse the direction of current in a straight conducting wire, then North pole of compass needle, nearby the wire, will also point in the opposite direction.

Ⓐ False Ⓑ Sometimes false Ⓒ True Ⓓ We cannot say

11. For a long straight current carrying wire, the strength of the magnetic field is inversely proportional to the distance from the wire.

Ⓐ False Ⓑ May be false Ⓒ True Ⓓ Data insufficient

12. Magnetic field at the centre of current carrying circular loop is along the axis of the loop.

Ⓐ False Ⓑ True Ⓒ Maybe true Ⓓ Data insufficient

Assertion and Reason type:

A. If assertion and Reason both are true, Reason is the correct explanation of assertion.
B. If assertion and Reason both are true,but reason is not correct explanation of assertion.
C. Assertion is true but reason is false.
D. Assertion is false but reason is true.

13. **Assertion:** If a coil has n turns,the magnetic field due to the coil is n times stronger than the that due to a single turn.

Reason: The strength of the magnetic field due to a current carrying circular coil is proportional to the number of turns.

14. **Assertion:** More is the strength of current in the circular coil,more is the strength of magnetic field.

Reason: Strength of the magnetic field produced by an electric current is directly proportional to the current.

15. **Assertion:** If the fingers of the right hand are curled along the direction of current,the stretched thumb gives the direction of the magnetic field.

Reason: The above is not Right Hand Thumb rule for current loop.

16. Two thin lenses of power +3.5D and –2.5D are placed in contact. The power of combination is

Ⓐ +1D Ⓑ –1D

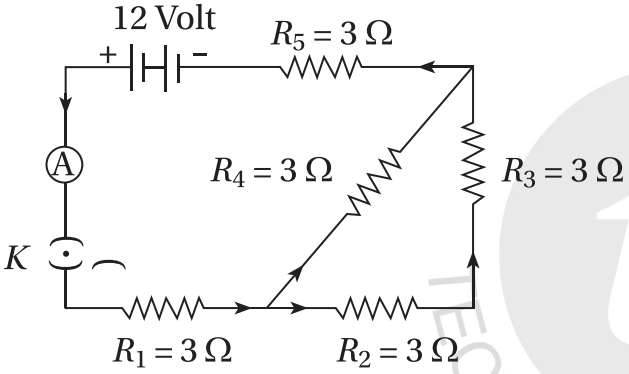
Ⓒ 2D Ⓓ –2D

17. The focal length of combination of lenses +3.5D and –2.5D is

Ⓐ 50 cm Ⓑ 100 cm

Ⓒ 75 cm Ⓓ 25 cm

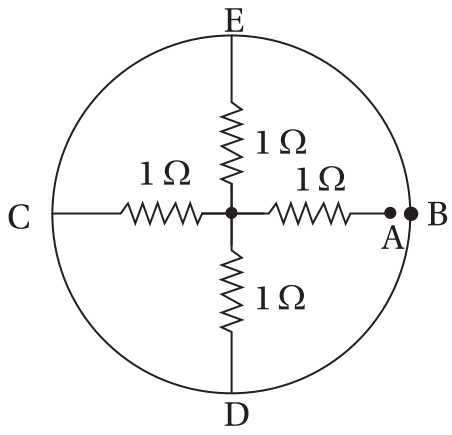
18.



With reference to the above electrical circuit, if the supply voltage of battery is 12 Volt, then circuit current is

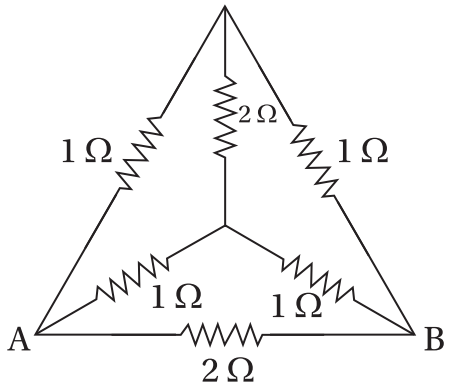
Ⓐ 1.5 A Ⓑ 1 A Ⓒ 0.75 A Ⓓ 2 A

19. Find the equivalent resistance across AB.



Ⓐ $\frac{2}{3}\Omega$ Ⓑ $\frac{4}{3}\Omega$ Ⓒ $3\ \Omega$ Ⓓ $2\ \Omega$

20. Find the resistance across AB.



Ⓐ $\frac{2}{3}\Omega$ Ⓑ $\frac{3}{5}\Omega$ Ⓒ $\frac{3}{7}\Omega$ Ⓓ $\frac{5}{7}\Omega$

21. Case-Based Questions: 21-23

An uniform magnetic field is given vertically downward and a proton and an alpha particle are projected with same velocity perpendicular to the given field. If their radii of circular trajectory are respectively R_p and R_a then $R_p : R_a$ =

Ⓐ 1 : 2 Ⓑ 2 : 1 Ⓒ 1 : 1 Ⓓ $1:\sqrt{2}$

22. If they enter with same momentum, then $R_p : R_a$ =

Ⓐ 1 : 2 Ⓑ 2 : 1 Ⓒ 1 :1 Ⓓ $1:\sqrt{2}$

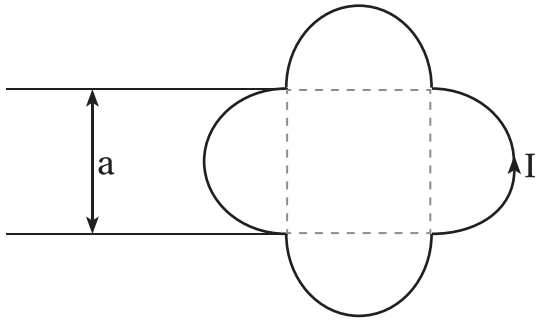
23. If they enter with same kinetic energy, then $R_p = R_a$ =

Ⓐ 1 : 2 Ⓑ 2 : 1 Ⓒ $\sqrt{2}:1$ Ⓓ 1 : 1

24. A bar magnet of length 'L' and magnetic moment M is bent into a semicircular arc. The new magnetic moment of the bent magnet is

Ⓐ M Ⓑ M/π Ⓒ $M/2\pi$ Ⓓ $2M/\pi$

25. The magnetic moment of the given loop carrying current of 'I' is given by



Ⓐ $\frac{(\pi+2)}{2}a^2I$ Ⓑ $(1+2\pi)a^2I$ Ⓒ $\frac{(\pi+4)}{2}a^2I$ Ⓓ $(1+4\pi)a^2I$

26. Wrong statement is

Ⓐ Diamond is a good conductor of electricity

Ⓑ Fullerene has a molecular formula C_{60}

Ⓒ Graphite is a good conductor of heat Ⓓ CCl_4 acts as a solvent

27. In which of the following option, both are unsaturated hydrocarbons ?

Ⓐ C_2H_6 & C_2H_2 Ⓑ C_2H_4 & C_4H_{10} Ⓒ C_3H_6 & C_2H_2 Ⓓ C_3H_6 & C_4H_{10}

28. In case of desertification reaction, what is the role of concentrated H_2SO_4 ?

Ⓐ Oxidising agent Ⓑ Reducing agent Ⓒ Dehydrating agent Ⓓ Solvent

29. Electrical conductivity of methane is very low. Because

Ⓐ Methane is a gaseous molecule Ⓑ Water solubility of methane is very low

Ⓒ Methane is a colourless molecule

Ⓓ Methane does not contain free electron(s)

30. Ethanol and dimethyl ether are which type of isomers ?

Ⓐ Chain isomer Ⓑ Positional isomers

Ⓒ Functional group isomers Ⓓ Metamers

31. Methane forms methyl chloride and hydrochloric acid after reacting with chlorine gas in diffused sunlight. This is an example of

Ⓐ Substitution reaction Ⓑ Elimination reaction

Ⓒ Polymerization reaction Ⓓ Redox reaction

32. Which of the following is an example of polymerization reaction ?

Ⓐ formation of ethene from ethanol Ⓑ formation of polythene from ethene

Ⓒ formation of methane from acetic acid Ⓓ formation of CCl4 from methane

Assertion Reason Type Question (33):

Read the two statements carefully and select the correct option given below.

A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion

B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion

C: Assertion is correct but Reason is wrong

D: Assertion is wrong but Reason is correct

33. **Assertion (A):** C^{4-} ion is very stable

Reason (R): C^{4-} ion has 10 electrons and 6 protons

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

34. In covalent molecules which is/are correct

Ⓐ Low melting point and boiling point

Ⓑ Bad conductors of electricity

Ⓒ Insoluble in polar solvent

Ⓓ All of these

35. Denatured alcohol means

Ⓐ Water is added to ethanol

Ⓑ Acetic acid is added to ethanol

Ⓒ Methanol and other additives are added to ethanol

Ⓓ Propanone and water added to ethanol

36. How artificial diamond is formed ?

Ⓐ By heating graphite and cooling it suddenly

Ⓑ By applying impure carbon to high temperature and pressure

Ⓒ By applying pure carbon to high temperature and pressure

Ⓓ No option is correct

37. Among the given options, which is the weakest bond ?

Ⓐ Carbon - Chlorine Ⓑ Carbon - Bromine

Ⓒ Carbon - fluorine Ⓓ Carbon - Iodine

Assertion Reason Type Question (38):

Read the two statements carefully and select the correct option given below.

A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion

B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion

C: Assertion is correct but Reason is wrong

D: Assertion is wrong but Reason is correct

38. **Assertion (A):** $CH_3CH_2CH_2OH$ is oxidised after reaction with alkaline $KMnO_4$ solution

Reason (R): $KMnO_4$ is an ionic compound

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

Case study based Questions (39-40):

Read the passage carefully and select the correct options :

Covalent bonds are formed by the non-metals and ionic bonds are formed by complete transfer of electrons between metals and non-metals. Covalent compounds fulfill their octets by sharing electrons and receive nearest noble gas configuration. Thus covalent molecules may have single, double and triple bonds. But in case of ionic compounds, the metal releases electron(s) to form cations and the non-metals accept electron(s) to form anion.

39. When magnesium and oxygen form magnesium oxide then correct statement is

Ⓐ Metal releases 3 electrons and non - metal accepts 2 electrons

Ⓑ Metal releases 2 electrons and non - metal accepts 2 electrons

Ⓒ Metal releases 3 electrons and non - metal accepts 3 electrons

Ⓓ Metal releases 2 electrons and non - metal accepts 3 electrons

40. X = total number of electrons in the outermost shell of N^{3-} ion

Y = total number of electrons in the outermost shell of oxygen atom

The value of (X +Y) is

Ⓐ 12 Ⓑ 14 Ⓒ 16 Ⓓ 15

41. When calcium comes contact with water then it starts floating. Because

Ⓐ Density of the metal starts decreasing Ⓑ The metal becomes lighter

Ⓒ The produced gas sticks to the metal Ⓓ Calcium hydroxide is formed

Assertion Reason Type Question (42-43):

Read the two statements carefully and select the correct option given below.

A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion

B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion

C: Assertion is correct but Reason is wrong

D: Assertion is wrong but Reason is correct

42. **Assertion (A):** Aluminium is used to make utensils for cooking

Reason (R): Aluminium is highly reactive metal.

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

43. **Assertion (A):** Sodium is kept immersed in kerosene oil

Reason (R): Sodium is a very reactive metal

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

44. What happens when silver chloride is exposed to sunlight ?

Ⓐ Black coloured silver is produced along with Cl_2 gas

Ⓑ Black coloured silver oxide is produced along with Cl_2 gas

Ⓒ Grey coloured silver oxide is produced along with Cl_2 gas

Ⓓ Grey coloured silver is produced along with Cl_2 gas

45. 'X' molecule iron (III) oxide is strongly heated with 'Y' molecule aluminium to form 'P' molecule iron and 'Z' molecule aluminium oxide. Now (X + Y + 2Z + P) = Q. Now, one atom of that element having atomic number 'Q' is forming a molecule with hydrogen. The correct statement about that molecule is

Ⓐ Octate of the central element is not attained

Ⓑ Octate of the central element is exceeds

Ⓒ Both octate rule and duplate rules are properly obeyed

Ⓓ The compound is ionic

Question 46 & 47 are Assertion (A) and Reason (R) questions. Select the correct option

A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion

B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion

C: Assertion is correct but Reason is wrong

D: Assertion is wrong but Reason is correct

46. **Assertion (A) :** In CCl_4 molecule, octet of carbon is satisfied but not satisfied for chlorine

Reason (R) : Total number of bonds present in CH_3COOH is 8

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

47. **Assertion (A) :** Two isomeric hydrocarbons are possible having molecular formula C_4H_{10}

Reason (R) : General formula for alkene CnH_{2n+2}

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

48. Ethanol is reacting with sodium metal and select the correct statements

(I) There is only one bond in the produced gaseous compound

(II) The salt produced in this reaction is same when a salt produced during the reaction between ethanoic acid and sodium hydroxide

(III) Ethanol and sodium metal is a reducing agent

Ⓐ I, II, III Ⓑ I, II Ⓒ II, III Ⓓ I, III

49. The number of carbon atoms surrounding each carbon atom in a diamond are

Ⓐ 3 Ⓑ 4

Ⓒ 2 Ⓓ 5

Assertion Reason Type Question (50):

Read the two statements carefully and select the correct option given below.

A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion

B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion

C: Assertion is correct but Reason is wrong

D: Assertion is wrong but Reason is correct

50. **Assertion (A):** A mixture of pure oxygen and ethyne is used for welding

Reason (R): Oxygen molecule contains double ond while ethyne molecule contains triple bond

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

Mathematics

51. If the radius and height of a cylinder are in ratio 5 : 7 and its volume is 550 cm^3, then its radius is equal to (take $\pi = \frac{22}{7}$).

Ⓐ 6 cm Ⓑ 7 cm Ⓒ 5 cm Ⓓ 10 cm

52. A tent is in the form of a cylinder of diameter 8 m and height 2 m, surmounted by a cone of equal base and height 3 m. The canvas used for making the tent is equal to

Ⓐ 36 $\pi\, m^2$ Ⓑ 28 $\pi\, m^2$ Ⓒ 24 $\pi\, m^2$ Ⓓ 32 $\pi\, m^2$

53. A river 3 m deep and 60 m wide is flowing at the rate of 2.4 km/h. The amount of water running into the sea per minute is

Ⓐ 6000 m^3 Ⓑ 6400 m^3 Ⓒ 6800 m^3 Ⓓ 7200 m^3

54. Find the mean of the following distribution

x :	4	6	9	10	15
f :	5	10	10	7	8

Ⓐ 9 Ⓑ 15 Ⓒ 18 Ⓓ none of these

55. Find the mode of the following data

26, 16, 19, 48, 19, 20, 34, 15, 19, 20, 21, 24, 19, 22, 16, 18, 20, 16, 19

Ⓐ 48 Ⓑ 20 Ⓒ 19 Ⓓ 24

56. Cards each marked with one of the numbers 4, 5, 6,...., 20 are placed in box and mixed

thoroughly. One card is drawn at random from the box. Then, the probability of getting an even prime number is

Ⓐ 0 Ⓑ 1 Ⓒ $\frac{1}{2}$ Ⓓ None of these

57. A bag contains 10 red balls and some white balls. If the probability of drawing a white ball is double that of a red ball, then number of white balls in the bag will be

Ⓐ 10 Ⓑ 15 Ⓒ 20 Ⓓ 25

Assertion Reason based Questions (58–59):

Directions: In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

58. **Assertion (A) :** Amount of water flow out through a pipe having an area of cross-section of 5 cm^2 in one minute, if the speed of water in the pipe is 30 cm/sec is 9 litres.

Reason (R) : Volume of water flowing out from a cylindrical pipe in time t is given by

$V = \pi r^2 \nu t$ where

V = total volume of water flowing out

r = radius of the pipe

ν = speed of water flow

t = time

Ⓐ a Ⓑ b Ⓒ c Ⓓ d

59. **Assertion (A) :** The mean of 1, 3, 4, 5, 7, 4 is m. The numbers 3, 2, 2, 4, 3, 3, p have mean (m–1) and median q. Then p + q = 7

Reason (R) : The mean of a data set is always the same as the median

Ⓐ a Ⓑ b Ⓒ c Ⓓ d

Case Study Based Questions (60–62):

Ram has two dice of different colours. He rolled both the dice and recorded the numbers on the upper faces. Based on his observations, he prepared few questions and asked those questions to his younger brother Shyam.

Now answer the following questions :

60. Total number of outcomes is

Ⓐ 6 Ⓑ 6^2 Ⓒ 6^3 Ⓓ none of these

61. Let A be the event that sum of the numbers on the upper faces of two dice is less than 2, then P(A) is

Ⓐ 0 Ⓑ 1 Ⓒ 2 Ⓓ 3

62. Let B be the event that the product of the numbers on the upper faces of two dice is a prime number, then P (B) is

Ⓐ $\frac{1}{6}$ Ⓑ $\frac{11}{36}$ Ⓒ $\frac{5}{36}$ Ⓓ $\frac{17}{36}$

63. A hemispherical tank full of water is emptied by a pipe at the rate of $3\frac{4}{7}$ litres per second. How much time will it take to empty half of the tank, if the tank is 3 metres in diameter?

Ⓐ 15.5 minutes Ⓑ 16.5 minutes Ⓒ 32 minutes Ⓓ 31 minutes

64. Given below is the frequency distribution of the heights of players in a school. Find the average height of maximum number of students.

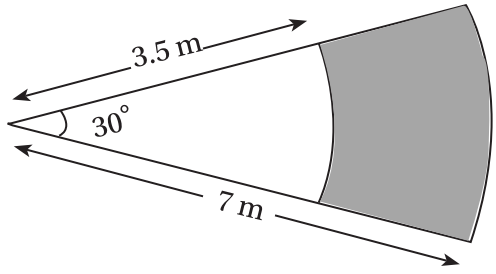
Height (in cm)	160 – 162	163 – 165	166 – 168	169 – 171	172 – 174
No. of students	15	118	142	127	18

Ⓐ 167.31 cm Ⓑ 167.0 cm Ⓒ 166.35 cm Ⓓ 167.35 cm

65. A box contains 12 balls out of which x are black. If one ball is drawn at random from the box, then the probability of drawing a black ball is A. The probability of drawing a black ball after putting 6 more black balls in the box is B. If 2A = B, then the value of x is

Ⓐ 4 Ⓑ 3 Ⓒ 2 Ⓓ 6

66. Flowers are to be planted in the shaded portion which is shown by sectors of two concentric circles of radii 7 m and 3.5 m, then the area of the shaded region is $\left(\text{use } \pi = \frac{22}{7}\right)$



Ⓐ 9.625 m^2 Ⓑ 9 m^2 Ⓒ 10 m^2 Ⓓ 8.5 m^2

67. The angle of elevation of the top of a tower at a distance of 500 metres from its foot is 30°. The height of the tower is

Ⓐ $\frac{500\sqrt{3}}{3}$ m Ⓑ $\frac{500(\sqrt{3}-1)}{3}$ m Ⓒ $\frac{500(\sqrt{3}+1)}{3}$ m Ⓓ 500 m

68. If the ratio of the sum of n terms of two A.P.s is $(3n - 13) : (5n + 21)$, then the ratio of 24th terms of the two A.P.s is

Ⓐ 2 : 3 Ⓑ 2 : 1 Ⓒ 1 : 2 Ⓓ None of these

69. If $b^2 - 4ac \geq 0$, then the roots of quadratic equation $ax^2 + bx + c = 0$ are

Ⓐ $\frac{b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}$ Ⓑ $-\frac{b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}$ Ⓒ $\frac{b}{2a} \pm \frac{\sqrt{b^2 + 4ac}}{2a}$ Ⓓ $-\frac{b}{2a} \pm \frac{\sqrt{b^2 + 4ac}}{2a}$

70. A fraction becomes $\frac{4}{5}$ when 1 is added to each of the numerator and denominator. However, if we subtract 5 from each of numerator and denominator then it becomes $\frac{1}{2}$. The fraction is

Ⓐ $\frac{5}{8}$ Ⓑ $\frac{5}{6}$ Ⓒ $\frac{7}{9}$ Ⓓ $\frac{13}{16}$

71. An exhibition tent is in the form of a cylinder surmounted by a cone. The height of the tent above the ground is 85 m and the height of the cylindrical part is 50 m. If the diameter of the base is 168 m, find the quantity of canvas (in nearest m^2) required to make the tent allowing 20% extra for folding and stitching.

Ⓐ 60508 m^2 Ⓑ 60509 m^2 Ⓒ 61509 m^2 Ⓓ 61508 m^2

72. The outer and inner diameters of a hemispherical bowl are 17 cm and 15 cm respectively. Find the cost of polishing it all over at 25 paise per cm^2.

Ⓐ ₹ 215 Ⓑ ₹ 215.50 Ⓒ ₹ 214.50 Ⓓ ₹ 216

73. The mean of the data $1^2, 2^2, 3^2, \ldots\ldots\ldots\ldots, n^2$ is

Ⓐ $\frac{(n+1)(2n+1)}{6}$ Ⓑ $\frac{(n-1)(2n+1)}{6}$

Ⓒ $\frac{(n-1)(2n-1)}{6}$ Ⓓ $\frac{n(n+1)(2n-1)}{6}$

74. Which of the following is true?

Ⓐ Mode = 2 median – mean Ⓑ Mode = 3 median + 2 mean

Ⓒ Mode = 3 median – 2 mean Ⓓ None of these

75. A bag contains tickets numbered 11, 12, 13, ..., 30. A ticket is taken out from the bag at random. Find the probability that the number on the drawn ticket is greater than 15 and a multiple of 5.

Ⓐ $\frac{3}{20}$ Ⓑ $\frac{7}{20}$ Ⓒ $\frac{9}{20}$ Ⓓ $\frac{1}{20}$

Biology

76. The number of chromosomes in a human cell is

Ⓐ 23 pairs Ⓑ 26 pairs Ⓒ 46 pairs Ⓓ 49 pairs

77. When we say a plant is tall, we are talking about its

Ⓐ Phenotype Ⓑ Genotype

Ⓒ Both Ⓓ None

78. The genotype of the F1 individuals produced in Mendel's monohybrid cross is _____ .

Ⓐ TT Ⓑ Tt Ⓒ tt Ⓓ None

79. Ozone depletion is caused by

Ⓐ CO_2 Ⓑ BHC Ⓒ CFC Ⓓ All

80. Height of plant : Tall plant = Character : _____

Ⓐ Characteristic Ⓑ Feature Ⓒ Trait Ⓓ All

81. Which one is a recyclable waste ?

Ⓐ Paper Ⓑ Torn clothes

Ⓒ Metallic and plastic discards Ⓓ All

82. Combustible materials can be hygienically disposed off through

Ⓐ Dumping Ⓑ Composting

Ⓒ Recycling Ⓓ Incineration

83. In Mendel's monohybrid cross considering the colour of flowers, the F_1 hybrids all bear

Ⓐ Purple flowers

Ⓑ White flowers

Ⓒ Red flowers

Ⓓ Half of the plants bear purple and the other half bear white flowers.

84. Pea plants are normally self pollinating. Mendel performed cross pollination by employing which of the following techniques?

Ⓐ Emasculation of flowers of one of the parent plant

Ⓑ Emasculation of flowers of both the parent plants

Ⓒ Removal of carpels of flowers of both the parent plants

Ⓓ Removal of accessory whorls of all the flowers

85. Consider the food chain :

Phytoplankton ⟶ Zooplankton ⟶ Small fish ⟶ Big fish ⟶ Man.

Which trophic level would show the highest degree of biological magnification of pesticides?

Ⓐ Zooplankton
Ⓑ Small fish
Ⓒ Big fish
Ⓓ Man

Assertion-Reason type Questions (86–87):

Directions: Read the following questions and choose any one of the following four responses.

A. Both Assertion and Reason are true and Reason is the correct explanation of the Assertion.
B. Both Assertion and Reason are true but Reason is not the correct explanation of the Assertion.
C. Assertion is true but Reason is false.
D. Assertion is false but Reason is true.

86. **Assertion:** In Mendel's dihybrid cross, the F_1 progeny are genotypically hybrids

Reason: The F1 individuals receive alleles of contrasting traits from both the parents.

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

87. **Assertion:** The human female is heterogametic

Reason: All the eggs produced by the female bears only X-chromosome.

Ⓐ A Ⓑ B Ⓒ C Ⓓ D

Case Based Questions (88-90) :

Read the given passage and answer the following questions :

The amount of ozone in the atmosphere began to drop sharply in the 1980s. This decrease has been linked to chemicals like CFCs. In 1987, the UNEP succeeded in forging an agreement to freeze CFC production at 1986 levels.

88. $O_2 \xrightarrow{X} O + O$

$O + Y \longrightarrow O_3$; X and Y stand for :

Ⓐ UV and O_2, respectively
Ⓑ IR and H_2O, respectively
Ⓒ O_3 and UV, respectively
Ⓓ UV and O, respectively

89. CFCs are used in :

Ⓐ Refrigerants
Ⓑ Fire extinguishers
Ⓒ Both A and B
Ⓓ Composting

90. UNEP stands for

Ⓐ United National Environmental Programme

Ⓑ United National Environment Programme

Ⓒ United Nations Environmental Programme

Ⓓ United Nations Environment Programme

91. Name the organ that stores bile.

Ⓐ Liver Ⓑ Gall bladder Ⓒ Stomach Ⓓ Large intestine

92. Transpiration in plants takes place through

Ⓐ Stomata Ⓑ Cuticle Ⓒ Lenticels Ⓓ All of these

93. Unicellular organisms perform excretion by the process of

Ⓐ Simple diffusion Ⓑ Osmosis Ⓒ Facilitated diffusion Ⓓ Imbibition

94. If pyruvate breaks down anaerobically, the number of ATP molecules produced are

Ⓐ 1 Ⓑ 2 Ⓒ 3 Ⓓ 4

95. The hormone that promotes reabsorption of water from the glomerular filtrate is

Ⓐ Oxytocin Ⓑ Vasopressin Ⓒ Relaxin Ⓓ Calcitonin

96. Hyena feeds on dead bodies of animals. So it is a _____

Ⓐ Carnivore Ⓑ Decomposer Ⓒ Scavenger Ⓓ Predator

97. As we move along the food chain, the number of individuals at each trophic level

Ⓐ increases Ⓑ decreases

Ⓒ remains constant Ⓓ varies from food chain to food chain

Case Based Questions (98–100):

Read the given passage and answer the following questions :

In a dihybrid cross, Mendel crossed genetically pure yellow and round seeded pea plants with green and wrinkled seeded pea plants. The F_2 progeny bore a ratio 9 : 3 : 3 : 1

98. The ratio 9 : 3 : 3 : 1 is the

Ⓐ Phenotypic ratio of the F1 offsprings Ⓑ Genotypic ratio of the F1 offsprings

Ⓒ Phenotypic ratio of the F2 offsprings Ⓓ Genotypic ratio of the F2 offsprings

99. In the ratio, 9 : 3 : 3 : 1, the number 9 represents

Ⓐ Yellow and rounded seeds Ⓑ Yellow and wrinkled seeds

Ⓒ Green and rounded seeds Ⓓ Green and wrinkled seeds

100. The genotype of the F1 hybrids is

Ⓐ RR yy Ⓑ rr YY Ⓒ RR YY Ⓓ Rr Yy

Space For Rough Works

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