Monthly Progressive Test

Class: X (S)

Subject: PCMB

Test Booklet No.: MPT05

Test Date: 2 2 0 8 2 0 2 4

Time: 180 mins

Full Marks: 200

Important Instructions :

1. The Test is of 180 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 MPT0522082024.

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 scrible 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.

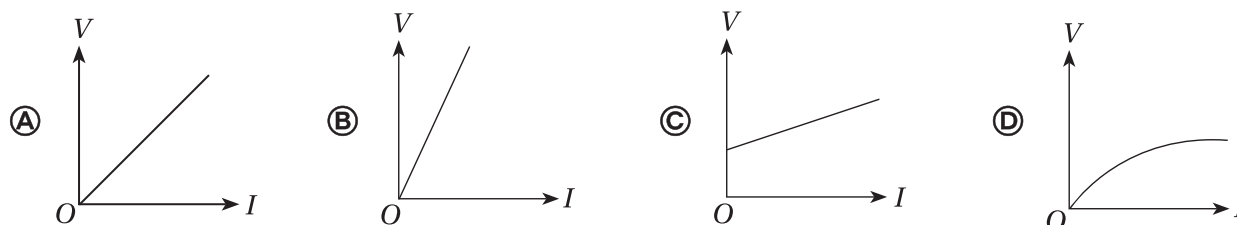13. There is no scope for altering response mark in Answer Sheet.

Physics

1. The potential difference required across a conductor of resistance 5 Ω to pass a current of 2 A is (in volt)

   Ⓐ 10   Ⓑ 7.5   Ⓒ 5   Ⓓ 12

2. Select the graph for non-ohmic conduction

   Ⓐ   Ⓑ   Ⓒ   Ⓓ

3. The resistance of a wire is 2 Ω. Then the resistance across the ends of the wire if it is doubled on itself (in area)

   Ⓐ 0.25 Ω   Ⓑ 0.5 Ω   Ⓒ 0.75 Ω   Ⓓ 1 Ω

4. For substance, the resistivity and resistance is practically invariant with temperature change is

   Ⓐ Constantan   Ⓑ Manganin   Ⓒ Both Ⓐ & Ⓑ   Ⓓ none of the above

Passage 4:

For practical reasons having to do with the accuracy of measurements, the SI unit of charge is derived from the SI unit of electric current, the Ampere (A). The SI unit of the charge is the Coulomb (C): One coulomb is the amount of charge that is transferred through the cross-section of a wire in 1 second when there is a current of 1 ampere in the wire.

Figure shows plots of the correct i through a certain cross-section of a wire over four different time periods
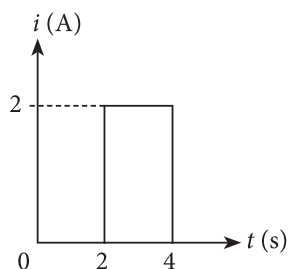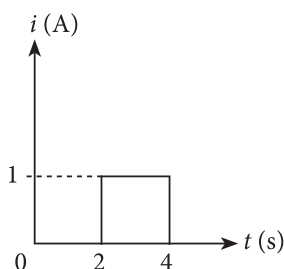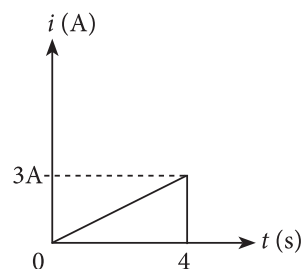

Fig (i)   Fig (ii)   Fig (iii)

5. In figure (i), the total charge from 2 s to 4 s is

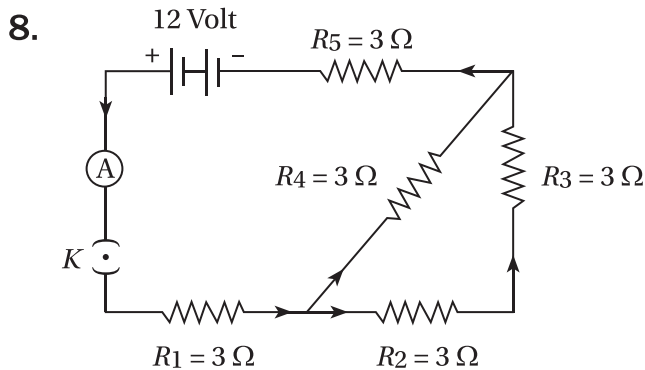   Ⓐ 2 C   Ⓑ 4 C   Ⓒ 3 C   Ⓓ 1 C

6. In the figure (ii), the total charge from 2 s to 4 s is

    Ⓐ 2 C   Ⓑ 3 C   Ⓒ 1 C   Ⓓ 4 C

7. In figure (iii), the total charge from 0 s to 4 s is

    Ⓐ 3 C   Ⓑ 1 C   Ⓒ 4 C   Ⓓ 6 C

8.

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

9.
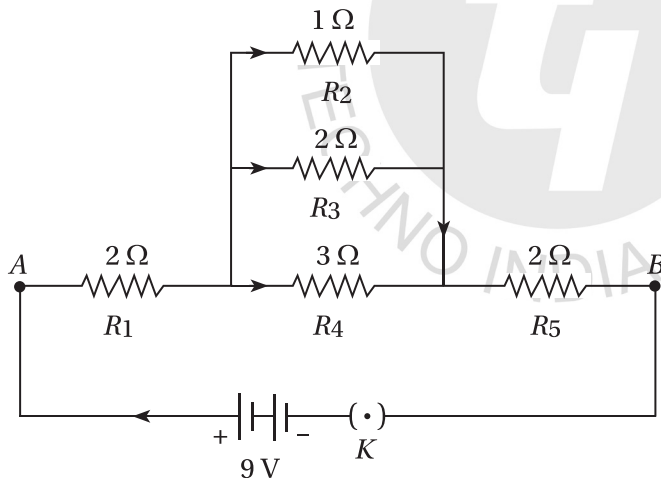
With reference to above electrical circuit, the total circuit current is nearly

    Ⓐ 1 A   Ⓑ 1.5 A   Ⓒ 2 A   Ⓓ 2.5 A

10.

With reference to the above circuit, the equivalent resistance across ends A and B is

    Ⓐ 6 ohm   Ⓑ 3 ohm   Ⓒ 4 ohm   Ⓓ 5 ohm

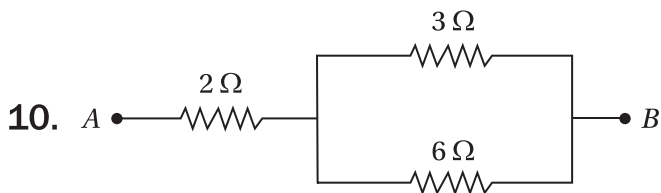**11.** What is the lowest total resistance which can be secured by combinations of four coils of resistances 4 ohm, 8 ohm, 12 ohm and 24 ohm?

Ⓐ 3   Ⓑ 4   Ⓒ 6   Ⓓ 2

12. Compute the heat generated while transferring 2 C of charge in one hour through a potential difference of 20 Volt

Ⓐ 30 J   Ⓑ 25 J   Ⓒ 35 J   Ⓓ 40 J

13. A tubelight of 40 Watt is used in 220 Voltage, draws a current of

Ⓐ 1 A   Ⓑ 0.18 A   Ⓒ 2 A   Ⓓ 1.5 A

14. Two lamps, one rated at 100 W–220 V and other 60 W–220 V are connected in parallel to electric main supply. If the supply voltage is 220 V, then current is drawn from the line is

Ⓐ 0.72 A   Ⓑ 0.45 A   Ⓒ 0.27 A   Ⓓ 1 A

15. If a wire of resistance R is melted and recast to half of its length, the new resistance of the wire will be

Ⓐ $R/4$ Ⓑ $R/2$ Ⓒ R Ⓓ $2R$

16. For a convex lens of focal length 20 cm, if the image is formed at 20 cm, then u =

Ⓐ infinity   Ⓑ 10 cm   Ⓒ 20 cm   Ⓓ 40 cm

17. If $V_A = 10$ volt and $V_B = 6$ volt, then $V_A - V_B =$

Ⓐ 2 volt   Ⓑ 4 volt   Ⓒ 3 volt   Ⓓ 1 volt

Assertion Reason Based Questions (18 – 19)

Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

A. If both Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If Assertion is false but Reason is true.

18. Assertion: A concave lens is also called a diverging lens.

Reason: A parallel beam of light incident on a concave lens diverges on the other side.

Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

19. Assertion: The power of a convex lens is positive.

Reason: The power of a concave lens is negative.

Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

20. If potential difference across a resistor 2 ohm is 10 volt, then current is

Ⓐ 5A   Ⓑ 3A   Ⓒ 2A   Ⓓ 6A

Assertion Reason Based Questions (21 – 23)

Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

A. If both Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If Assertion is false but Reason is true.

21. Assertion: Fuse wire should have low melting temperature and high resistivity.

Reason: Fuse saves an appliance from damage by increasing its current passing capacity.

Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

22. Assertion: A conductor that carries current is always charged

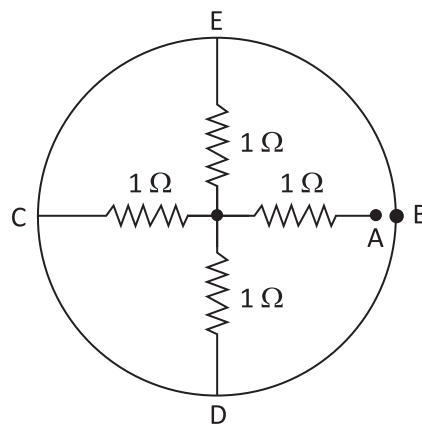**Reason:** Current in conductor is due to drift of free electrons

Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

23. Assertion: Generally Manganin is used for making standard resistances

Reason: Manganin has a high resistivity and a low temperature coefficient of resistivity.
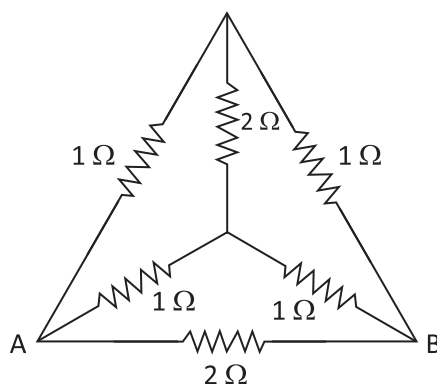
Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

24. Find the equivalent resistance across AB.

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

25. Find the resistance across AB.

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

Chemistry

26. Which of the following element cannot form more than one oxide ?

Ⓐ Carbon Ⓑ Boron Ⓒ Sulpher Ⓓ Iron

27. In N_2 molecule, lone pair present = X and bonds present = Y. The value of $(X + Y)$ will be

Ⓐ 7 Ⓑ 4 Ⓒ 6 Ⓓ No option correct

28. Among the metals, poorest conductor of electricity is —

Ⓐ Hg Ⓑ Al Ⓒ Cu Ⓓ Fe

29. Which non-metal is used as a food preservative ?

Ⓐ N_2 Ⓑ Cl_2 Ⓒ H_2 Ⓓ O_2

Question number 30 to 31 are *STATEMENT BASED QUESTIONS*. Select the correct option

Option A : Both statements are correct

Option B : Statement I correct and statement II wrong

Option C : Statement II correct and statement I wrong

Option D : Both statements are wrong

30. Statement I : Sodium is stronger metal than iron

Statement II : Iron has higher melting point than sodium

31. Statement I : Sodium is stronger metal than potassium

Statement II : Fluorine readily forms anion

32. In which of the following option, all are amphoteric oxide ?

Ⓐ BeO, SnO, PbO   Ⓑ BeO, BaO, Fe_2O_3 Ⓒ Na_2O, SnO, PbO   Ⓓ Na_2O, SnO, ZnO

33. Consider the equation x Al_2O_3 + y NaOH $\longrightarrow$ z $NaAlO_2$ + p H_2O . The correct value of $(x + y + z + p)$ is equal to

Ⓐ 8   Ⓑ 6   Ⓒ 7   Ⓓ 4

34. In which option, all metals are associated with electrolytic refining ?

Ⓐ Cu, Zn, Ca, Al   Ⓑ Na, Zn, Ni, Ca   Ⓒ Fe, Zn, Ni, Sn   Ⓓ Cu, Zn, Ni, Sn

35. Metal 'X' reacts with both $FeSO_4$ and $CuSO_4$ solution and metal 'Y' reacts with only $CuSO_4$ solution while metal 'Z' does not react neither with $FeSO_4$ nor $CuSO_4$ solutions. The correct order of reducing power of the metals is

Ⓐ Z > Y > X   Ⓑ X > Z > Y   Ⓒ X > Y > Z   Ⓓ Z > X > Y

Question number 36 to 37 are *ASSERTION - REASON TYPE*. Select the correct option

OPTION A : Assertion and reason both are correct and reason is the correct explanation of assertion

OPTION B : Assertion and reason both are correct and reason is not the correct explanation of assertion

OPTION C : Assertion is correct but reason is wrong

OPTION D : Assertion is wrong but reason is correct

36. **Assertion :** When MnO_2 is heated with aluminium metal then manganese is produced

   Reason : Aluminium is a very strong reducing element

37. **Assertion :** When an iron nail is completely dipped in pure water then rusting occurs

   Reason : In case of rusting, iron is oxidised

Question number 38 to 40 are *ASSERTION - REASON TYPE*. Select the correct option

   PASSAGE 5 : Alloy is a homogenous mixture of metals and they are formed when different metals are mixed with each other in a definite proportion and they are heated to melt. After that it is cooled to room temperature. Some alloy contain solid non-metals e.g. stainless steel contains carbon. Alloy is more stable than pure metals and hence it is widely used than the pure metals.

38. Which of the following non-metal cannot be used to prepare alloy ?

Ⓐ Oxygen   Ⓑ Carbon   Ⓒ Sulpher   Ⓓ Phospuorus

39. Alloy is a homogeneous mixture because

Ⓐ All the components are in different state

Ⓑ Boiling point values of the components are very close to each other

Ⓒ All the components are in solid state

Ⓓ Colour of the alloy and the pure metal are very much similar to each other

40. In which of the following alloy, carbon is present ?

    Ⓐ Brass   Ⓑ Bell metal   Ⓒ Nichrome   Ⓓ Stainless steel

41. When dilute hydrochloric acid is added to granulated zinc placed in a test tube, the observation made is

    Ⓐ the surface of the metal turns shining

    Ⓑ the reaction mixture turns milky

    Ⓒ odour of chlorine is observed

    Ⓓ a colourless and odourless gas evolves with bubbles

42. When CO_2 gas comes in contact with aqueous $Ca(OH)_2$ then the correct product is

    Ⓐ White coloured CaC_2 Ⓑ White coloured $CaCO_3$

    Ⓒ Yellow coloured CaC_2 Ⓓ Yellow coloured $CaCO_3$

43. X molecule NaCl, Y molecule H_2O, Z molecule NH_3, P molecules CO_2 are reacting with each other to form NH_4Cl and $NaHCO_3$. If the value of $(X + Y + Z + P) = Q$ then the solution whose $p^H = Q$ will be

    Ⓐ Acidic   Ⓑ basic   Ⓒ Neutral   Ⓓ data insufficient

44. p^H values of 4 solutions A, B, C, D are 7, 8, 9, 10 respectively. Put them in a sequence according to their nature

    Ⓐ acidic, acidic, neutral, basic   Ⓑ acidic, neutral, basic, basic

    Ⓒ acidic, acidic, acidic neutral   Ⓓ neutral, basic, basic, basic

45. CH_3COOH is a

    Ⓐ Monobasic acid   Ⓑ Dibasic acid

    Ⓒ Tribasic acid   Ⓓ Cannot be predicted about its basicity

46. Find out wrong statements

    (I) Carbonate is the main ore of copper

    (II) During electrorefining of copper, the concentration of copper sulphate decreases

    (III) Both copper and zinc can produce hydrogen gas after reacting with dilute sulphuric acid

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

47. What is the charge of iron in Fe_3O_4 ?

Ⓐ $+\dfrac{8}{3}$ Ⓑ $+3$ and $+4$ Ⓒ $+2$ and $+3$ Ⓓ $+\dfrac{4}{3}$

48. Correct statements about allotropy are

(I) Physical properties are different

(II) Chemical properties are different

(III) Different structural forms

(IV) Temperature change does not affect the change between allotropic forms

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

49. Consider the following elements

carbon, aluminium, copper, sulpher, silver, silicon, sulpher, magnesium, nickel, cobalt

X = Number of non-metals

Y = Number of coinage metals

Z = Number of transitional metals

P = Number of metals which receives neon gas configuration after releasing less than 5 electrons

(X + Y + 2Z + P) = Q. If 'Q' is the atomic number of an element then it will receive its nearest noble gas configuration by

Ⓐ releasing one electron   Ⓑ accepting 3 electrons

Ⓒ accepting 5 electrons   Ⓓ releasing two electrons

50. '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

Mathematics

51. In ΔABC, ∠B = 90°. If AB = 14 cm and AC = 50 cm, then tan A equals

  Ⓐ $\dfrac{24}{25}$ Ⓑ $\dfrac{24}{7}$ Ⓒ $\dfrac{7}{24}$ Ⓓ $\dfrac{25}{24}$

52. If $\sin\theta = \dfrac{12}{13}$, then the value of the $\dfrac{2\cos\theta + 3\tan\theta}{\sin\theta + \tan\theta\sin\theta}$ is

  Ⓐ $\dfrac{12}{5}$ Ⓑ $\dfrac{5}{3}$ Ⓒ $\dfrac{259}{102}$ Ⓓ $\dfrac{259}{65}$

53. sin 30° + cos 60° equals

  Ⓐ $\dfrac{1+\sqrt{3}}{2}$ Ⓑ $\sqrt{3}$ Ⓒ 1   Ⓓ None of these

54. 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

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

55. If two towers of heights h_1 and h_2 subtend angles 60° and 30° respectively at the midpoint of the line joining their feet, then $h_1 : h_2 =$

  Ⓐ 1 : 2   Ⓑ 1 : 3   Ⓒ 2 : 1   Ⓓ 3 : 1

56. Angle of elevation of the top of the tower from 3 points (collinear) A, B and C on a road leading to the foot of the tower are 30°, 45° and 60° respectively. The ratio of AB : BC is

  Ⓐ $\sqrt{3}:1$ Ⓑ $\sqrt{3}:2$ Ⓒ 1 : 2   Ⓓ $2:\sqrt{3}$

57. ABC is a right- angled triangle, right angled at B such that BC = 6 cm and AB = 8 cm. A circle with centre O is inscribed in ΔABC. The radius of the circle is

  Ⓐ 1 cm   Ⓑ 2 cm   Ⓒ 3 cm   Ⓓ 4 cm

Assertion Reason based Questions (58–59):

Directions: In this question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choice.

(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:** The angle of elevation of a bird from a point 50 metres above a lake is 30° and the angle of depression of its image in the lake is 60°, then the height of the bird is 100 m

   Reason: $\tan\theta = \dfrac{\text{Perpendicular}}{\text{Base}}$ and object distance = image distance from the mirror
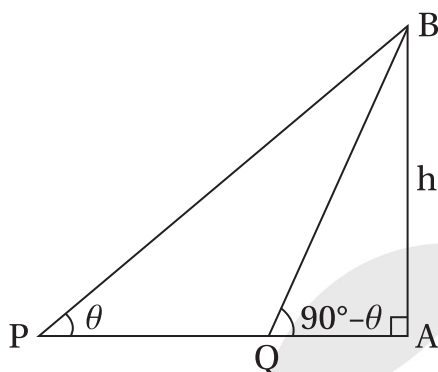
   Ⓐ a   Ⓑ b   Ⓒ c   Ⓓ d

59. **Assertion:**

   In the adjoining figure, $h = \sqrt{AP \times AQ}$

   Reason: $\tan\theta \cdot \cot\theta = 2$ when $0° < \theta < 90°$

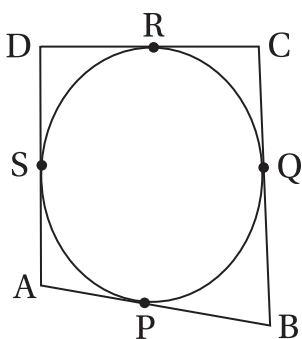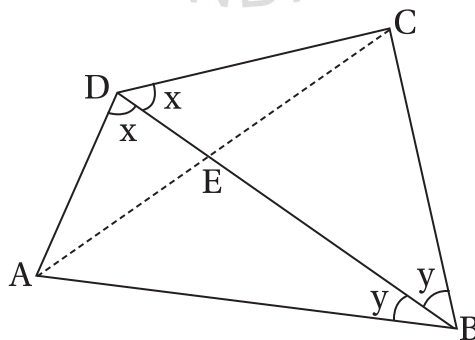   Ⓐ a   Ⓑ b   Ⓒ c   Ⓓ d

Case Study based Questions (60 – 62):

In a park, four poles are standing at positions A, B, C and D around a circular fountain such that the clothes joining the poles touch the fountain at P, Q, R and S as shown in the figure.


Based on the above information, answer the following questions.

60. If O is the centre of the circular fountain, then $\angle OSA =$

Ⓐ 60°   Ⓑ 90°   Ⓒ 45°   Ⓓ none of these

61. Which of the following is correct?

Ⓐ AS = AP   Ⓑ BP = BQ   Ⓒ CQ = CR   Ⓓ All of these

62. If DR = 7 cm and AD = 11 cm, then AP =

Ⓐ 4 cm   Ⓑ 18 cm   Ⓒ 7 cm   Ⓓ 11 cm

63. Find the value of the expression $3(\sin x - \cos x)^4 + 6(\sin x + \cos x)^2 + 4(\sin^6 x + \cos^6 x)$.

Ⓐ $1 - 3\sin^2 x \cos^2 x$ Ⓑ 11   Ⓒ 13   Ⓓ $2\cos x \sin x - 1$

64. A ladder rests against a wall at an angle α to the horizontal. Its foot is pulled away from the wall through a distance a, so that it slides a distance b down the wall making an angle β with the horizontal then $\dfrac{a}{b}$ is

Ⓐ $\dfrac{\cos\alpha - \cos\beta}{\sin\beta - \sin\alpha}$ Ⓑ $\dfrac{\cos\alpha - \cos\beta}{\sin\beta + \sin\alpha}$ Ⓒ $\dfrac{\cos\alpha + \cos\beta}{\sin\beta - \sin\alpha}$ Ⓓ $\dfrac{\cos\alpha + \cos\beta}{\sin\alpha + \sin\beta}$

65. QR is a chord of a circle with centre O. Two tangents at the points Q and R intersect each other at the point P. QM is a diameter of the circle. Then

Ⓐ $<QPR = <RQM$ Ⓑ $<QPR = 2<RQM$

Ⓒ $<QPR = \dfrac{1}{2} <RQM$ Ⓓ all of these

66. The diagonal BD of a quadrilateral ABCD bisects $\angle B$ and $\angle D$, then

Ⓐ $\dfrac{AB}{CD} = \dfrac{AD}{BC}$ Ⓑ $\dfrac{AB}{CB} = \dfrac{AD}{CD}$ Ⓒ $AB = AD \times BC$ Ⓓ None of these

67. If the ratio of the sum of n terms of two APs is $(3n - 13) : (5n + 21)$, then the ratio of 24th terms of the two progression is

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

68. If one root is $3+\sqrt{5}$, then quadratic equation will be

Ⓐ $x^2 + 6x - 4 = 0$ Ⓑ $x^2 + 6x + 4 = 0$ Ⓒ $x^2 - 6x + 4 = 0$ Ⓓ $x^2 - 6x - 4 = 0$

69. The value of $x + y$ in the solution of equations $\dfrac{x}{4}+\dfrac{y}{3}=\dfrac{5}{12}$ and $\dfrac{x}{2}+y=1$ is

Ⓐ $\dfrac{1}{2}$ Ⓑ $\dfrac{3}{2}$ Ⓒ 2 Ⓓ $\dfrac{5}{2}$

70. The least perfect square number which is divisible by 8, 15, 20, 22 is

Ⓐ 435600   Ⓑ 43560   Ⓒ 39600   Ⓓ 465660

71. If $\sin\theta = p$ and $\cos\theta = q$, then the value of $\dfrac{p - 2p^3}{2q^3 - q}$ is

Ⓐ $\sec\theta$ Ⓑ $\operatorname{cosec}\theta$ Ⓒ $\cot\theta$ Ⓓ $\tan\theta$

72. If $x = (\sec A + \tan A)(\sec B + \tan B)(\sec C + \tan C)$ & $y = (\sec A - \tan A)(\sec B - \tan B)(\sec C - \tan C)$ and $x = y$ then x & y is equal to

Ⓐ ± 1 Ⓑ 0 Ⓒ ± 2 Ⓓ None of these

73. From a light house the angles of depression of two ships on opposite sides of the light house are observed to be 30° and 45°. If the height of the light house is h metres then the distance between the ships is

Ⓐ $(\sqrt{3}+1)\,\mathrm{h\,m}$ Ⓑ $(\sqrt{3}-1)\,\mathrm{h\,m}$ Ⓒ $\sqrt{3}\,\mathrm{h\,m}$ Ⓓ $\left(1+\dfrac{1}{\sqrt{3}}\right)\mathrm{h\,m}$

74. From the top of a cliff 60 m high, the angles of depression of the top and bottom of a tower are observed to be 30° and 60° respectively, find the height of tower.

Ⓐ 40 m   Ⓑ 50 m   Ⓒ 60 m   Ⓓ 80 m

75. A circle with centre 'O' has been inscribed in an isosceles triangle PQR such that PQ = PR = 17 cm and QR = 16 cm
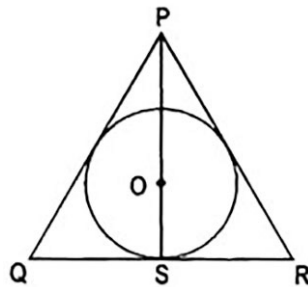
then radius of the circle is

Ⓐ 8 cm   Ⓑ 6 cm   Ⓒ 4.8 cm   Ⓓ 8.5 cm

Biology

76. Reproduction through leaves is shown by

    Ⓐ Potato   Ⓑ Rose   Ⓒ *Bryophyllum*   Ⓓ Mucor

77. The endosperm of angiosperms is

    Ⓐ Haploid   Ⓑ Diploid   Ⓒ Triploid   Ⓓ Polyploid

78. Seed is a modification of

    Ⓐ Ovary   Ⓑ Ovule   Ⓒ Thalamus   Ⓓ All of these

79. The human embryo gets nutrition from the mother's blood with the help of a special organ called

    Ⓐ Zygote   Ⓑ Ovary   Ⓒ Oviduct   Ⓓ Placenta

80. In budding :

    Ⓐ Outgrowth develops earlier than nuclear division

    Ⓑ Nucleus divides earlier than development of outgrowth

    Ⓒ Both occur simultaneously

    Ⓓ There is no fixed sequence

81. Implantation occurs in which state of embryo development?

    Ⓐ Blastocyst   Ⓑ Morula   Ⓒ Gastrula   Ⓓ Zygote

82. Genital warts are caused by

    Ⓐ Bacteria   Ⓑ Protozoa   Ⓒ Virus   Ⓓ Worm

Assertion Reason Based Questions (83–86):

Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

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.

83. **Assertion:** Vegetative propagation is extensively practised by farmers.

    Reason: Vegetative propagation is a fast process and is not dependent on the traditional processes of pollination and fertilization.

    Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

84. **Assertion:** Gametes are unfertilised reproductive cells.

   Reason: Zygote is the fertilised ovum.

   Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

85. **Assertion:** A condom is a mechanical barrier method of contraception

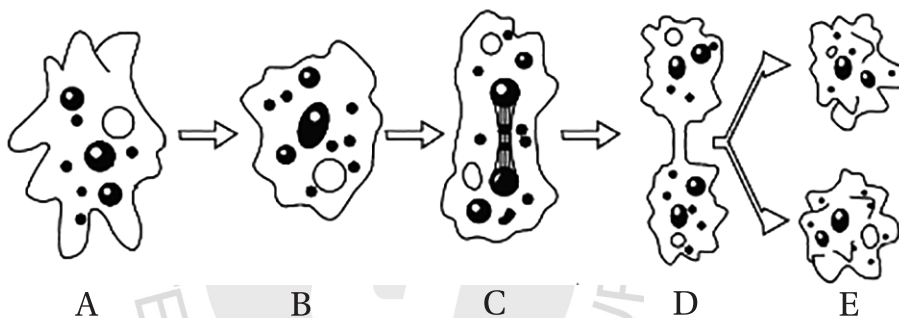   **Reason:** A condom prevents a sperm and ovum from coming in contact with each other.

   Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

86. **Assertion:** Synergids and antipodals take part in the process of fertilisation.

   Reason: Zygote is formed only after fertilisation.

   Ⓐ A   Ⓑ B   Ⓒ C   Ⓓ D

Case based Questions (87–90):

A   B   C   D   E

Study the diagram given above and answer the following questions:

87. The above diagram shows:

   Ⓐ Binary fission in *Amoeba*   Ⓑ Binary fission in *Leishmania*

   Ⓒ Binary fission in *Paramoecium*   Ⓓ Binary fission in bacteria

88. Select the correct pair of statements from the list given below:

   I. Cytoplasm divides before nucleus.

   II. Nuclear division is followed by division of cytoplasm.

   III. The resultant daughter amoeba are identical to each other.

   IV. The mother amoeba (stage A), continuous to divide by binary fission.

   Ⓐ I and II   Ⓑ I and III   Ⓒ II and III   Ⓓ I and IV

89. The stage C represents—

   Ⓐ Formation of 2 daughter cells

   Ⓑ Daughter cells undergoing detachment

   Ⓒ Division of nucleus + Division of cytoplasm

   Ⓓ Division of nucleus

90. *Leishmania*, another protozoan, shows binary fission only along one plane because:

Ⓐ It is parasitic   Ⓑ It is slipper-shaped

Ⓒ It can change its shape   Ⓓ It has a whip-like flagellum at one end.

91. Which nutrient is required in small amounts, but is essential for various metabolic processes in the body?

Ⓐ Carbohydrates   Ⓑ Proteins   Ⓒ Fats   Ⓓ Vitamins

92. Transpiration in plants takes place through :

Ⓐ Stomata   Ⓑ Cuticle   Ⓒ Lenticels   Ⓓ All of these

93. Name the organ that stores bile

Ⓐ Liver   Ⓑ Gall bladder   Ⓒ Stomach   Ⓓ Large intestine

94. Olfactoreceptors occur in —

Ⓐ Nasal cavity   Ⓑ Buccal cavity   Ⓒ Lungs   Ⓓ Skin

95. Choose the odd one out:

Ⓐ Pons   Ⓑ Arachnoid   Ⓒ Duramater   Ⓓ Piamater

Case based Questions (96–100):

Unicellular organisms are single-celled whereas multicellular organisms are made up of many cells. Depending upon the complexity of the body, reproduction in unicellular organisms is different from that of multicellular organisms. Unicellular organisms reproduce by asexual means. In multicellular organisms, reproduction can be either sexual or asexual. The mode of reproduction in an organism depends upon the favourability of conditions prevailing.

96. Reproduction is synonymous with growth in

Ⓐ unicellular algae, bacteria and *Amoeba*

Ⓑ algae and fungi

Ⓒ fungi and ferns

Ⓓ algae and fungi

97. The figure given below represents a type of asexual reproduction.
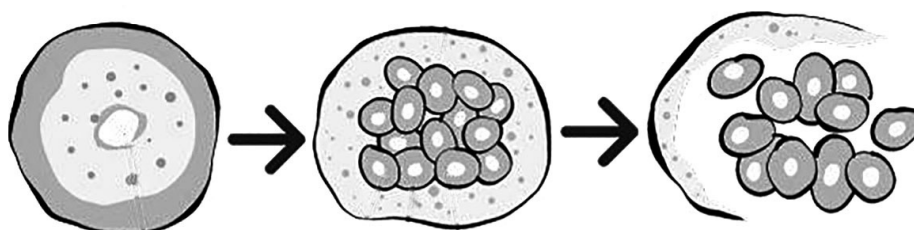
The given figure shows the

Ⓐ multiple fission of *Paramecium*

Ⓑ multiple fission in encysted *Amoeba*

Ⓒ multiple fission in *Plasmodium*

Ⓓ multiple fission in yeast

98. Study the figure given below that represents the vegetative reproduction in plants.
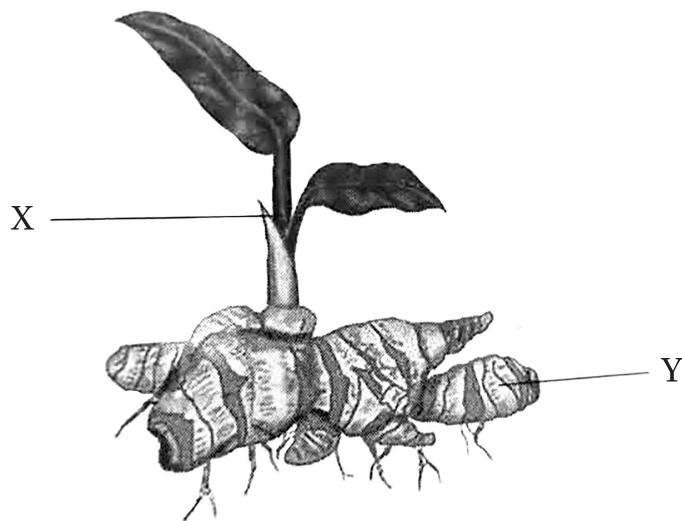
Identify X and Y

	X	Y
(i)	Node	Vegetative propagule
(ii)	Vegetative propagule	Internode
(iii)	Vegetative propagule	Node
(iv)	Internode	Node

Ⓐ (i)   Ⓑ (ii)   Ⓒ (iii)   Ⓓ (iv)

99. Which of the following statement(s) is (are) true?

I. In sexual reproduction, the offspring produced are morphologically and genetically identical to the parent.

II. Zoospores are asexual reproductive structures.

III. In asexual reproduction, a single parent produces offspring with or without the fusion of gametes.

IV. Conidia are asexual structures in *Penicillium*.

Ⓐ I and II only   Ⓑ II and III only   Ⓒ I, II and III only   Ⓓ II and IV

100. Which part of the flower would turn to a fruit post fertilisation?

Ⓐ Style   Ⓑ Anther   Ⓒ Stigma   Ⓓ Ovary