



Monthly Progressive Test

Class: X

Subject: PCMB



Test Booklet No.: MPT01

Test Date:

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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 MPT01 07072025.
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 scibble 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 ray of light passes from water into air, the angle of refraction will be

(A) equal to the angle of incidence	(B) > the angle of incidence
(C) < the angle of incidence	(D) 45°
2. The speed of light in water if r.i of water 4/3.

(A) 2×10^8 m/s	(B) 2.25×10^8 m/s	(C) 1.5×10^8 m/s	(D) 2.75×10^8 m/s
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3. Refractive index of diamond is 2.5 and that of glass is 1.5. The refractive index of diamond with respect to glass is

(A) 2.67	(B) 2.5	(C) 1.4	(D) 1.67
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4. Critical angle from diamond-air interface is

(A) 42°	(B) 40°	(C) 24°	(D) 30°
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5. Appearance of water without its actually presence is called

(A) image	(B) diffraction	(C) spectrum	(D) mirage
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6. Absolute refractive indices of diamond and water are 2.42 and 1.33, respectively. The value of refractive index of water with respect to diamond is

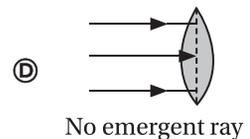
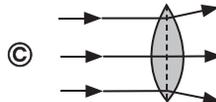
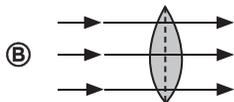
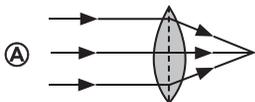
(A) 0.595	(B) 0.4	(C) 0.3	(D) 0.2
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7. The refractive index of diamond is 2.42 and that of glass is 1.52. How much faster does light travel in glass than in diamond?

(A) 1.8	(B) 1.59	(C) 1.4	(D) 1.2
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8. Both a spherical mirror and a thin spherical lens have a focal length of (-15 cm). Then the type of mirror and lens are

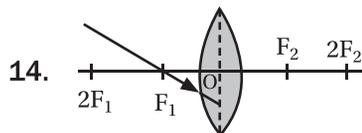
(A) convex mirror	(B) concave mirror
(C) concave lens only	(D) both (B) and (C) are correct
9. When a plane mirror is placed horizontally on levelled ground at a distance of 40 m from the foot of tower, the top of the tower and its image in the mirror subtend an angle of 90° at the eye. Then the height of tower is

(A) 20 m	(B) 30 m	(C) 40 m	(D) 45 m
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10. A spherical mirror produces an image of magnification -1 on a screen placed at a distance of 50 cm. The type of mirror is

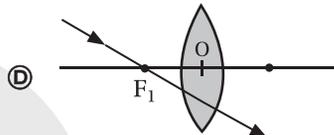
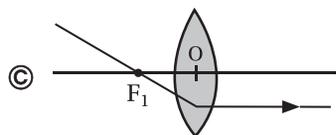
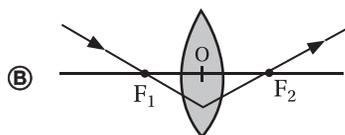
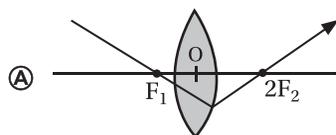
(A) convex only	(B) concave only	(C) convex or concave	(D) difficult to say
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11. A convex lens made of a material of refractive index n_2 is kept in a medium of refractive index n_1 . A parallel beam of light is incident on the lens. If $n_1 > n_2$, then select the correct figure.



12. The focal length of a lens having power $-2D$ is
 (A) 50 cm (B) -50 cm (C) 25 cm (D) -100 cm
13. Two lenses of power $-2.5D$ and $+1.5D$ are placed in contact. The focal length of this combination is
 (A) -50 cm (B) $+50$ cm (C) -100 cm (D) -75 cm



Select the correct ray diagram

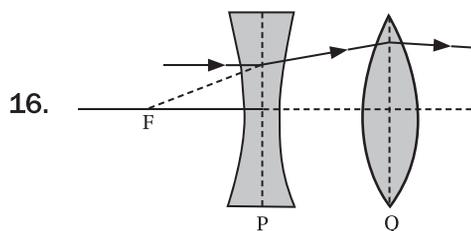


15. As the refractive indices of water, glass and sulphuric acid as 1.33, 1.53 and 1.43 respectively, hence light travels slowest in
 (A) sulphuric acid (B) glass (C) water (D) data insufficient

ASSERTION AND REASON (16-19):

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

- 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.



Assertion (A) : It is found the incident and emergent ray both are parallel to principal axis.

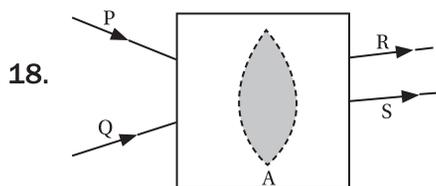
Reason (R) : As F is focus point of lens P and as well lens Q.

- (A) A (B) B (C) C (D) D

17. **Assertion (A) :** It is possible to burn a piece of paper using a convex lens in the day light without using the match-box or any direct flame.

Reason (R) : As the paper is kept at the focus of convex lens in day light.

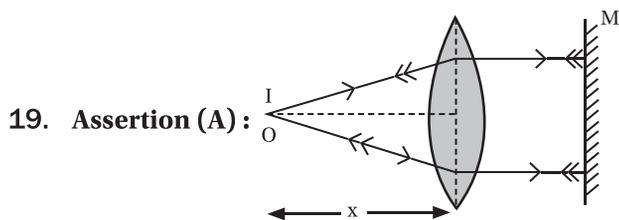
- (A) A (B) B (C) C (D) D



Assertion (A) : The two incident rays P and Q which emerge as parallel rays R and S.

Reason (R) : The box A represents convex lens.

- (A) A (B) B (C) C (D) D



Reason (R) : As $x =$ focal length of lens.

- (A) A (B) B (C) C (D) D

CASE BASED QUESTIONS (20-22):

I. Atmospheric Refraction

We know that the earth is surrounded by a layer of air called the atmosphere. The density of air in the atmosphere is not the same everywhere, it is greatest at the earth's surface and goes on decreasing as we move higher. The refractive index of air depends on the density-higher the density of air, greater its refractive index. Under standard conditions of temperature, humidity etc., near the earth's surface, the refractive index of air is slightly greater than 1. It decreases with height and is very close to 1 in the outermost region of the atmosphere.

20. When we see objects above the heated surface of roads on hot summer days or above a large burning stove or chulha, the objects viewed through it seem to flicker or sway.
 (A) true (B) false (C) sometimes true (D) we cannot conclude
21. The sun is visible even when the sun is just below the horizon. It is due to
 (A) atmospheric reflection (B) atmospheric dispersion
 (C) atmospheric refraction (D) interference
22. At sunset, we see sun even after it has just dipped below the horizon. This increases day light, 2 minutes at sunset
 (A) false (B) true (C) sometimes true (D) we can't say

CASE BASED QUESTIONS (23-25):

II. Total Internal Reflection

Let a ray of light travel from a medium of higher refractive index (n_1) to a medium of lower refractive index (n_2). After refraction, the ray of light bends away from the normal. Therefore, the angle of refraction is greater than the angle of incidence ($r > i$). Now if the angle of incidence increases, the angle of refraction r increases. For a particular value of $i = i_c$ (the critical angle), the angle of refraction becomes 90° . The refracted ray then comes out parallel to the surface separating the two media. When the angle of incidence is $> i_c$, this would bring the ray back into the first medium.

23. $\sin i_c =$

- (A) $\frac{n_2}{n_1}$ (B) $\frac{n_1}{n_2}$ (C) $\frac{n_1}{n_2} - 0.2$ (D) $\frac{n_2}{n_1 + n_2}$

24. Optical fibre works on the principle of
 (A) dispersion (B) total internal reflection
 (C) scattering (D) interference
25. The critical angle for a pair of media is less for the violet light and more for red light.
 (A) false (B) sometimes false (C) true (D) data insufficient

Chemistry

26. The correct products when zinc nitrate strongly heated?
 (A) $\text{ZnO}_2 + \text{NO}_2 + \text{O}_2$ (B) $\text{ZnO}_2 + \text{N}_2 + \text{O}_2$ (C) $\text{Zn} + \text{NO}_2 + \text{O}_2$ (D) $\text{ZnO} + \text{NO}_2 + \text{O}_2$
27. In cement industry, which of the following compound is widely used?
 (A) CaC_2 (B) CaO (C) CaCl_2 (D) $\text{Ca}(\text{HCO}_3)_2$
28. Reaction between Zinc and Copper sulphate solution is an example of
 (A) Simple displacement reaction (B) Double displacement reaction
 (C) Thermal decomposition reaction (D) Photo chemical reaction
29. How many NaCl molecules will be produced when 1 molecule sodium sulphate reacts with 1 molecule barium chloride ?
 (A) 1 (B) 1.5 (C) 2 (D) 2.5
30. Which of the following statement for the reaction is correct?

$$\text{ZnO} + \text{CO} \longrightarrow \text{Zn} + \text{CO}_2$$
 (A) ZnO is oxidised (B) ZnO is reduced (C) CO is reduced (D) CO_2 is oxidised
31. A reducing agent generally :
 (A) loses the electron(s) (B) gain the electron(s) (C) is in gaseous state (D) both (B) & (C)
32. Which of the following elements undergoes corrosion?
 (A) Gold (B) Silver (C) Platinum (D) All of these
33. The function of anti oxidants is to prevent oxidation. Which of the following is/are antioxidant ?
 (A) BHA (Butylated hydroxy anisole) (B) BHT (Butylated hydroxy toluene)
 (C) Sodium benzoate (D) All of these
34. In the given equation 'X' stands for : $2\text{Al} + x \text{H}_2\text{SO}_4 \longrightarrow \text{Al}_2(\text{SO}_4)_3 + 3\text{H}_2$
 (A) 2 (B) 3 (C) 1 (D) 5
35. When barium chloride reacts with sodium sulphate then the colour of the precipitation is :
 (A) Brown (B) Yellow (C) Green (D) White
36. Which among the following is a polymerisation reaction?
 (A) $\text{NH}_4\text{CNO} \xrightarrow{\Delta} \text{NH}_2\text{CONH}_2$ (B) $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \longrightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{Energy}$
 (C) $\text{NaCl} + \text{AgNO}_3 \longrightarrow \text{AgCl} + \text{NaNO}_3$ (D) $n\text{CH}_2 = \text{CH}_2 \xrightarrow[\text{high pressure}]{\text{high temp}} (-\text{CH}_2 - \text{CH}_2 -)_n$

37. Which of the following is endothermic in nature?

- Ⓐ Mixing barium hydroxide in ammonium chloride
- Ⓑ Dilution of concentrated sulphuric acid
- Ⓒ Addition of water to quicklime
- Ⓓ Addition of hydrochloric acid to sodium hydroxide

38. Match the following:

Column-I		Column-II	
(a)	$A \longrightarrow A^+ + e^\ominus$	(i)	Exothermic reaction
(b)	$A + e^\ominus \longrightarrow A^\ominus$	(ii)	Endothermic reaction
(c)	$A + B \longrightarrow C + \text{Energy}$	(iii)	Oxidation reaction
(d)	$A + B \longrightarrow C - \text{Energy}$	(iv)	Reduction reaction

- Ⓐ (a)(ii), (b)(iv), (c)(i), (d)(iii)
- Ⓑ (a)(iv), (b)(iii), c(i), (d)(ii)
- Ⓒ (a)(iii), (b)(i), (c)(ii), (d)(iv)
- Ⓓ (a)(iii), (b)(iv), (c)(i), (d)(ii)

39. A dilute ferrous sulphate solution was gradually added to the beaker containing acidified permanganate solution. The light purple colour of the solution fades and finally disappears. Which of the following is the correct explanation for the observation?

- Ⓐ KMnO_4 is an oxidising agent, it oxidises FeSO_4 .
- Ⓑ FeSO_4 acts as an oxidising agent and oxidises KMnO_4 .
- Ⓒ The colour disappears due to dilution no reaction is involved.
- Ⓓ KMnO_4 is an unstable compound and decomposes in presence of FeSO_4 to a colourless compound.

40. Which of the following is (are) an endothermic process(es) ?

- (i) Dilution of sulphuric acid
- (ii) Sublimation of dry ice
- (iii) Condensation of water vapour
- (iv) Evaporation of water

- Ⓐ (i) & (iii)
- Ⓑ (ii) only
- Ⓒ (iii) only
- Ⓓ (ii) and (iv)

Assertion and Reason: (Q. 41 - 44)

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

- 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.

41. **Assertion (A):** Magnesium ribbon burns in open air

Reason (R): Oxygen helps in burning of any substance.

- Ⓐ a
- Ⓑ b
- Ⓒ c
- Ⓓ d

42. **Assertion (A):** Every chemical equation must be balanced

Reason (R): It is mandatory to make the number of atoms of reactants equal to that of products to balance

- Ⓐ a Ⓑ b Ⓒ c Ⓓ d

43. **Assertion (A):** Reaction between methane and oxygen is an example of endothermic reaction.

Reason (R): Both methane and oxygen are gaseous

- Ⓐ a Ⓑ b Ⓒ c Ⓓ d

44. **Assertion (A):** Quick lime reacts with water vigorously to produce Ca(OH)_2

Reason (R): Ca(OH)_2 exist in aqueous state and CaO exists in solid state.

- Ⓐ a Ⓑ b Ⓒ c Ⓓ d

Case Base Question (Q45 to Q47)

Chemical reaction are of various types. In case of oxidation reaction oxygen is added to a substance and in case of reduction reaction oxygen is removed. In case of displacement reaction, one cationic part is displaced by another cation and the anion does not suffer any change. In case of double displacement reaction, both cation and anion face changes. In case of decomposition reaction a large compound turns into smaller compounds.

45. When copper oxide reacts with hydrogen to form copper and water then the correct statement is :

- Ⓐ Copper oxide get oxidised and hydrogen gets reduced
 Ⓑ Copper oxide get reduced and hydrogen gets oxidised
 Ⓒ It is an oxidation - reduction reaction not a displacement reaction.
 Ⓓ It is a displacement reaction not an oxidation - reduction reaction.

46. Find out the correct statements

- (i) A displacement reaction is always considered as an oxidation reduction reaction.
 (ii) All double displacement reaction are oxidation reduction reaction.
 (iii) Anions do not face change during displacement reaction.

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

47. Lead nitrate is heated strongly. In this case :

- Ⓐ Lead is oxidised Ⓑ Lead is reduced
 Ⓒ Cationic displaced Ⓓ Lead neither gets oxidised nor reduced

Case Base Question (Q48 to Q50)

In case of combination reactions, some compounds react with each other form large compods. In case of decomposition large compounds. In case of decomposition reaction. Large compound break into small compounds by heating strongly or by electrolysis reaction or in some cases sunligh causes it. Decomposition of food and vegetables are done b bacteria and virus. In both cases, physical states of reactants and products may or may not same.

48. Quick lime reaction with water to produced slaked lime. The correct product is

- Ⓐ CaCO_3 Ⓑ Ca(OH)_2 Ⓒ $\text{Ca(HCO}_3)_2$ Ⓓ CaSO_4

49. For combination reactions
- (A) Always heat is evolved (B) heat is always absorbed
 (C) Colour change is mandatory (D) heat can be absorbed or evolved
50. When lead nitrate is decomposed then the correct solid product will be :
- (A) Lead (iv) oxide (B) metallic lead (C) lead oxide (D) lead sulphide

Mathematics

51. A test had 200 questions. Each correct answer carried 2 marks. Each wrong answer carried $-\frac{1}{2}$ mark and unanswered questions carried no mark. Ajay attempted all the questions in the test and scored 360 marks. What would his marks be, if for each correct answer he got only $\frac{1}{2}$ mark and for each wrong answer he lost 2 marks?
- (A) 80 (B) 60 (C) 40 (D) 100
52. Find the value of K if the equations $3x + \left(\frac{k}{3} + 2\right)y = 1$ and $kx + 2ky = 4$ have infinite solutions
- (A) 10 (B) 12 (C) 14 (D) 16
53. The sum of a two-digit number and its reverse is 99. How many two-digit numbers satisfy this condition?
- (A) 9 (B) 8 (C) 5 (D) 4
54. The roots of the quadratic equation $(m-k+\ell)x^2 - 2mx + (m-\ell+k) = 0$ are
- (A) $1, \frac{\ell+m-k}{k+m-\ell}$ (B) $1, \frac{2m}{\ell+m-k}$ (C) $1, \frac{k+m-\ell}{\ell+m-k}$ (D) $1, \frac{2k}{k-m+\ell}$
55. If $\left(x^2 + \frac{1}{x^2}\right) - 4\left(x + \frac{1}{x}\right) + \frac{23}{7} = 0$, the value of $\left(x + \frac{1}{x}\right)$ is
- (A) 2 (B) 3 (C) 4 (D) none of these
56. The product of all the factors of 36 is
- (A) $36^4(6)$ (B) $36^8(6)$ (C) 36^4 (D) none of these
57. Express the recurring decimal $1.\overline{116}$ in the form of a fraction
- (A) $\frac{367}{330}$ (B) $\frac{221}{198}$ (C) $\frac{62}{55}$ (D) $\frac{223}{198}$
58. The LCM and HCF of 2 numbers are 120 and 6 respectively. If one of the numbers is 30, find the prime factors of other
- (A) 2, 3 (B) 3, 5 (C) 3, 7 (D) 5, 11
59. If $a^3 + b^3 + c^3 = 3abc$, then
- (A) $a + b + c = 0$ (B) $a = b = c$
 (C) Both (A) & (B) are true (D) At least one of (A) & (B) is true

60. Let $p(x)$ be a polynomial with integer coefficients such that $p(m) - p(n)$ divides $(m^2 - n^2)$ for all integers m and n . If $p(0) = 1$ and $p(1) = 2$, find the largest possible value of $p(9)$.
- (A) 37 (B) 50 (C) 65 (D) none of these
61. The remainder when $(7m + 1)(7m + 3)(7m + 4)$ is divided by 7 is
- (A) 4 (B) 6 (C) 5 (D) 2
62. If $x^n + py^n + qz^n$ be divisible by $x^2 - (ay + bz)x + abyz$ then the value of $\left(1 + \frac{p}{a^n} + \frac{a}{b^n}\right)$ is
- (A) 0 (B) 1 (C) 2 (D) 3
63. How many positive integers (a, b) are there such that $\gcd(a, b) = 1$ and $\frac{a}{b} + \frac{14b}{9a}$ is an integer ?
- (A) 1 (B) 2 (C) 3 (D) 4
64. If $p(x) = ax^2 + bx + c$ and $(a + c) = b$, then one of the zeroes is
- (A) $\frac{b}{a}$ (B) $\frac{c}{a}$ (C) $\frac{-c}{a}$ (D) $\frac{-b}{a}$
65. If one zero of the polynomial $(p^2 - 2)x^2 + 18x + p$ is reciprocal of the then p is equal to
- (A) 1 (B) -2 (C) Both (A) & (B) are true (D) none of these

Assertion and Reason: (Q 66 – 69)

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

- 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.

66. **Assertion (A):** $y = f(x) = x^2 + x + 1$ and this curve intersect y axis at $(0,1)$ so there is 1 zero of this polynomial.
Reason (R): If for the given polynomial $p(x)$, $p(\alpha) = 0$ then α is a zero of $p(x)$.
- (A) A (B) B (C) C (D) D
67. **Assertion (A):** For a positive integer n , define $d(n) =$ the number of positive divisor of n . Then $d(d(d(20)))$ is 3.
Reason (R): If a number n can be expressed as
- $$n = p_1 a^1, p_2 a^2, \dots, p_k a^k$$
- where p_1, p_2, \dots, p_k are distinct prime numbers and a_1, a_2, \dots, a_k are their respective exponents. Then total number of divisors of n is given by $(a_1 + 1)(a_2 + 1) \dots (a_k + 1)$
- (A) A (B) B (C) C (D) D
68. **Assertion (A):** If $3(a^2 + b^2 + c^2) = (a + b + c)^2$ then $a = b = c$
Reason (R): If $x, y \in \mathbb{R}$ and $x^2 + y^2 = 0 \Rightarrow x = y = 0$
- (A) A (B) B (C) C (D) D
69. **Assertion (A):** A decrease of 2 paise per dozen in the price of pins allows a person to buy 6 more pins for 42 paise. The current price per dozen of the pins is 14 paise.

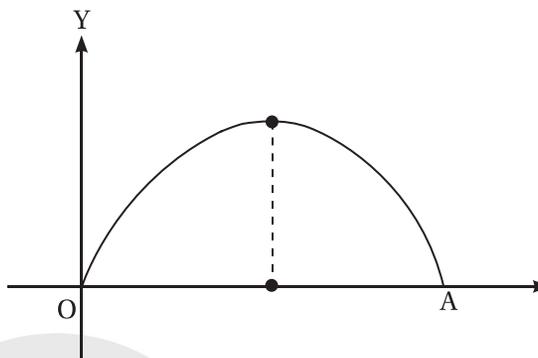
Reason (R) : If $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

- (A) A (B) B (C) C (D) D

Case Study - 1 : (Q. 70 to Q. 72)

A school designing a parabolic garden path in the shape of a U-shaped arch, where the height of the arch (in meters) at any point x meters from the left end is modeled by the quadratic equation.

$$h(x) = -x^2 + 6x.$$



The path starts at point O (where $x = 0$) end at point A (where the height again becomes zero). The highest point of the arch lies at the mid point between A and B.

Based on the above paragraph answer the following questions.

70. What is the total width of the garden from point O to point A ?
 (A) 4 unit (B) 6 unit (C) 8 unit (D) none of these
71. This garden is symmetrical about the line
 (A) $x = 0$ (B) $y = 0$ (C) $x = 3$ (D) $y = 3$
72. The maximum height of the garden arch is
 (A) 3 unit (B) 6 unit (C) 9 unit (D) 12 unit

Case Study II : (Q73 to Q75)

Ravi is a mathematics enthusiast who loves playing with numbers. Oneday, he decided to explore the concept of real numbers using two positive integers, say 252 and 105. He want to find the largest number that can divide both numbers exactly. He then reads that this concept connected to Euclid's Division lemma. After this, he goes on to explore whether $\sqrt{2}$ is rational and how terminating and non-terminating decimals are related to prime factorization of denominators.

Based on the above paragraph answer the following questions :

73. Ravi wants to find the greatest number that exactly divide both 252 and 105. What concept should he use ?
 (A) Least common Multiple (B) Euclid's division Lemma
 (C) Irrational number (D) Sieve of eratosthenes
74. If for some integers x and y , $252x + 105y = 21$ then
 (A) any common divisor of 252 and 105 is greater than 21
 (B) any common divisor of 252 and 105 is less than 21
 (C) any common divisor of 252 and 105 does not divide 21
 (D) none of these

75. Ravi investigates the decimal expansion of $\frac{17}{40}$. What type of decimal expansion will it have ?
- (A) Non-terminating repeating (B) Non-terminating non-repeating
(C) Terminating (D) Irrational

Biology

76. Where are chloroplasts mainly found in leaves?
- (A) Guard cells (B) Vascular bundles
(C) Mesophyll tissue (D) Lower epidermis containing stomata
77. Which of the following events of photosynthesis does not require sunlight?
- (A) Excitation of chlorophyll molecules (B) Evolution of oxygen
(C) Splitting of water molecules (D) Reduction of CO₂ to carbohydrate
78. Name the substrate X of the given reaction.
- $$\text{X} \xrightarrow{\text{Ptyalin}} \text{Maltose}$$
- (A) Glucose (B) Starch (C) Cellulose (D) Fats
79. Which among the following organisms, depend on another living organism, for nutrition?
- (A) Decomposers (B) Algae (C) *Amoeba* (D) None of the above
80. Which of the following structures help in gaseous exchange in the woody stem of a plant?
- (A) Stomata (B) Lenticels (C) Guard cells (D) All of the above
81. As compared to terrestrial organisms, the rate of breathing in aquatic organisms is
- (A) faster because they need more oxygen for their survival
(B) faster because the amount of dissolved oxygen in water is fairly low
(C) slower because the amount of dissolved oxygen in water is fairly low
(D) slower because the capacity of water of dissolving atmospheric air is limited
82. Which chamber of the heart generates the force required to pump blood to all parts of the body?
- (A) Right atrium (B) Right ventricle (C) Left atrium (D) Left ventricle
83. There is some mixing of oxygenated and deoxygenated blood in the heart of amphibians and reptiles because:
- (A) They have two atria (B) They have one ventricle
(C) They are cold blooded (D) They are sluggish animals
84. Choose the incorrectly matched pair:
- (A) Kidney - purification of blood (B) Renal artery - carries deoxygenated blood to kidneys
(C) Ureter - connects kidney to urinary bladder (D) Urethra - urination

85. Choose the odd one out
- (A) Removal of drugs (B) Removal of excess water
(C) Removal of CO₂ (D) Removal of faeces
86. Which organ does not produce any digestive enzyme?
- (A) Pancreas (B) Liver (C) Stomach (D) Duodenum
87. The oxygen in photosynthesis is released from:
- (A) CO₂ (B) H₂O (C) Carbohydrates (D) Chlorophyll
88. Which of the following cannot be considered to be an essential life process for an individual living thing?
- (A) Growth (B) Irritability (C) Reproduction (D) Respiration
89. Transpiration causes water to overcome
- (A) Cohesive and adhesive forces (B) Root pressure
(C) Gravity (D) All of the above
90. Transportation of food in plants occurs in the form of _____
- (A) Glucose (B) Fructose (C) Sucrose (D) Starch

Assertion and Reason:

Directions: The questions 91 to 94 have two statements – Assertion (A) and Reason (R). Of the two statements, mark the correct answer from the options given below:

- A: Both A and R are true and R is the correct explanation of A.
 B: Both A and R are true but R is not the correct explanation of A.
 C: A is true but R is false.
 D: A is false but R is true.

91. **Assertion (A):** Pulmonary artery is an exceptional artery.

Reason (R): Pulmonary artery carries deoxygenated blood.

- (A) A (B) B (C) C (D) D

92. **Assertion (A):** Artificial kidney is different from natural kidney.

Reason (R): The process of selective reabsorption does not occur in artificial kidney.

- (A) A (B) B (C) C (D) D

93. **Assertion (A):** The process of protein digestion starts in the stomach.

Reason (R): The enzyme trypsin digests proteins.

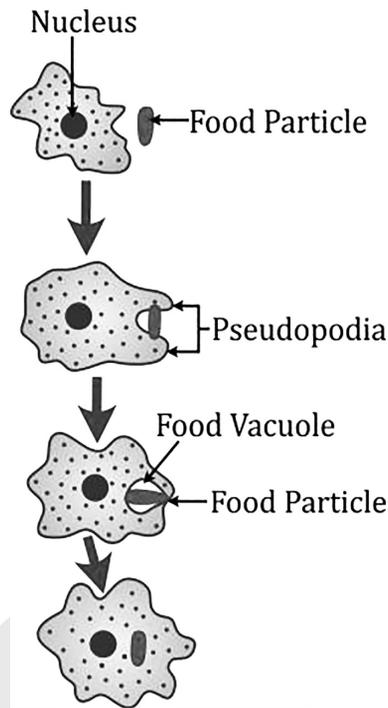
- (A) A (B) B (C) C (D) D

94. **Assertion (A):** All unicellular organisms respire anaerobically.

Reason (R): Anaerobic respiration helps in faster generation of energy.

- (A) A (B) B (C) C (D) D

Study the diagram carefully and answer the following questions: (95-97)



95. Which process has not been shown in the diagram above?
 (A) Phagocytosis (B) Digestion (C) Absorption (D) Egestion
96. Name the type of nutrition shown in the above diagram.
 (A) Saprotrophic (B) Parasitic (C) Insectivory (D) None of the above
97. Which of the following animals will show the same type of nutrition as the organism in the figure.
 (A) Deer (B) Tiger (C) Bear (D) All of the above

Read the given passage and answer the following questions: (98-100)

During the breathing cycle, when air is taken in and thrown out, the lungs always contain a residual volume of air. It provides sufficient time for oxygen to be absorbed and CO_2 to be released. Haemoglobin is the respiratory pigment which transports oxygen in the human body.

98. At an altitude of 3000 m, a person would feel extremely breathless even on the slightest exertion. This is due to :
 (A) Higher availability of CO_2 in the high altitudes
 (B) Lower availability of O_2 in the high altitudes
 (C) Lower availability of both O_2 and CO_2 in the high altitudes
 (D) Lower temperature causes the blood to freeze
99. When pyruvic acid breaks down in the absence of oxygen, what could be the products formed?
 (A) Carbon dioxide (B) Lactic acid (C) Ethyl alcohol (D) All of the above
100. How many molecules of ATP are released if one molecule of glucose is broken down sequentially, involving both cytoplasm and mitochondria?
 (A) 38 (B) 28 (C) 18 (D) 48