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Roll No. :

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Total : 100 Questions

Time : 2 Hours

CLASS

10

ENGLISH MEDIUM

- ◆ The paper consists of Four sections

MATHS : Section A : (20 Questions), Section B : (5 Questions)

CHEMISTRY : Section A : (20 Questions), Section B : (5 Questions)

BIOLOGY : Section A : (20 Questions), Section B : (5 Questions)

PHYSICS : Section A : (20 Questions), Section B : (5 Questions)

- ◆ Each question carries 1 mark. For each correct response, the candidate will get 1 marks. For each incorrect response, 0.25 marks will be deducted from the total scores.
- ◆ All questions are compulsory.
- ◆ Use of calculator is not permitted. Write your Name, Roll No. and Class clearly on the OMR SHEET and do not forget to sign it.
- ◆ To mark your choice of answers by darkening the circles in the OMR SHEET, use an HB Pencil or a Blue / Black ball point pen only.
E.g. 11. (A) ● (C) (D)
- ◆ Rough work should be done in the blank space provided in the booklet.
- ◆ Return the OMR SHEET to the invigilator at the end of the exam.
- ◆ Write your Roll No. on the Question Paper too and take it home for future reference.

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MATHS**SECTION - A**

1. If p and q are positive integers and $(p - q)$ is an even number, then $(p^2 - q^2)$ will always be divisible by

(a) 4 (b) 6
(c) 12 (d) 8

2. If α, β are the zeros of polynomial

$$p(x) = x^2 + 2x - 3, \text{ then } \frac{1}{\alpha} + \frac{1}{\beta} = ?$$

(a) $\frac{4}{3}$ (b) $-\frac{4}{3}$
(c) $\frac{2}{3}$ (d) None of these

3. Value of x, y which satisfies $3x + 5y = 12xy$ and $7x - 2y = 4xy$ are

(a) $x = \frac{37}{31}, y = \frac{41}{31}$ (b) $y = \frac{41}{44}, x = \frac{41}{72}$
(c) $x = 1, y = 2$ (d) $y = \frac{32}{41}, x = \frac{44}{41}$

4. Jigar wanted to type first 100 natural numbers. How many times does he have to press the key?

(a) 190 (b) 192
(c) 194 (d) Data inadequate

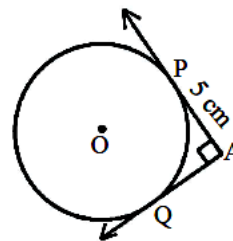
5. The leading coefficient of a polynomial $P(x)$ of degree 3 is 2006. Suppose that $P(1) = 5$, $P(2) = 7$ and $P(3) = 9$, then find $P(x)$.

(a) $2006(x-1)(x-2)(x-3) + 2x + 3$
(b) $2006(x-1)(x-2)(x-3) + 2x + 1$
(c) $2006(x-1)(x-2)(x-3) + 2x - 1$
(d) $2006(x-2)(x-3)(x-1) - (2x - 3)$

6. $3 \cos^2 30^\circ + \sec^2 30^\circ + 2 \cos 0^\circ + 3 \sin 90^\circ - \tan^2 60^\circ =$

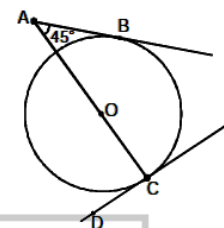
(a) $\frac{65}{12}$ (b) $\frac{67}{12}$
(c) $\frac{69}{12}$ (d) $\frac{71}{12}$

7. In the adjoining figure, the pair of tangents AP and AQ are drawn from an external point A to a circle with centre O are perpendicular to each other. If the length of tangent AP is 5 cm, then the radius of the circle is



(a) 10 cm (b) 7.5 cm
(c) 5 cm (d) 2.5 cm

8. In the figure given below O is the centre of the circle. Line AB intersects the circle only at point B and line DC intersects the circle only at point C . If the circle has a radius of 2 cm, then AC is

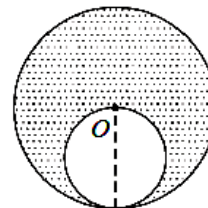


(a) 4 cm (b) $2 + \sqrt{2}$ cm
(c) $4 + \sqrt{2}$ cm (d) $2 + 2\sqrt{2}$ cm

9. Formula represents the relation between the measures of central tendency.

(a) $Z = 2\bar{x} - 3M$ (b) $Z = 3M - 2\bar{x}$
(c) $Z = 3\bar{x} - 2M$ (d) $Z = 2M - 3\bar{x}$

10. In the given figure, the larger circle has the radius 10 cm with O as its centre, then area of the shaded region will be



(a) $\frac{1056}{7} \text{ cm}^2$ (b) $\frac{1044}{5} \text{ cm}^2$
(c) $\frac{1650}{7} \text{ cm}^2$ (d) None of these

11. What is the probability of getting doublet, when throwing two dice together?

(a) $\frac{1}{10}$ (b) $\frac{1}{5}$
(c) $\frac{3}{10}$ (d) $\frac{1}{6}$

12. The points (0, -2), (3, 0) and (-3, -4) lie on a graph of a linear polynomial, then the zero of the polynomial is

(a) 0 (b) -2
(c) 3 (d) -3

13. **Statements I:** The graph of $P(x) = 3 - 6x + 3x^2$ is a curve open upwards.

Statements II: The product of the zeros of polynomial $x^2 - 4x + 3$ is 4.

(a) Statement I is true Statement II is false.
(b) Statement I is false Statement II is true.
(c) Both Statement I and Statement II are true.
(d) Both Statement I and Statement II are false.

14. **Assertion (A):** Common difference of the AP -5, -1, 3, 7, ... is 4.

Reason (R): Common difference of the AP $a, a + d, a + 2d, \dots$ is given by $d = a_2 - a_1$.

(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Assertion is false but reason is true.

15. Match the column.

	Column-I		Column-II
P.	IF A(1, 2) and B(3, -2) are given points, then mid point of AB.	1.	2
Q.	For an A.P., $S_n - 2S_{n-1} + S_{n-2} = (n > 2)$	2.	4
R.	The smallest Composite number is	3.	d
S.	The smallest even prime number is	4.	(2, 0)

(a) $P \rightarrow 4, Q \rightarrow 3, R \rightarrow 2, S \rightarrow 1$
(b) $P \rightarrow 3, Q \rightarrow 4, R \rightarrow 1, S \rightarrow 2$
(c) $P \rightarrow 1, Q \rightarrow 2, R \rightarrow 3, S \rightarrow 4$
(d) $P \rightarrow 1, Q \rightarrow 3, R \rightarrow 2, S \rightarrow 4$

16. Select true statements.

(A) The mean of first n natural numbers is $\frac{(n+1)}{2}$.

(B) The decimal expansion of $\frac{337}{125}$ is 2.698.

(C) The conjugate surd of $3 + \sqrt{2}$ is $3 - \sqrt{2}$.

(D) The degree of the polynomial $p(x) = 3x - x^4 + x^2 + 2x^3 + 7$ is 3.

(a) A and B (b) A and C
(c) C and D (d) B and C

17. A parallelogram ABCD whose three vertices are A (-2, 3), B (6, 7) and C (8, 3). Find out false statements among A, B, C and D.

(A) The fourth vertex D is (0, -1).

(B) Length of CD is $5\sqrt{5}$.

(C) Intersection point of AC and BD is (4, 3).

(D) Mid point of AB is (2, 5).

(a) A and B (b) A and C
(c) C and D (d) B and C

18. If an ordered pair satisfying the equations $2x - 3y = 18$ and $4x - y = 16$ also satisfies the equation $5x - py - 23 = 0$.

Consider true statements among A, B, C and D.

(A) Above first two equations has unique solution.

(B) The value of p is 2.

(C) The solution of equations is (-3, 4).

(D) Above first two equations have no solutions.

(a) A and B (b) A and C
(c) C and D (d) B and C

19. Identify the correct statements:

(A) The quadratic equation $X^2 + 7x - 60$ has two equal roots.

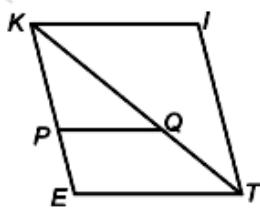
(B) The value of $a_{30} - a_{20}$ for the A.P. -9, -14, -19 is -50.

(C) If a, b, c are in A.P., then the straight lines $ax + by + c = 0$ will always pass through (1, -2).

(D) The discriminate (D) of quadratic equation $2x^2 + x + 4 = 0$ is a positive number.

(a) A and B (b) A and C
(c) C and D (d) B and C

20. KITE is a parallelogram in which P and Q are points on KE and KT respectively such that $PQ \parallel ET$. If $PQ = 4$ cm, $KQ = (4x - 5)$ cm, $QT = (5x - 4)$ cm, $KP = (x - 1)$ cm and $PE = x$ cm



Identify correct statements :

- (A) The value of x is 2.
 (B) Length of IT is 3 cm.
 (C) BPT is necessary to find the x .
 (D) Length of KI is 6 cm.
 (a) A, B and C (b) A and C
 (c) C and D (d) B and C

SECTION-B

21. **Statement I:** The sum of first n odd natural numbers is n^2 .

Statement II: for a given A.P. $T_6 = 12$ & $T_{12} = 72$ then common difference is 10.

- (a) Statement I is true Statement II is false.
 (b) Statement I is false Statement II is true.
 (c) Both Statement I and Statement II are true.
 (d) Both Statement I and Statement II are false

22. **Assertion (A):** The length of a tangent from a point A at 25 cm from the centre of a circle is 24 cm. The radius of the circle is 10 cm.

Reason (R): The tangent to the circle at any point is the perpendicular to the radius.

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
 (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
 (c) Assertion is true but reason is false.
 (d) Assertion is false but reason is true

23. **Assertion (A):** Card numbered as 1, 2, 3, ... 15 are put in a box and mixed thoroughly; one card is then drawn at random. The probability of drawing an even number is $\frac{7}{15}$.

Reason (R): $P(E) + P(\text{not } E) = 1$.

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
 (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
 (c) Assertion is true but reason is false.
 (d) Assertion is false but reason is true.

24. Match the column.

	Column-I		Column-II
P.	The probability of a sure event is...	1.	$\frac{1}{3}$
Q.	The minimum value of $\cos \theta$ is	2.	1
R.	If 3, $4+p$, $6-p$ are in A.P., then p must be equal to	3.	-1
S.	The maximum terms in a cubic polynomials is	4.	4

- (a) $P \rightarrow 2, Q \rightarrow 3, R \rightarrow 1, S \rightarrow 4$
 (b) $P \rightarrow 3, Q \rightarrow 4, R \rightarrow 1, S \rightarrow 2$
 (c) $P \rightarrow 1, Q \rightarrow 2, R \rightarrow 3, S \rightarrow 4$
 (d) $P \rightarrow 1, Q \rightarrow 3, R \rightarrow 2, S \rightarrow 4$

25. The frequency distribution of 63 students marks given below:

Class	0-10	10-20	20-30	30-40	40-50
Frequency	7	15	13	17	11

Consider true statements:

- (A) The Modal class of the frequency distribution is 10-20.
 (B) The cumulative frequency of class 20-30 is 35.
 (C) The Median class of the frequency distribution is 20-30.
 (D) The mode of the above distribution is 34.
 (a) A and B
 (b) A and C
 (c) C and D
 (d) B, C and D

SCIENCE BIOLOGY**SECTION A**

26. If amount of ADH decrease in blood, micturition
 (a) Remains unchanged
 (b) Decreases
 (c) Increases
 (d) None
27. Exchange of genetic material takes place in
 (a) Sexual reproduction
 (b) Asexual reproduction
 (c) Vegetative reproduction
 (d) Budding
28. What is the biological name of 'touch me not' plant?
 (a) *Mimosa verginca*
 (b) *Mimosa pudica*
 (c) *Mimosa ternatea*
 (d) *Mimosa fabaceae*
29. Ovulation occurs under the influence of
 (a) LH (b) FSH
 (c) Progesterone (d) Estrogen
30. Menstrual cycle is controlled by
 (a) Estrogen and progesterone of ovary
 (b) FSH and LH of pituitary
 (c) Both a & b
 (d) FSH of pituitary
31. Oral- contraceptives prevent the
 (a) Fertilisation
 (b) ovulation
 (c) implantation
 (d) entrance of sperms in vagina
32. Which part of the climbers grows in directional movement?
 (a) Tendrils (b) Wall
 (c) Stem (d) Leaves
33. Systole causes
 (a) Entry of blood into lungs
 (b) Entry of blood into heart
 (c) Exit of blood from ventricle
 (d) None of the above
34. What property is responsible for upward and downward movement of roots in response to gravity?
 (a) Hydrotropism (b) Geotropism
 (c) Phototropism (d) Chemotropism
35. Which hormone promotes stem growth in plant
 (a) Adrenaline (b) Mitochondria
 (c) Gibberellins (d) Cytoplasm
36. Menstruation is caused by
 (a) Increase in FSH level
 (b) Fall in oxytocin level
 (c) Fall in progesterone level
 (d) Increase in oestrogen level
37. Which of the following is an IUCD?
 (a) Copper-T (b) Diaphragm
 (c) Oral pills (d) Tubectomy
38. **Statement I:** Condom is a safe contraceptive method to prevent pregnancy.
Statement II: condom prevents transmission of infection during sexual act.
 (a) Statement I is true Statement II is false.
 (b) Statement I is false Statement II is true.
 (c) Both Statement I and Statement II are true.
 (d) Both Statement I and Statement II are false.
39. What is the gap between two neurons called?
 (a) Synapse (b) Skin
 (c) Axon (d) Nerve endings
40. Match the column.
- | | Column-I | | Column-II |
|----|--------------------|----|---|
| P. | Funicle | 1 | Main Part of ovule |
| Q. | Filiform apparatus | 2. | Protection |
| R. | Integument | 3. | Outgrowth in ovule |
| S. | Nucellus | 4. | Connect placenta and main body of ovule |
| | | 5. | Synergids |
- (a) P → 2, Q → 4, R → 3, S → 1
 (b) P → 2, Q → 3, R → 1, S → 4
 (c) P → 2, Q → 3, R → 4, S → 1
 (d) P → 4, Q → 5, R → 2, S → 1

41. Which of the following statements are incorrect about puberty?
- (A) Body shows starting of sexual maturity at this stage.
- (B) The rate of general body growth begins to proceed faster as the reproductive tissues begin to mature.
- (C) Changes taking place in the body parts are different in boys and girls.
- (D) All the changes during puberty takes place very fast.

(a) A and B (b) B and D
(c) C and D (d) A and D

42. Which of the following statements are incorrect for the process of photosynthesis during light and dark reactions?

- (A) Light reaction occurs in stroma region of the chloroplast whereas dark reaction takes place in thylakoid membrane.
- (B) Light reaction generates ATP and NADPH Whereas dark reaction consumes ATP and NADPH.
- (C) Oxygen is released as a by product during light as well as dark reactions.
- (D) Process of assimilation of CO_2 to form carbohydrate does not require light.

(a) A and C (b) B and D
(c) A and B (d) A, B and D

43. Which type of neurons carry message to the brain in a reflex arc?

- (a) Muscles (b) Cell body
(c) Sensory neuron (d) Motor neuron

44. Which of the following statements is/are correct?

- (A) If egg is not fertilised, it remains viable for about one week.
- (B) When a girl is born, ovaries already contain thousands of immature eggs.
- (C) Secretion from prostate gland and seminal vesicles provide nutrition to the sperms.
- (D) Syphilis and gonorrhoea are sexually transmitted diseases caused by virus.

(a) A and B (b) B and C
(c) A and C (d) C and D

45. Sexual reproduction is the mode of reproduction that

- (A) Depend on the involvement of two different gametes.
- (B) Incorporates a process of combining DNA from two gametes.
- (C) Gives better chances of variations as compared to asexual reproduction.
- (D) Gives rise to genetically identical offspring.

(a) A and D (b) B and C
(c) A and B (d) A, B and C

SECTION B

46. **Statement I:** Femidom is a thin rubber tube which acts as a contraceptive measure.

Statement II: Femidom is used by males just before starting of sexual intercourse.

- (a) Statement I is true, Statement II is false.
(b) Statement I is false, Statement II is true.
(c) Both Statement I and Statement II are true.
(d) Both Statement I and Statement II are false.

47. **Assertion (A):** Acquired trait cannot be passed on from one generation to next generation.

Reason (R): Inaccuracy during DNA copying of acquired trait is minimum.

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Assertion is false but reason is true.

48. **Assertion (A):** In male reproductive system, transport of sperm takes place in a fluid which also provide nutrition.

Reason (R): Protective glands and seminal vesicles secret in the vas deferens.

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Assertion is false but reason is true.

49. Match the column.

	Column-I		Column-II
P.	Amoeba	1.	Extensive coiling
Q.	Trypsin	2.	Pseudopodia
R.	Liver	3.	Pancreatic juice
S.	Small intestine	4.	Bile

(a) $P \rightarrow 2, Q \rightarrow 4, R \rightarrow 3, S \rightarrow 1$

(b) $P \rightarrow 2, Q \rightarrow 3, R \rightarrow 1, S \rightarrow 4$

(c) $P \rightarrow 2, Q \rightarrow 3, R \rightarrow 4, S \rightarrow 1$

(d) $P \rightarrow 1, Q \rightarrow 2, R \rightarrow 3, S \rightarrow 4$

50. Which of the following statement are correct about glands?

(A) All glands are ductless

(B) Pancreas is a mixed gland

(C) Glands are specific in their action

(D) Endocrine glands are ductless

(a) A, and B

(b) C and D

(c) A and C

(d) B, C and D

SCIENCE CHEMISTRY

SECTION A

51. Which one of the following process involve chemical reactions?

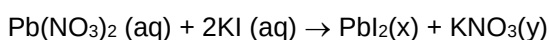
(a) Storing of oxygen gas under pressure in a gas cylinder

(b) Liquefaction of air

(c) Keeping petrol in a China dish in the open

(d) Heating copper wire in the presence of air at high temperature

52. Complete the missing variables given as 'x' and 'y' in the following reaction:



(a) aq and aq

(b) s and s

(c) aq and s

(d) s and aq

53. Which of the following can be decomposed by the action of sunlight?

(a) KBr

(b) AgBr

(c) MgO

(d) NaCl

54. Which of the following is the mineral acid?

(a) Hydrochloric acid

(b) Citric acid

(c) Acetic acid

(d) Lactic acid

55. Which of the following acids is present in sour milk?

(a) Glycolic acid

(b) Oxalic acid

(c) Lactic acid

(d) Citric acid

56. The heating of lead nitrate produces brown fumes of 'X' gas. Identify 'X' from the following.

(a) Lead oxide

(b) Oxygen

(c) Nitrogen dioxide

(d) Dinitrogen oxide

57. Baking soda is a mixture of:

(a) Sodium carbonate and acetic acid

(b) Sodium carbonate and tartaric acid

(c) Sodium hydrogen carbonate and tartaric acid

(d) Sodium hydrogen carbonate and acetic acid

58. Which of the following is a characteristic of metals?

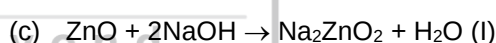
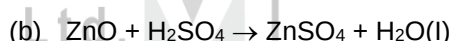
(a) They have one to three valence electrons

(b) They have 4 to 8 valence electrons

(c) They are brittle

(d) They are capable to form anions easily

59. Which of the following reaction shows that the given oxide is amphoteric in nature?



(d) Both (b) and (c)

60. The name of the compound $\text{CH}_3 - \text{CH}_2 - \text{CHO}$ is:

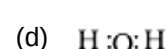
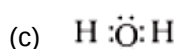
(a) Propanal

(b) Propanone

(c) Ethanol

(d) Ethanal

61. The correct electron dot structure of a water molecule is:



62. Which of the following does not belong to the same homologous series?

(a) CH_4

(b) C_2H_6

(c) C_3H_8

(d) C_4H_8

63. **Statement I:** The aqueous solutions of glucose and alcohol do not show acidic character.

Statement II: Aqueous solutions of glucose and alcohol do not give H^+ ions.

(a) Statement I is true Statement II is false.

(b) Statement I is false Statement II is true.

(c) Both Statement I and Statement II are true.

(d) Both Statement I and Statement II are false.

64. **Assertion (A):** Zinc oxide is amphoteric in nature.

Reason (R): Zinc oxide reacts with both acids and bases.

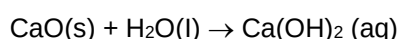
- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
 (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
 (c) Assertion is true but reason is false.
 (d) Assertion is false but reason is true.

65. Match the column.

	Column-I (Indicators)		Column-II (Change in colour in basic medium)
P.	Red litmus	1.	Yellow
Q.	Methyl orange	2.	Blue
R.	Phenolphthalein	3.	No change
S.	Blue litmus	4.	Pink

- (a) $P \rightarrow 2, Q \rightarrow 4, R \rightarrow 3, S \rightarrow 1$
 (b) $P \rightarrow 2, Q \rightarrow 3, R \rightarrow 1, S \rightarrow 4$
 (c) $P \rightarrow 2, Q \rightarrow 1, R \rightarrow 4, S \rightarrow 3$
 (d) $P \rightarrow 1, Q \rightarrow 2, R \rightarrow 3, S \rightarrow 4$

66. The following reaction is an example of



- (A) Displacement reaction
 (B) Combination reaction
 (C) Decomposition reaction
 (D) Exothermic reaction
 (a) Only C (b) A and C
 (c) B and D (d) Only A

67. What happens when copper rod is dipped in iron sulphate solution?

- (A) Copper displaces iron.
 (B) Blue colour of copper sulphate solution is obtained.
 (C) Reaction is exothermic.
 (D) No reaction takes place.
 (a) A and C (b) A, B and C
 (c) Only A (d) Only D

68. Sodium hydrogen carbonate when added to acetic acid evolves a gas. Which of the following statements are true about the gas evolved?

- (A) It turns lime water milky.
 (B) It extinguishes a burning splinter.
 (C) It dissolves in a solution of sodium hydroxide.
 (D) It has a pungent odour.
 (a) A and B (b) A, B and C
 (c) B, C and D (d) A and D

69. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?

- (A) Good thermal conductivity
 (B) Good electrical conductivity
 (C) Ductility
 (D) High melting point
 (a) A and B
 (b) A and C
 (c) B and C
 (d) A and D

70. Which of the following statements are usually correct for carbon compounds?

- (A) They are good conductors of electricity.
 (B) They are poor conductors of electricity.
 (C) They have strong forces of attraction between their molecules.
 (D) They do not have strong forces of attraction between their molecules.
 (a) A and C (b) B and C
 (c) A and D (d) B and D

SECTION B

71. **Statement I:** Silver and gold do not react with oxygen even at high temperatures.

Statement II: Silver and gold are less active metals.

- (a) Statement I is true Statement II is false.
 (b) Statement I is false Statement II is true.
 (c) Both Statement I and Statement II are true.
 (d) Both Statement I and Statement II are false.

72. **Assertion (A):** Hydrogen gas is not evolved when a metal reacts with nitric acid.

Reason (R): Nitric acid is a strong oxidising agent.

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
 (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
 (c) Assertion is true but reason is false.
 (d) Assertion is false but reason is true.

73. **Assertion (A):** Reaction between silver nitrate and potassium chloride is a precipitation reaction.

Reason (R): Precipitation reaction produces insoluble salt.

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
 (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
 (c) Assertion is true but reason is false.
 (d) Assertion is false but reason is true.

74. Match the column.

	Column-I (Chemical reactions)		Column-II (Types of chemical reactions)
P.	Formation of NH_3 from N_2 and H_2	1.	Decomposition
Q.	Calcination of zinc carbonate	2.	Double displacement
R.	Rusting of iron	3.	Combination
S.	Reaction of aqueous BaCl_2 solution with dil. H_2SO_4	4.	Redox

- (a) $P \rightarrow 3, Q \rightarrow 1, R \rightarrow 4, S \rightarrow 2$
 (b) $P \rightarrow 3, Q \rightarrow 4, R \rightarrow 1, S \rightarrow 2$
 (c) $P \rightarrow 1, Q \rightarrow 2, R \rightarrow 3, S \rightarrow 4$
 (d) $P \rightarrow 1, Q \rightarrow 3, R \rightarrow 2, S \rightarrow 4$

75. What happens, when sodium hydroxide is mixed in water?

- (A) Hydronium ions will be produced.
 (B) Heat is released during dissolution.
 (C) The process is endothermic.
 (D) Hydroxide ions will be produced

Choose the correct option.

- (a) A and B (b) B and D
 (c) A and C (d) Only D

Science PHYSICS

SECTION A

76. Resistivity of metals X, Y and Z are $1.18 \times 10^{-6} \Omega \cdot \text{cm}$, $1.0 \times 10^{-6} \Omega \cdot \text{cm}$ and $4.8 \times 10^{-6} \Omega \cdot \text{cm}$ respectively. Out of them, the best electrical conductor is:

- (a) X
 (b) Y
 (c) Z
 (d) All have same electrical conductivity

77. A piece of wire of resistance 4Ω is bent through 180° at its midpoint and two halves are twisted together, then the resistance is:

- (a) 1Ω (b) 2Ω
 (c) 5Ω (d) 8Ω

78. Current is induced in a coil by electromagnetic induction when:

- (a) Only the coil moves in a magnetic field
 (b) Only the magnet moves towards the coil
 (c) Coil and magnet move with respect to each other
 (d) None of the above

79. What is the maximum resistance which can be made using five resistors each of $\frac{1}{10} \Omega$?

- (a) 10Ω (b) 15Ω
 (c) $\frac{1}{2} \Omega$ (d) $\frac{1}{4} \Omega$

80. If other factors remain constant which of the following combinations of number of turns per 20 cm and electric current respectively in a solenoid produce the weakest electromagnet?

- (a) 500 turns & 3A (b) 700 turns & 2 A
 (c) 200 turns & 5 A (d) 300 turns & 4 A

81. Fleming's right hand rule gives:
- The magnitude of induced current.
 - The magnitude of the magnetic field.
 - The direction of induced current.
 - Both magnitude and direction of induced current.
82. In order to obtain a real image of magnification 2 using a converging lens of focal length 20cm, where should an object be placed from the lens?
- 50 cm
 - 30 cm
 - 10 cm
 - 15 cm
83. In case of refraction of light from a rectangular glass slab if 'i' be the angle of incidence and 'e' be the angle of emergence, then
- $e = i$
 - $e < i$
 - $e > i$
 - $i \neq e$
84. Light travels from air into glass of refractive index 1.5. The time taken by the light to travel through a piece of glass of 50cm thickness is:
- 2.25s
 - 2.25×10^{-7} s
 - 2.5×10^{-8} s
 - 2.5×10^{-9} s
85. The intensity of scattered light varies inversely as n^{th} power of wavelength (λ) of incident light where
- $n = -2$
 - $n = 1$
 - $n = -4$
 - $n = 4$
86. Two beams of red and violet colours are made to pass separately through a prism whose angle is 60° . In the position of minimum deviation, the angle of refraction, will be:
- 30° for both the colours
 - greater for the violet colour
 - greater for the red colour
 - equal but not 30° for both the colours
87. With both eyes open, a person's field of view is about
- 90°
 - 150°
 - 360°
 - 180°
88. **Statement I:** The connecting wires are made of copper.
Statement II: The resistivity of copper is high.
- Statement I is true Statement II is false.
 - Statement I is false Statement II is true.
 - Both Statement I and Statement II are true.
 - Both Statement I and Statement II are false.

89. **Assertion (A):** Fuse wire must have high resistance and low melting point.

Reason (R): Fuse is used for small current flow only.

- Both assertion and reason are correct and reason is the correct explanation of the assertion.
- Both assertion and reason are correct but reason is not the correct explanation for the assertion.
- Assertion is true and reason is false.
- Assertion is false and reason is true.

90. Match the column.

	Column-I		Column-II
P.	A perpendicular drawn at the point of incidence to the reflecting surface	1.	Linear magnification
Q.	The rays which strike the mirror surface near the periphery	2.	Normal
R.	The ratio of the height of the image to the height of the object	3.	Absolute refractive index
S.	The ratio of speed of light in vacuum to the speed of light in a medium	4.	Marginal ray

- $P \rightarrow 3, Q \rightarrow 1, R \rightarrow 4, S \rightarrow 2$
- $P \rightarrow 3, Q \rightarrow 4, R \rightarrow 1, S \rightarrow 2$
- $P \rightarrow 2, Q \rightarrow 4, R \rightarrow 1, S \rightarrow 3$
- $P \rightarrow 1, Q \rightarrow 3, R \rightarrow 2, S \rightarrow 4$

91. Which of the following statement is true?

- The speed of all colours of light is same in air or vacuum.
 - The speed of all colours of light is different in denser media.
 - Speed of light in air is 3×10^8 m/s.
 - Refractive index has no units.
- A and B
 - B and D
 - A, B and C
 - All of these

92. According to new Cartesian sign convention for convex lens, which of the following statements are true?

(A) Distance of the object is negative
 (B) Distance of the real image is negative
 (C) Distance of the virtual image is positive
 (D) Focal length of the lens is positive
 (a) A and B (b) A and D
 (c) A and C (d) All of these

93. Which of the following statements are true regarding a series combination of resistors?

(A) The potential difference across each resistor is constant.
 (B) The total resistance of the combination is greater than each individual resistance.
 (C) The current flowing through each resistor is the same as that flowing through the circuit.
 (D) The total resistance of the combination is less than each individual resistance.
 (a) A, B and D (b) B and C
 (c) A and D (d) A and B

94. Which of the following statements are true for the resistance of a conductor:

(A) It is directly proportional to area of cross section of conductor.
 (B) It is directly proportional to length of conductor.
 (C) It is inversely proportional to area of cross section of conductor.
 (D) It is inversely proportional to length of conductor.
 (a) A, B and C (b) A, C and D
 (c) A and D (d) B and C

95. Which of the following statements are incorrect?

(A) Magnetic field is a scalar quantity.
 (B) Magnetic field lines are closed curves.
 (C) Magnetic field lines emerge from the south pole and merge at the north pole.
 (D) The strength of magnetic field is stronger where the field lines are apart.
 (a) B, C and D (b) C and D
 (c) A, C and D (d) A, B and C

SECTION – B

96. **Statement I:** A current carrying wire deflects a magnetic needle placed near it.

Statement II: Strength of a magnetic field at a point near the conductor increases on increasing the current through the conductor.

(a) Statement I is true Statement II is false.
 (b) Statement I is false Statement II is true.
 (c) Both Statement I and Statement II are true.
 (d) Both Statement I and Statement II are false.

97. **Assertion (A):** The strength of the magnetic field at the centre of a circular coil of a wire depends on the radius of the coil.

Reason (R): The strength of the magnetic field at the centre of a circular coil of a wire depends on the number of turns of the wire in the coil

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

(b) Both assertion and reason are correct but reason is not the correct explanation for the assertion.

(c) Assertion is true and reason is false.

(d) Assertion is false and reason is true.

98. **Assertion (A):** Concave mirrors are used as make-up mirrors.

Reason (R): When the face is held within the focal length of a concave mirror, a diminished image of face is seen in the mirror.

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

(b) Both assertion and reason are correct but reason is not the correct explanation for the assertion.

(c) Assertion is true and reason is false.

(d) Assertion is false and reason is true.

99. Match the column.

	Column-I		Column-II
P.	Potential difference	1.	$\frac{RA}{L}$
Q.	Resistivity	2.	$\frac{V^2}{R}$
R.	Power	3.	$\frac{V}{R}$
S.	Current	4.	$\frac{W}{Q}$

(a) $P \rightarrow 2, Q \rightarrow 1, R \rightarrow 3, S \rightarrow 4$

(b) $P \rightarrow 4, Q \rightarrow 1, R \rightarrow 2, S \rightarrow 3$

(c) $P \rightarrow 1, Q \rightarrow 2, R \rightarrow 4, S \rightarrow 3$

(d) $P \rightarrow 4, Q \rightarrow 2, R \rightarrow 1, S \rightarrow 3$

100. Which of the following statements are true in relation to long-sightedness?

(A) The converging power of the eye-lens increases.

(B) The eye-lens becomes thin and its focal length increases.

(C) The converging power of the eye-lens decreases.

(D) The eye-lens becomes thick and its focal length decreases.

(a) B and C

(b) A and D

(c) C and D

(d) A, B and C

ANSWER KEY

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans	a	c	b	b	a	b	c	d	b	c	d	c	a	a	a	b	d	a	d	a
Q	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans	c	a	b	a	d	c	a	b	a	c	b	a	c	b	c	c	a	c	a	d
Q	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans	b	a	c	b	d	a	c	a	c	d	d	d	b	a	c	c	c	a	d	a
Q	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ans	c	d	c	a	c	c	d	b	d	d	c	a	a	a	b	b	a	c	c	c
Q	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ans	c	b	a	d	d	a	d	a	c	c	d	b	b	d	c	c	b	c	b	a

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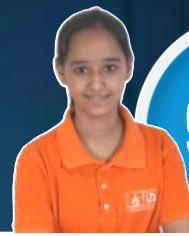


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Outstanding Results

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660

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644

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637

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NITYA SHAH
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