

Hall Ticket No.

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Booklet No.

99450

Candidate's Name:

Signature of the Candidate

Signature of the Invigilator

INSTRUCTIONS TO THE CANDIDATES

(Read the instructions carefully before Answering)

1. Candidates should write their Hall Ticket Number and Name in the space provided on Question Paper Booklet with Black Ball Point Pen only.
2. The Candidate should ensure that the Hall Ticket Number and Name of the Candidate are properly printed in the OMR Answer Sheet provided to them.
3. Changing an answer is NOT Allowed.
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4. Immediately on opening the Question Paper Booklet by tearing off the paper seal, please check (a) Question Paper Booklet contains 100 Multiple Choice Questions in total are printed (b) The number of pages and (c) Correct Printing. In case of any defect, please report to the invigilator and ask for replacement of booklet with same code within five minutes from the commencement of the test.
5. Use of Calculators, Mathematical Tables, Log books, Mobile Phones and any Electronic gadgets are not permitted
6. One mark will be awarded for every correct answer. There will be no negative mark for wrong answer.
7. Answer to the questions must be entered only on OMR Answer Sheet by completely shading the appropriate circle with Ball Point Pen (Black) only.
8. The OMR Answer Sheet will be invalidated if the circle is shaded using Pencil or if more than one circle is shaded against each question.

9. The OMR Answer Sheet will not be valued if the candidate:
 - a) Write any irrelevant matter including religious symbols, words, prayers or any communication whatsoever in any part of the OMR Answer Sheet.
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10. Rough work should be done only in the space provided in the Question Paper Booklet.
11. No loose sheets or papers will be allowed in the examination hall.
12. Examination duration: 90 minutes
13. **Timings of the Exam: 11.00 AM to 12.30 PM**
14. Candidates should ensure that he/she enters his/her Hall Ticket number, Name and appends signature on the Question Paper Booklet in the space provided. Candidate should ensure that the invigilator puts his/her signature on the Question Paper Booklet and OMR Answer Sheet.
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This Booklet contains a total of 14 Pages including cover page and the pages for rough work

1. If $a + b + c = 9$ and $ab + bc + ca = 26$, then $a^2 + b^2 + c^2 =$
 A) 29 B) 19 C) 17 D) 27
2. A hemispherical bowl has the radius of 4.2 cm. Then the volume of the water which the bowl contains is
 A) 135.123 cm^3 B) 255.132 cm^3
 C) 155.232 cm^3 D) 175.323 cm^3
3. If $2^{x+1} = 3^{1-x}$, then the value of x is
 A) $\frac{1}{2}$ B) $\frac{\log\left(\frac{3}{2}\right)}{\log 6}$ C) $\frac{\log\left(\frac{2}{3}\right)}{\log 6}$ D) $\frac{3}{2}\log 6$
4. Which of the following sets is infinite ?
 A) $\{x : x \in \mathbb{N}, x < 100\}$ B) $\{x : x \in \mathbb{N}, 10 < x < 500\}$
 C) $\{x : x \in \mathbb{N}, x < 1\}$ D) $\{x : x \in \mathbb{N}, x \text{ is a multiple of } 2\}$
5. Let α, β, γ be the zeros of the cubic polynomial $4x^3 + 8x^2 - 6x - 2$. Then the value of $\alpha\beta + \beta\gamma + \gamma\alpha$ is
 A) $-\frac{1}{2}$ B) $-\frac{3}{2}$ C) $\frac{3}{2}$ D) 2
6. The number of two digit numbers which are divisible by 3 is
 A) 20 B) 30 C) 32 D) 28
7. A right circular cylinder has base radius 7 cm and height 14 cm. Then the curved surface area of the right circular cylinder is
 A) 154 cm^2 B) 308 cm^2 C) 2156 cm^2 D) 616 cm^2
8. The hypotenuse of a right triangle is 6 cm more than twice of the shortest side. If the third side is 2 cm less than the hypotenuse, then the sides of the triangle are
 A) 5 cm, 16 cm, 14 cm B) 10 cm, 26 cm, 24 cm
 C) 6 cm, 18 cm, 16 cm D) 8 cm, 22 cm, 20 cm
9. If $1.\overline{62} = \frac{p}{q}$, where p and q are integers, then $p - q =$
 A) 99 B) 161 C) 62 D) 260

10. Two coins are tossed simultaneously. Then the probability of getting at least one head is

A) $\frac{3}{4}$ B) $\frac{1}{4}$ C) $\frac{1}{2}$ D) $\frac{1}{3}$

11. The value of k so that the points $(1,2), (-1,k), (-3,-4)$ are collinear is

A) 1 B) -2 C) 2 D) -1

12. The ages of Ravi and Rahul are in the ratio 5:7. Four years later, the sum of their ages will be 56 years. Then the present ages of Ravi and Rahul are

A) 22 years, 26 years B) 20 years, 28 years
C) 15 years, 22 years D) 25 years, 35 years

13. Let the difference between 31% of a number and 13% of the same number be 576. Then the 17% of that number is

A) 536 B) 476 C) 544 D) 644

14. If $\tan A = \cot B$, where A and B are acute angles, then $A + B =$

A) 70° B) 90° C) 80° D) 120°

15. Three spheres of radii 3 cm, 4 cm, 5 cm are melted to form a new sphere. Then the radius of the new sphere is

A) 6 cm B) 12 cm C) 15 cm D) 9 cm

16. If the mean of the following distribution is 7.2, then the value of k is

x	2	4	6	8	10	12
f	4	7	10	16	k	3

A) 9 B) 18 C) 10 D) 8

17. A person observed top of an electric pole at an angle of elevation of 60° when the observation point is 8 meters away from the foot of the pole. Then the height of the pole is

A) $6\sqrt{3}$ meters B) $8\sqrt{2}$ meters C) $6\sqrt{2}$ meters D) $8\sqrt{3}$ meters

18. Which of the following is not a linear equation?

A) $2x - 1 = y$ B) $x + 2 = y - 2x$ C) $x + y = 4$ D) $3x^2 - 4 = y$

19. The quadratic equation for which the sum and product of the roots are 8 and 15 is
- A) $x^2 + 8x - 15 = 0$ B) $x^2 + 8x + 15 = 0$
 C) $x^2 - 8x + 15 = 0$ D) $-x^2 + 8x + 15 = 0$
20. In an arithmetic progression, the sum of the first n terms is $2n + 3n^2$. Then the r^{th} term of the progression is
- A) $6r-1$ B) $6r$ C) $6r+1$ D) $5r-1$
21. The roots of the equation $\frac{x}{x-a} + x = \frac{b}{b-a} + b$ are
- A) $a, \frac{b}{b-a} + a$ B) $a, \frac{a}{b-a} + b$ C) $b, \frac{a}{b-a} + b$ D) $b, \frac{a}{b-a} + a$
22. Which term of the geometric progression $2, 2\sqrt{2}, 4, \dots$ is 64 ?
- A) 13 B) 11 C) 10 D) 12
23. A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that OQ = 13 cm. Then the length of PQ is
- A) 12 cm B) 15 cm C) 10 cm D) 16 cm
24. The perimeter of a rectangular plot is 32 m. If the length is increased by 2 m and the breadth is decreased by 1 m, the area of the plot remains the same. Then the length and breadth of the plot are
- A) 6 m, 4 m B) 14 m, 8 m C) 10 m, 6 m D) 8 m, 5 m
25. If $8^x 2^y = 512$ and $3^{3x+2y} = 9^6$, then $x + y =$
- A) 5 B) 9 C) 8 D) 7
26. If an object is placed at a point in between the pole and focal point of the concave mirror, we get----- image
- A) Erected, real B) Erected, virtual C) Inverted, real D) Inverted, virtual
27. Which of the following parameter doesn't change when light travels from air in to a glass slab
- A) velocity B) wavelength C) frequency D) amplitude
28. A thin convex lens has a power of +5.0D. Its focal length is-----
- A) 0.2cm B) 20 cm C) 2 cm D) 2 meters

29. Air bubble in water behaves as -----
A) convex lens
B) concave lens
C) plano-convex lens
D) plano-concave lens
30. For a healthy person, least distance of distinct vision value is
A) 20 cm
B) 40 cm
C) 25 cm
D) 60cm
31. The defect in which people can't see object's beyond far point is called
A) Hypermetropia
B) Presbyopia
C) Myopia
D) farsightedness
32. Two resistors having resistance values 10 ohms each connected in parallel. The resultant resistance of the combination is -----
A) 20 ohm
B) 1/20 ohm
C) 5 ohm
D) 0.2 ohm
33. ----- material obeys Ohm's law
A) Silicon
B) Germanium
C) Glass
D) Silver
34. Kirchhoff's current law obeys ----- principle.
A) conservation of mass
B) conservation of energy
C) conservation of charge
D) conservation of momentum
35. Multimeter is used to measure -----
A) current
B) voltage
C) resistance
D) all the three
36. Tesla is the Unit of -----
A) Magnetic flux density (B)
B) Magnetic field intensity(H)
C) Magnetic moment(M)
D) Magnetic flux
37. Force acting on a current carrying conductor placed in a magnetic field is maximum when kept -----
A) parallel to magnetic field
B) perpendicular to magnetic field
C) antiparallel to magnetic field
D) away from the magnetic field

38. Number of protons and electrons in chloride ion are _____
 A) 17 & 17 B) 17 & 18 C) 17 & 16 D) 18 & 18
39. The coefficients of reactants and products for the reaction
 $\text{Na} + \text{H}_2\text{O} \longrightarrow \text{NaOH} + \text{H}_2$ are _____
 A) 2,2,2,1 B) 2,1,1,2 C) 1,1,2,2 D) 2,1,2,1
40. The white precipitate formed when CO_2 gas is passed through lime water is due to the formation of _____
 A) $\text{Ca}(\text{HCO}_3)_2$ B) $\text{Ca}(\text{OH})_2$ C) CaCO_3 D) CaO
41. The plaster used by doctors for setting the fractured bones is contains _____
 A) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ B) $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$ C) CaCO_3 D) CaCl_2
42. The electronic configuration of the element with highest electron affinity is _____
 A) $1s^2 2s^2 2p^5$ B) $1s^2 2s^2 2p^6 3s^2 3p^4$ C) $1s^2 2s^2 2p^6$ D) $1s^2 2s^2 2p^6 3s^2 3p^5$
43. _____ among the following is a transition element.
 A) Ca B) Cs C) Cr D) Cf
44. An element 'A' belonging to alkali metals combine with an element 'B' belonging to halogens to form a compound of type AB. The compound AB is soluble in _____
 A) H_2O B) C_6H_6 C) CCl_4 D) C_6H_{12}
45. In the formation of MgCl_2 , Mg atom loses _____ electrons.
 A) 1 B) 2 C) 3 D) 4
46. The correct set of quantum numbers for the last electron in potassium atom is _____

A)

n	l	m	S
4	0	0	+1/2

B)

n	l	m	S
4	1	1	+1/2

C)

n	l	m	S
4	1	0	+1/2

D)

n	l	m	S
4	0	1	+1/2

47. The statement 'electron pairing in orbitals starts only when all the available empty orbitals of same energy are singly occupied' is known as _____

- A) Bohr-bury principle B) Pauli exclusion principle
C) Hund's rule D) Aufbau principle

48. Sulphide ores are concentrated by _____ method.

- A) Hand picking B) Magnetic separation
C) Froth flotation D) Washing

49. The substance added to the ore to remove impurities from it is called as _____

- A) Slag B) Fuel C) Flux D) Gangue

50. Chlorination of methane is an example of _____ reaction.

- A) Combustion B) Addition C) Substitution D) Elimination

Q. No. 51 to Q. No. 53 Choose the synonym of the word underlined in the following sentences from the options given under:

51. The Prime Minister is very optimistic about India recovering from the Covid 19 crisis.

- A) pessimistic B) serious C) sanguine d) jovial

52. Adolf Hitler is infamous for his atrocities to war prisoners.

- A) cruel B) notorious C) ambitious D) powerful

53. Gandhi preached and practiced prudent behaviour all through his life.

- A) unruly B) good C) strong D) wise

Q. No. 54 to Q. No. 58 Choose the antonym of the word underlined in the following sentences from the options given under:

54. Most of the scientists are apprehensive of the vaccines in use against Covid-19 virus.
A) confident B) skeptic C) anxious D) uneasy
55. Students around the world are very reluctant to stay home as a result of the series of lock downs.
A) happy B) willing C) unmindful D) confident
56. Everyone loves to have, but only the rich can afford to have sumptuous dinner.
A) healthy B) nutritious C) luxurious D) stupendous

Choose the one word substitute for the following from the options given under:

57. One who is multi-talented
A) versatile B) seasoned C) specialised D) skillful
58. One who studies languages
A) philosopher B) linguist C) novelist D) student

Q.No. 59 to Q.No. 75 Fill in the blanks with the appropriate one from the given four options:

59. Foreign word/expression “**bona fide**” means _____
A) known B) good C) genuine D) details
60. Foreign word/expression “**sine die**” means _____
A) signature B) defined C) finite D) indefinitely
61. Phrasal verb “**take after**” means _____
A) resemble B) unlike C) same D) resume
62. Phrasal verb “**wear out**” means _____
A) dressed well B) exhaust C) external D) partying
63. Idiomatic expression “**at sixes and sevens**” means _____
A) a state of shock B) a state of strength
C) a state of confusion D) a state of poverty

64. Idiomatic expression “**let the cat out of the bag**” means _____
 A) unleash the cat B) unearth a treasure
 C) lose the opportunity D) reveal a secret
65. _____ he _____ to school every day?
 A) Do; goes B) Does; go C) Does; goes D) Did; went
66. Beauty _____ no ornaments.
 A) needs B) needn't C) have need D) did need
67. In June, I _____ thirty-seven.
 A) shall be B) were C) am being D) will
68. She _____ me since 1972.
 A) has known B) has been known
 C) has been knowing D) is knowing
69. What do you usually have for _____ lunch?
 A) a B) an C) the D) no article
70. I got her letter _____ previous day.
 A) a B) an C) the D) no article
71. He is sick _____ staying at home for weeks together due to lock down.
 A) of B) off C) with D) for
72. The old man was overwhelmed _____ grief at the death of his only son.
 A) to B) with C) over D) under
73. Film actresses usually take pride _____ their beauty.
 A) of B) over C) in D) by
74. Either you or she _____ the gold medal for this academic year.
 A) wins B) win C) won D) had won
75. It is time we _____ the battle against Covid 19 pandemic.
 A) defeat B) win C) conquer D) defeated

76. Which one of the following state doesn't share border with Myanmar?
- A) Nagaland B) Mizoram C) Meghalaya D) Manipur.
77. Find out the name of water body that separates the Andaman in the North and Nicobar in the South.
- A) Eleven Degree Channel B) Ten Degree Channel
C) Twelve Degree Channel D) Nine Degree Channel.
78. Identify the basis for constituting the Constituent Assembly of India.
- A) Indian Independence Act. B) The Cabinet Mission Plan
C) Lord Mountbatten Plan D) Lord Wavell Plan
79. India lies in the:
- A) West of Prime Meridian B) South of Prime Meridian
C) North of Prime Meridian D) East of Prime Meridian
80. The Great Himalayas were formed during the:
- A) Oligocene Period B) Miocene Period
C) Pliocene Period D) Eocene Period
81. The Great Indian(Thar) Desert is called as:
- A) Ranasthali B) Rethistali C) Tapishstali D) Marusthali
82. Which Peninsula in Asia is occupied by India?
- A) South East B) North East C) South Central D) South West.
83. Which one of the following is the only active volcano in India?
- A) Barren Island B) Amini Island C) Canannore Island D) Neill Island
84. Which one of the following is **not** a main component of tertiary sector?
- A) Agriculture B) Education C) Health D) Entertainment

85. What is import quota?
- A) International Obligation B) Tariff
C) Non-Tariff barrier D) Concession
86. What is the difference between GDP and NDP?
- A) Net Direct Tax B) Net Capital Formation
C) Government Revenue D) Net Indirect Tax
87. Excise duty is a tax levied on
- A) Sale of goods B) Production of goods
C) Import of goods D) Export of goods
88. Which of the following is not a national debt?
- A) Provident Fund B) National Saving Certificate
C) Life Insurance Policies D) Long term government bonds.
89. Which one of the following formulates fiscal policy in India?
- A) NITI Aayog B) Ministry of Finance
C) RBI D) Finance Commission
90. Who was the member of Rajya Sabha first appointed as Prime Minister of India?
- A) Indira Gandhi B) P.V. Narasimha Rao
C) I.K. Gujral D) H.D. Devegowda
91. Which one of the following state belongs high literacy states, according to 2011 census report ?
- A) Manipur B) Nagaland C) Sikkim D) Mizoram.
92. What was the sex ratio in Kerala, according to 2011 census report?
- A) 1085 B) 1086 C) 1084 D) 1083
93. After the Second World War Germany was divided into:
- A) Four Zones B) Two Zones C) Six Zones D) Three Zones

94. Which country invaded China in the year 1938?
A) America B) Germany C) France D) Japan
95. Marshall plan was aimed at rebuilding of:
A) America B) Great Britain C) European Nations D) France
96. In which year Delhi became capital of India?
A) 1912 B) 1911 C) 1914 D) 1913
97. How many schedules did Indian constitution has initially ?
A) Six B) Five C) Eight D) Nine
98. In which year League of Nations was officially dissolved?
A) 1939 B) 1945 C) 1946 D) 1944
99. The Election commission of India takes decision by:
A) Consensus B) Majority vote
C) Casting Vote D) Unanimity of opinion
100. What does the eleventh fundamental duty related to?
A) Health B) National Security
C) Food Security D) Education

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Hall Ticket No.

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Q.P. Booklet No.

240383

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C I T D - 2024
(Diploma Entrance Test)

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1. If $\frac{x}{y} = \frac{1}{4}$ and $\frac{y}{z} = \frac{8}{3}$, then $\frac{x^2 - z^2}{x^2 + z^2} =$
- A) $-\frac{3}{13}$
B) $\frac{5}{13}$
C) $-\frac{5}{13}$
D) $\frac{3}{13}$
2. If the GCD and LCM of two numbers are 135 and 3 respectively, then the product of the two numbers is
- A) 350
B) 540
C) 270
D) 405
3. The value of x satisfying the equation $\log_5 3 + \log_5 (x+1) = \log_5 (2x) + 1$ is
- A) $\frac{3}{7}$
B) $\frac{2}{7}$
C) 3
D) $\frac{1}{5}$
4. If the two numbers are in the ratio 1:2 and if 8 is added to both the numbers, then the ratio between the two numbers becomes $\frac{15}{22}$. The sum of the numbers is
- A) 15
B) 21
C) 37
D) 24
5. If 25% of A is equal to 15% of B, then 20% of A is equal to what percent of B?
- A) 16
B) 13
C) 15
D) 12

6. If α and β are the roots of the equation $x^2 + ax - b = 0$, then $\frac{1}{\alpha^2 + \beta^2} =$
- A) $\frac{1}{a^2 - 2b}$
 B) $\frac{1}{a^2 + b}$
 C) $\frac{1}{a^2 + 2b}$
 D) $\frac{1}{a^2 - b}$
7. If the sum of an infinite geometric progression is twice its first term, then the common ratio is
- A) 2
 B) $\frac{1}{2}$
 C) $\frac{2}{3}$
 D) $\frac{1}{3}$
8. If the base of a parallelogram is thrice its height and its area is 98 sq.cm, then its height is (in cm)
- A) 6
 B) 8
 C) 5
 D) 9
9. If $\sec \theta + \tan \theta = k$, then $\tan \theta =$
- A) $\frac{k^2 + 1}{2k}$
 B) $\frac{k^2 - 1}{2}$
 C) $\frac{k^2 - 1}{2k}$
 D) $\frac{1 - k^2}{k}$
10. A person observed 9 meters away from the foot of an electric pole of height $3\sqrt{3}$ meters. Then the angle of elevation of the top is
- A) 45°
 B) 30°
 C) 60°
 D) 15°

11. If $x = \sqrt{2} + \sqrt{3}$, then $x^2 - \frac{1}{x^2} =$
- A) 0
B) $2\sqrt{6}$
C) 10
D) $4\sqrt{6}$
12. The sum of the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ is
- A) 3
B) 4
C) $4 + 2\sqrt{2}$
D) $3\sqrt{2}$
13. The number of subsets of the set $A = \{2, 4, 6, 8\}$ is
- A) 24
B) 16
C) 8
D) 32
14. The mean of the first 35 natural numbers is
- A) 16
B) 15
C) 18
D) 14
15. If two dice are thrown simultaneously, then the probability of getting a total of 9 is
- A) $\frac{4}{9}$
B) $\frac{1}{3}$
C) $\frac{1}{6}$
D) $\frac{1}{9}$
16. If the centroid of the triangle whose vertices are $(3, -5)$, $(x, 4)$ and $(10, y)$ is $(2, -1)$, then $x - y =$
- A) 2
B) 7
C) -5
D) 5
17. If $A = \{x : x \text{ is a natural number, } 1 < x < 20\}$ and $B = \{x : x \text{ is a prime number, } 2 < x < 30\}$, then $n(A \cap B) =$
- A) 9
B) 18
C) 10
D) 7

18. Let (x, y) be the solution of the equations $3x - y = -5$, $-2x + 5y = 12$. Then $3x^2 - y^2 =$
- 1
 - 3
 - 1
 - 0
19. $\triangle ABC \sim \triangle PQR$ and their areas respectively are 100 cm^2 and 144 cm^2 . If $QR = 24 \text{ cm}$, then $BC =$
- 14 cm
 - 24 cm
 - 22 cm
 - 20 cm
20. The volume of the hemisphere of radius 7 cm is (Take $\pi = \frac{22}{7}$)
- 697.18 cm^3
 - 815.54 cm^3
 - 718.67 cm^3
 - 1437.33 cm^3
21. The area of the largest circle that can be drawn inside a rectangle with sides 50 cm and 42 cm is (Take $\pi = \frac{22}{7}$)
- 1300 cm^2
 - 1350 cm^2
 - 1284 cm^2
 - 1386 cm^2
22. $\sin 36^\circ \cos 54^\circ + \cos 36^\circ \sin 54^\circ =$
- 0
 - 1
 - $\frac{1}{2}$
 - $\frac{1}{\sqrt{2}}$
23. If the mode of the observations 2, 1, 0, 3, 2, x , 5, 7, 8, 3, 9, 8, 9 is 8, then $x =$
- 2
 - 9
 - 8
 - 5
24. If the sum of two numbers is 32 and their product is 255, then sum of their squares is
- 450
 - 514
 - 596
 - 475

25. If $3^{n+6} - 3^{n+4} = 8$, then $n =$
- A) -4
 - B) 3
 - C) 2
 - D) -3
26. Which of the following is not in MKS system of units?
- A) Mass
 - B) Length
 - C) Temperature
 - D) Time
27. The transverse nature of light is confirmed by
- A) Polarization
 - B) Diffraction
 - C) Interference
 - D) Reflection
28. The incorrect statement with reference to least count is
- A) It is a smallest measurement of the instrument.
 - B) It is the one main scale division and one vernier scale division.
 - C) It is same for a given instrument.
 - D) It varies from instrument to instrument.
29. Identify the unlike term in the following.
- A) Energy
 - B) Retardation
 - C) Impulse
 - D) Displacement
30. One light year is equal to
- A) 9.47×10^{12} m
 - B) 9.47×10^{12} km
 - C) 9.47×10^{10} m
 - D) 9.47×10^{15} km
31. The length of stick in air is 4 cm and its apparent length in a liquid is 3.2 cm, then the refractive index of the liquid is.
- A) 0.8
 - B) 1.3
 - C) 1.25
 - D) Cannot be determined
32. Which one of the following types of medicines is used for treating indigestion?
- A) Analgesic
 - B) Antiseptic
 - C) Antibiotic
 - D) Antacid

33. Along the period in the periodic table as
- Atomic radius increases, nuclear charge decreases
 - Atomic radius increases, nuclear charge increases
 - Atomic radius decreases, nuclear charge increases
 - Atomic radius decreases, nuclear charge decreases
34. Propane, with the molecular formula C_3H_8 has
- 10 Covalent bonds
 - 11 Covalent bonds
 - 3 Covalent bonds
 - 8 Covalent bonds
35. $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$, this reaction is an example of
- A combination reaction
 - A double displacement reaction
 - A decomposition reaction
 - A displacement reaction
36. The chemical formula of Plaster of Paris is
- $CaCO_3 \cdot \frac{1}{2}H_2O$
 - $Na_2CO_3 \cdot \frac{1}{2}H_2O$
 - $CaSO_4 \cdot \frac{1}{2}H_2O$
 - $Na_2SO_4 \cdot \frac{1}{2}H_2O$
37. Element X forms a chloride with the formula $XC l_2$, which is a solid with a high melting point. X could most likely be in the same group of the Periodic Table as
- Na
 - Mg
 - Si
 - Al
38. In stable organic compounds, carbon will always form
- Two bonds
 - Three bonds
 - Four bonds
 - Five bonds
39. The Kala-azar disease is caused by
- Amoeba
 - Euglena
 - Leishmania
 - Mucor
40. Which Organism use regenerative cells for reproduction in the process of budding?
- Amoeba
 - Hydra
 - Plasmodium
 - Rhizopus

41. Which of the following represents a homozygous genotype?
- A) Tt
 - B) TT
 - C) tT
 - D) TtT
42. Which pair of chromosomes determine the male sex in humans?
- A) XX
 - B) XY
 - C) YY
 - D) XXX
43. Which of the following statements about food webs is true?
- A) They consist of several interconnected food chains
 - B) They show a linear flow of energy
 - C) They are less complex than food chains
 - D) They only include carnivores
44. In an ecosystem, the sequence of organisms through which energy flows is called a:
- A) Food cycle
 - B) Food web
 - C) Food chain
 - D) Trophic level
45. Which of the following is not a characteristic of autotrophic nutrition?
- A) Use of light energy
 - B) Production of glucose
 - C) Consumption of organic molecules
 - D) Conversion of inorganic molecules to organic molecules
46. The process by which green plants make their own food using sunlight is called:
- A) Respiration
 - B) Photosynthesis
 - C) Fermentation
 - D) Digestion
47. "The Origin of Life by means of Natural Selection" is written by
- A) Charles Darwin
 - B) A. I. Oparin
 - C) Gray
 - D) Adam Smith

48. Out of the 8 diseases listed here, in how many of them are transmitted by mosquitoes – Malaria, Yellow Fever, Dengue Fever, Eczema, Encephalitis, Pneumonia, Trachoma, Filariasis.
- A) 04
 - B) 05
 - C) 06
 - D) 07
49. Dental formula of an adult man is
- A) $\frac{2,1,2,3}{2,1,2,3}$
 - B) $\frac{2,1,3,1}{2,1,3,1}$
 - C) $\frac{2,1,2,2}{2,1,2,2}$
 - D) $\frac{2,1,2,3}{2,4,2,4}$
50. Jaundice is the disease of
- A) Kidney
 - B) Pancreas
 - C) Liver
 - D) Duodenum
51. In normal Adults, the blood pressure is
- A) 80/120 mmHg
 - B) 120/80 mmHg
 - C) 100/120 mmHg
 - D) 100/100 mmHg
52. Which is the master gland of our body?
- A) Adrenal gland
 - B) Liver
 - C) Pituitary gland
 - D) Pancreas
53. The endoskeleton of the cell is made up of
- A) Mitochondria
 - B) Endoplasmic reticulum
 - C) Cell Wall
 - D) Cytoplasm

54. Choose the synonym of the underlined word in the sentence from the alternatives given:

One of the dwarfs was bashful and never looked the other person in the eye.

- A) Bold
- B) Forward
- C) Shy
- D) Aggressive

55. Choose the antonym of the word underlined in the following sentence from the alternatives given below:

Reckless driving causes accidents.

- A) Careful
- B) Slow
- C) Good
- D) Correct

56. Choose the accurate spelling of the word from the choices given below:

- A) Vaccum
- B) Vacuum
- C) Vacume
- D) Vacuum

57. Choose the correct option of one word substitute for the description given below:
Prolonged inability to sleep

- A) Amnesia
- B) Insomnia
- C) Nausea
- D) Utopia

58. Choose the correct option of one word substitute for the description given below:
A style in which a writer makes a display of his knowledge:

- A) Pedantic
- B) Verbose
- C) Ornate
- D) Pompous

59. Choose the appropriate word from the options given below to fill in blank to make a meaningful sentence.

The mother put _____ her work to attend to the baby who was crying.

- A) a side
- B) aside
- C) away
- D) of

60. Choose the appropriate word from the options given below to fill in blank to make a meaningful sentence
The little girl tried to _____ her brother when he broke his toy.
- A) condole
 - B) console
 - C) condone
 - D) compensate
61. Choose from the options given below the correct meaning of the idiom 'Go the extra mile'
- A) to work for long hours
 - B) to make an extra effort
 - C) to do exercise
 - D) to show off physical strength
62. Choose from the options given below the correct meaning of the idiom 'A man of straw'
- A) A man of no substance
 - B) A very active person
 - C) A worthy fellow
 - D) An unreasonable person
63. Fill in the blank by selecting appropriate phrasal verb from the given options given below to make a meaningful sentence.
I was _____ in Mumbai and later I settled in Delhi.
- A) brought up
 - B) broke down
 - C) brought down
 - D) broke up
64. Fill in the blank with the appropriate phrasal verb from the options given below to make a meaningful sentence.
She had to _____ with the horrible people in the hotel for three days.
- A) put in
 - B) put against
 - C) put up
 - D) put down
65. Identify the pair of appropriate articles from the options given below:
He is _____ European and his wife is _____ Indian.
- A) a, an
 - B) a, the
 - C) an, a
 - D) an, an

66. Identify the pair of appropriate articles from the options given below.
He is _____ MBA from _____ best college.
- A) the, the
 - B) a, an
 - C) an, the
 - D) a, a
67. Identify the pair of appropriate prepositions from the options given below:
In his autobiography he refers _____ his abhorrence _____ animal diet.
- A) on, of
 - B) is, on
 - C) to, of
 - D) in, to
68. Identify the pair of appropriate prepositions from the options given below:
He goes _____ Sunday _____ Church.
- A) on, at
 - B) at, in
 - C) to, on
 - D) on, to
69. Which of the following sentences has the grammatically correct tag question?
- A) He hardly has any debts left, has he?
 - B) He hardly has any debts left, hasn't he?
 - C) He hardly has any debts left, did he?
 - D) He hardly has any debts left, doesn't he?
70. Which of the following options is the correct active voice form of the sentence?
"The computer is made by HP."
- A) HP make the computer.
 - B) HP is making the computer.
 - C) HP made the computer.
 - D) HP makes the computer.
71. Which of the following options is the correct verb form to make the sentence grammatically correct?
I reached the station after the train _____.
- A) has left
 - B) had left
 - C) had been left
 - D) would have left

72. Choose the correct option indicating grammatically accurate subject-verb agreement:

None of the candidates _____ responded.

- A) were
- B) have
- C) has
- D) is

73. Identify the grammatically correct sentence from the options given:

- A) He, you and I will manage this problem together
- B) You, he and I will manage this problem together
- C) I, you and he will manage this problem together
- D) He, you and me will manage this problem together

Read the passage below and choose the right answers to the five questions that follow:

Reading is a fundamental skill that plays a vital role in our lives. It's not just about deciphering words on a page but about the doors it opens, the knowledge it imparts, and the worlds it allows us to explore. Reading is an essential tool for learning, expanding our horizons, and fostering imagination.

When we read, we acquire knowledge. Whether it's reading textbooks, newspapers, or online articles, we gain information that helps us understand the world. Books, in particular, are a treasure trove of knowledge. They contain the wisdom of generations, the discoveries of great minds, and the stories of diverse cultures. Reading books can educate us on history, science, literature, and countless other subjects. It's like having a mentor, guiding us through the complexities of life.

Reading also broadens our horizons. It exposes us to different viewpoints, perspectives, and experiences. When we read about characters from various backgrounds or explore far-off lands through the pages of a novel, we step into their shoes and see the world from a different angle. This broadening of perspective fosters empathy and understanding, making us more tolerant and open-minded individuals.

Furthermore, reading fuels our imagination. Whether it's a fantasy novel, a science fiction story, or a compelling mystery, books transport us to other worlds and challenge us to envision the unimaginable. Our minds become the canvas, and words paint the pictures. It's a magical experience that ignites creativity and inspiration.

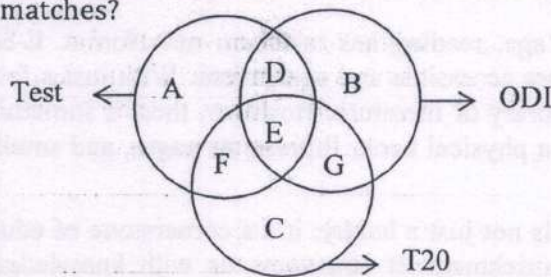
Moreover, reading is a skill that transcends academic boundaries. It's not just about scoring well on tests; it's about developing critical thinking, analytical skills, and the ability to communicate effectively. A person who reads regularly is likely to have a broader vocabulary, better writing skills, and an improved ability to express their thoughts and ideas.

In our modern digital age, reading has taken on new forms. E-books and audio books have made it more accessible and convenient. With just a few clicks or taps, we can access a vast library of literature. However, there's something timeless and intimate about holding a physical book, flipping its pages, and smelling the scent of paper and ink.

In conclusion, reading is not just a hobby; it's a cornerstone of education, personal growth, and cultural enrichment. It empowers us with knowledge, broadens our perspectives, ignites our imagination, and equips us with essential skills. Whether we're reading for pleasure, information, or self-improvement, reading is a journey that enriches our lives and shapes us into more informed, empathetic, and creative individuals.

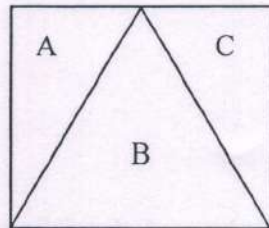
74. What are some of the benefits of reading mentioned in the passage?
- A) Acquiring knowledge
 - B) Curbs imagination
 - C) Developing listening and reading skills
 - D) Enhancing proficiency

75. How does reading broaden our horizons and foster empathy?
- By encouraging isolation
 - By exposing us to different viewpoints and experiences
 - By promoting narrow-mindedness
 - By making us aggressive
76. What role does reading play in developing critical thinking and communication skills?
- It has no impact on critical thinking or communication skills
 - It broadens horizons but does not impact skills
 - It expands vocabulary, improves writing skills, and enhances communication abilities
 - It only helps with imagination but not critical thinking or communication
77. What are the advantages of reading physical books compared to digital formats?
- Physical books are more expensive
 - Digital formats are more environmentally friendly
 - Physical books offer a timeless and intimate experience
 - Digital formats are easier to access
78. How does reading enrich our lives and shape us as individuals, according to the passage?
- Reading has no impact on personal growth
 - Reading makes us less informed and less creativity.
 - Reading empowers us with knowledge, broadens our perspectives, and equips us with essential skills, making us more informed, empathetic, and creative individuals
 - Reading only fosters creativity but not empathy
79. Which group of letters represent number of cricket players who play only two types of cricket matches?



- D, F, G
 - E, F, G
 - D, E, F
 - D, E, G
80. Find the third number of the following sequence: 20, 33, ____ 88
- 74
 - 66
 - 54
 - 44

81. A square consists of three triangles. If combined area of the two triangles B and C is 12 cm^2 , find side of the square.

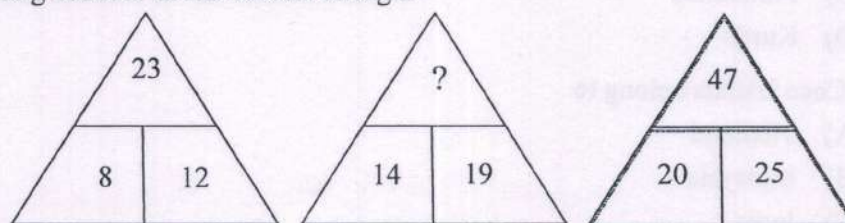


- A) 3.5 cm
B) 4 cm
C) 4.5 cm
D) 5 cm
82. If $Z=1$, $Y=2$, $B=25$, $A=26$, then SINDHU can be coded as
A) 8181423216
B) 8181322196
C) 8181323206
D) 8181323196
83. A person rides a bicycle with a speed of 20 kMph for 4 hrs. If he has to cover a distance of 150% of same distance in 5 hrs. at what speed the person should ride?
A) 30 kMph
B) 24 kMph
C) 20 kMph
D) 16 kMph

84. Two numbers of a 14 digit credit card are given in the boxes shown below. If sum of any three consecutive numbers is 20, then what is the unknown number Y?

			8				Y				7		
--	--	--	---	--	--	--	---	--	--	--	---	--	--

- A) 9
B) 5
C) 8
D) 7
85. Find the missing number in the second triangle.

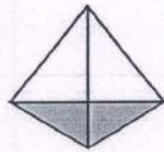


- A) 29
B) 31
C) 37
D) 41

86. Out of the following five letters, pick the odd letter.
E, H, Y, Z

A) E
B) H
C) Y
D) Z

87. The number of faces, vertices and edges of the following closed 3-dimentional object are



- A) 4, 3, 5 respectively
B) 4, 4, 6 respectively
C) 3, 4, 6 respectively
D) 4, 4, 4 respectively
88. The land border between India and China is called
A) Radcliffe Line
B) Durand Line
C) Line of Control
D) Line of Actual Control
89. Name the country in which name of their Airlines start with the word 'Garuda'.
A) Sri Lanka
B) Nepal
C) Bangladesh
D) Indonesia
90. People live in West Bank controlled by Israel are mainly
A) Persians
B) Jews
C) Philistines
D) Kurds
91. Coco islands belong to
A) Thailand
B) Malaysia
C) India
D) Myanmar

92. Who was the first Law minister of Pakistan?
- A) Liaquat Ali Khan
 - B) Md. Ali Jinnah
 - C) Jogendra Nath Mandal
 - D) Rana Bhagwandas
93. From which state Chandrayaan-3 was launched in 2023?
- A) Andhra Pradesh
 - B) Tamil Nadu
 - C) Karnataka
 - D) Odisha
94. The main menu used in MS Word to insert Footnote is
- A) Page Layout
 - B) Insert
 - C) References
 - D) Home
95. BIMSTEC stands for
- A) Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Countries
 - B) Bay of Bengal India for Multi-Sectoral Technical and Economic Countries
 - C) Bay of Bengal India for Multi-Sectoral Technical and Economic Cooperation
 - D) Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
96. The first actress who refused Dadasaheb Phalke Award is
- A) Devika Rani
 - B) Suchitra Sen
 - C) Mala Sinha
 - D) Savithri
97. World largest Buddha's statue is in
- A) China
 - B) Afghanistan
 - C) Nepal
 - D) India
98. In which event of Asian Games 2023, India won highest number of medals?
- A) Shooting
 - B) Archery
 - C) Athletics
 - D) Wrestling

99. Which country has the highest outstanding loan from International Monetary Fund?
- A) Egypt
 - B) Argentina
 - C) Ukraine
 - D) Pakistan
100. High density lipoprotein (HDL) cholesterol and Low density lipoprotein (LDL) cholesterol are respectively called
- A) Bad cholesterol and Very bad cholesterol
 - B) Good cholesterol and Very good cholesterol
 - C) Bad cholesterol and Good cholesterol
 - D) Good cholesterol and Bad cholesterol

* * * * *

Rough Work

Rough Work



Hall Ticket No.

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Q.P. Booklet No.

250093

Candidate's Name:

Signature of the Candidate

Signature of the Invigilator

C I T D – 2025
(Diploma Entrance Test)

INSTRUCTIONS TO THE CANDIDATES

(Read the instructions carefully before Answering)

1. Candidates should write their Hall Ticket Number and Name in the space provided on Question Paper Booklet with Black/Blue Ball Point Pen only.
2. The Candidate should ensure that the Hall Ticket Number and Name of the Candidate are properly printed in the OMR Answer Sheet provided to them.
3. Changing an answer is NOT Allowed.
 - The Candidates must fully satisfy themselves about the accuracy of the answer before darkening the appropriate circle with Black/Blue Ball Point Pen, as it is not possible to change or erase once darkened.
 - Use of Eraser or White Fluid on the OMR Answer Sheet is not permissible as the OMR Answer Sheet is machine gradable and it may lead to wrong evaluation.
4. Immediately on opening the Question Paper Booklet by tearing off the paper seal, please check (a) Question Paper Booklet contains 100 Multiple Choice Questions in total are printed (b) The number of pages and (c) Correct Printing. In case of any defect, please report to the invigilator and ask for replacement of booklet with same code within five minutes from the commencement of the test.
5. Use of Calculators, Mathematical Tables, Logbooks, Mobile Phones and any Electronic gadgets are NOT permitted.
6. One mark will be awarded for every correct answer. There will be no negative mark for wrong answer.
7. Answer to the questions must be entered only on OMR Answer Sheet by completely shading the appropriate circle with Ball Point Pen (Black/Blue) only.
8. The OMR Answer Sheet will be invalidated if circle is shaded using Pencil or if more than one circle is shaded against each question.

9. The OMR answer sheet will NOT be valued if the candidate:
 - a) Writes any irrelevant matter including religious symbols, words, prayers or any communication whatsoever in any part of the OMR Answer Sheet.
 - b) Adopts any other malpractice.
10. Rough work should be done only in the space provided in the Question Paper Booklet.
11. No loose sheets or papers will be allowed in the examination hall.
12. Examination duration: 90 minutes.
13. **Timings of the examination: 11.00 AM TO 12.30 PM**
14. Candidates should ensure that he/she enters his/her Hall Ticket Number, Name and appends signature on the Question Paper Booklet in the space provided. Candidate should ensure that the invigilator puts his/her signature on the Question Paper Booklet and OMR Answer Sheet.
15. Before leaving the Examination Hall, Candidate should return the OMR Answer Sheet and Question Paper Booklet to the invigilator.

1. The ratio of two numbers is 3:4 and their H.C.F is 4. Then their L.C.M is
 - A) 12
 - B) 16
 - C) 24
 - D) 48

2. What is the quadratic polynomial whose sum and the product of zeroes is $\sqrt{2}$, $\frac{1}{3}$ respectively?
 - A) $3x^2 - 3\sqrt{2}x + 1$
 - B) $3x^2 + 3\sqrt{2}x + 1$
 - C) $3x^2 - 3\sqrt{2}x - 1$
 - D) $3x^2 + 3\sqrt{2}x - 1$

3. Which of the following is not irrational?
 - A) $(3 + \sqrt{7})$
 - B) $(3 - \sqrt{7})(3 + \sqrt{7})$
 - C) $(-3 - \sqrt{7})$
 - D) $(3\sqrt{7})$

4. If the lines $3x+2ky - 2 = 0$ and $2x+5y+1 = 0$ are parallel, then the value of k is
 - A) 4/15
 - B) 15/4
 - C) 5/4
 - D) 4/5

5. In an Arithmetic Progression, if $a = 28$, $d = -4$, $n = 7$, then a_n is:
 - A) 4
 - B) 5
 - C) 6
 - D) 7

6. The first term and common difference for the A.P. 3, 1, -1, -3 ... are:
- A) 1 and 3
 - B) 3 and 2
 - C) -1 and 3
 - D) 3 and -2
7. Which term of the G.P: 5, 10, 20, 40.... is 2560?
- A) 12
 - B) 10
 - C) 11
 - D) 15
8. A man saved Rs. 33000 in 10 months. In each month after the first, he saves Rs.100 more than he did in the preceding month. How much did he save in the first month?
- A) Rs. 2580
 - B) Rs. 2058
 - C) Rs. 2850
 - D) Rs. 2150
9. The diagonals of a rhombus are 16 cm and 12 cm, in length. The side of the rhombus in length is:
- A) 20 cm
 - B) 8 cm
 - C) 9 cm
 - D) 10 cm
10. If perimeter of a triangle is 100 cm and the length of two sides are 30 cm and 40 cm, the length of third side will be
- A) 30 cm
 - B) 40 cm
 - C) 50 cm
 - D) 60 cm

11. If the distance between the points A (2, -2) and B (-1, x) is equal to 5, then the value of x is:

A) -2
B) 3
C) 2
D) 1

12. The value of $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$ is:

A) 0
B) 2
C) 3
D) 1

13. The angle of elevation of the top of a building from a point on the ground, which is 30 m away from the foot of the building, is 30° . The height of the building is:

A) 25m
B) $\sqrt{30} m$
C) $10\sqrt{3} m$
D) $\sqrt{3}/10m$

14. The wickets taken by the bowler in 10 cricket matches are as follows,

2 6 4 5 0 2 1 3 2 3

the mode of the data is:

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

15. Suppose we throw a dice, the probability of getting a number greater than 4 is,
- A) $\frac{2}{3}$
 - B) $\frac{4}{3}$
 - C) $\frac{3}{2}$
 - D) $\frac{1}{3}$
16. The median of a frequency distribution is found graphically with the help of
- A) Ogive
 - B) Histogram
 - C) Frequency polygon
 - D) Bar Graph
17. The probability that a leap year has 53 Sundays is:
- A) $\frac{1}{7}$
 - B) $\frac{2}{7}$
 - C) $\frac{3}{7}$
 - D) $\frac{4}{7}$
18. Which of the following statements is true for the transpose of a matrix,
- A) The number of rows is same as that of the given matrix
 - B) The number of columns is same as that of the given matrix
 - C) The order is same as that of the given matrix
 - D) The number of elements is same as that of the given matrix
19. If $\begin{bmatrix} x+3 & 4 \\ y-4 & x+y \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 3 & 9 \end{bmatrix}$ then the values of x and y are
- A) $x = 2, y = 7$
 - B) $x = 7, y = 2$
 - C) $x = -2, y = -7$
 - D) $x = -7, y = -2$

20. If $A = \begin{bmatrix} 2 & -2 \\ -2 & 2 \end{bmatrix}$ and $A^2 = pA$, then the value of p is
- A) 2
 - B) -2
 - C) 4
 - D) -4
21. A cylindrical container is filled with ice-cream whose diameter is 12 cm and height is 15 cm. The whole ice cream is distributed to 10 children by filling in equal cones and forming hemispherical tops. If the height of the conical portion is twice the diameter of its base, then the diameter of the ice cream cone.
- A) 3 cm
 - B) 4 cm
 - C) 6 cm
 - D) 5 cm
22. The radius of a hemispherical balloon increases from 6cm to 12cm as the air is being pumped into it. The ration of the surface areas of the balloon in the two cases is
- A) 1:4
 - B) 1:3
 - C) 2:3
 - D) 2:1
23. A horse is tied with a 7m long rope at each vertex of a field that is in the shape of an equilateral triangle. Each of its sides is at least 14m long. Then the total area of the field that is gazed by these three horses? (Use $\pi = \frac{22}{7}$)
- A) 92 m²
 - B) 84 m²
 - C) 68 m²
 - D) 77 m²

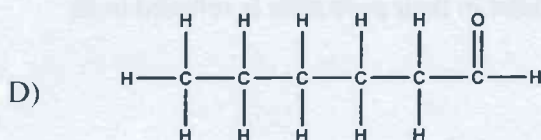
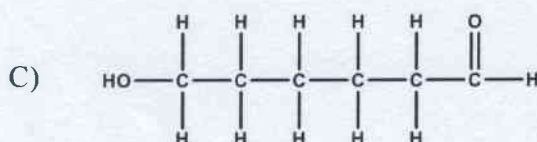
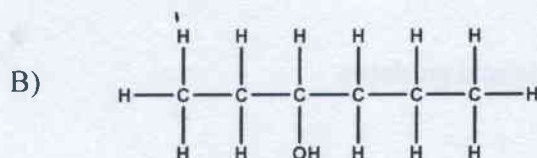
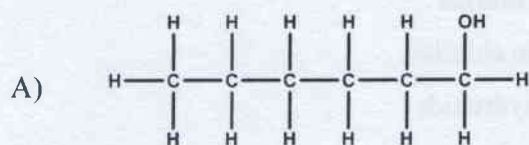
24. Rahul earns an interest of Rs.2996 for the third year and Rs.1400 for the second year on the same sum. Then the rate of interest per annum if it is lent at compound interest (compounding annually).
- A) 110%
 - B) 112%
 - C) 114%
 - D) 109%
25. The amount will triple in 25 years on simple interest. Then the rate of interest is
- A) 5%
 - B) 8%
 - C) 2%
 - D) 12%
26. The line that joins the centre of curvature and the pole of a lens is
- A) Focal length
 - B) Focal plane
 - C) Principal axis
 - D) Radius
27. Splitting of white light into different colours when light ray incident on a prism is called as
- A) Reflection
 - B) Refraction
 - C) Dispersion
 - D) Scattering
28. Three resistors of resistances $3\ \Omega$, $4\ \Omega$ and $6\ \Omega$ are connected in parallel in a circuit. The combination is connected to a battery of 8 V. The current in the circuit is
- A) 6 A
 - B) 3 A
 - C) 4 A
 - D) 8 A

29. The mirror used for rear view of a car is
- A) Concave mirror
 - B) Plane mirror
 - C) Convex mirror
 - D) All the above
30. In electric motors
- A) Mechanical energy is converted into electrical energy
 - B) Electrical energy is converted into light energy
 - C) Mechanical energy is converted into light energy
 - D) Electrical energy is converted into mechanical energy
31. Read the following two statements related to a lens and pick the correct answer
- (I) Any ray passing along the principal axis is undeviated
 - (II) A ray passing parallel to the principal axis converges at the focus or appear to diverge from the focus
- A) Only (I) is true
 - B) Only (II) is true
 - C) Both (I) and (II) are false
 - D) Both (I) and (II) are true
32. The defect in which people cannot see objects situated before near point is called
- A) Myopia
 - B) Presbyopia
 - C) Hypermetropia
 - D) All the above
33. S.I unit of magnetic flux is
- A) Weber
 - B) Tesla
 - C) Watt
 - D) Joule

34. Ohm's law is valid for
- A) Gaseous conductors
 - B) Semiconductors
 - C) Metal conductors
 - D) Insulators
35. An object is placed between pole and focus of a concave mirror. The nature of the image is
- A) Real, inverted, diminished
 - B) Real, inverted, same size
 - C) Virtual, erect, enlarged
 - D) Virtual, erect, diminished
36. The correct balanced chemical reaction equation for burning of a natural gas is
- A) $\text{CH}_4 (\text{g}) + 2\text{O}_2 \rightarrow \text{CO}_2 (\text{g}) + 2\text{H}_2\text{O} (\text{g})$
 - B) $\text{C} (\text{s}) + \text{O}_2 (\text{g}) \rightarrow \text{CO}_2 (\text{g})$
 - C) $2\text{H}_2 (\text{g}) + \text{O}_2 (\text{g}) \rightarrow 2\text{H}_2\text{O} (\text{l})$
 - D) $\text{CO} (\text{g}) + 2\text{H}_2 (\text{g}) \rightarrow \text{CH}_3\text{OH} (\text{l})$
37. $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + \text{NaCl}$
The above reaction is an example for
- A) Combination Reaction
 - B) Decomposition Reaction
 - C) Elimination Reaction
 - D) Double Displacement Reaction
38. When iron fillings are treated with dilute hydrochloric acid _____
- A) Water and iron salts are formed
 - B) No reaction occurs
 - C) H_2 gas and iron chloride are formed
 - D) Cl_2 gas and iron hydroxide are formed

39. What is a brine solution?
- A) An aqueous solution of sodium chloride
 - B) An aqueous solution of potassium chloride
 - C) An aqueous solution of sodium hydroxide
 - D) An aqueous solution of potassium hydroxide
40. The reaction of zinc metal with sulfuric acid produces
- A) SO_2 gas
 - B) SO_3 gas
 - C) O_2 gas
 - D) H_2 gas
41. The property of shining surface of a metal in their pure state is referred to as
- A) Ductile
 - B) Malleable
 - C) Metallic lustre
 - D) Conductivity
42. Among the below, two metals that are found in the free state in nature
- A) Fe and Cu
 - B) Au and Ag
 - C) Au and Al
 - D) Cu and Zn
43. Formation of huge number of carbon compounds in nature can be attributed to the following properties of the carbon
- A) Tetravalency and catenation
 - B) High Electronegativity and Tetravalency
 - C) Catenation and Highly Electronegativity
 - D) Pentavalency and catenation

44. What is the correct structure for 'hexanal'?



45. Reaction of ethyl acetate with sodium hydroxide will lead to the formation of

- A) $\text{CH}_3\text{CH}_2\text{OH} + \text{CH}_3\text{COONa}$
- B) $\text{CH}_3\text{COOH} + \text{CH}_3\text{CH}_2\text{ONa}$
- C) $\text{C}_2\text{H}_5\text{COOH} + \text{CH}_3\text{ONa}$
- D) $\text{C}_2\text{H}_5\text{COONa} + \text{CH}_3\text{OH}$

46. Thylakoid of chloroplast contains photosynthetic units consisting of Chla and Chlb pigments. Each chlorophyll has a metal as its integral component to perform photolysis of water. Identify the metal:

- A) Mn
- B) Mg
- C) Fe
- D) Cu

47. Phylloquinone is a fat-soluble vitamin in the human body. Which type of symptoms are associated with the deficiency of this vitamin.
- A) Nervous disorder
 - B) Over bleeding and delaying of blood clotting
 - C) Improper formation of bones
 - D) Night blindness and Xerophthalmia
48. Diabetes insipidus is caused due to deficiency of a particular hormone, which helps in reabsorption of water in the kidneys. Identify that hormone.
- A) Thyroxin
 - B) Ceratonin
 - C) Vasopressin
 - D) Melatonin
49. Generally, the ovary of a flower becomes fruit after fertilization. But if a fruit is formed without fertilization, this phenomenon is called _____
- A) Parthenocarp
 - B) Parthenogenesis
 - C) Tissue culture
 - D) Reflex action
50. About 100 billion neurons in the human nervous system communicate with each other for effective functioning of the human body. The junction of dendrites and axons of neurons for communication is _____
- A) Insulin
 - B) Tendon
 - C) Synapse
 - D) Synergid

51. In a flowering plant flower, ovule has 8 nucleated embryo sac. Out of 3 nuclei at micropylar end, central cell is egg cell. The two side cells are _____
- A) Antipodals
 - B) Polar nuclei
 - C) Tube nucleus
 - D) Synergids
52. What is the possibility of obtaining homozygous condition when both parents are heterozygous.
- A) 50%
 - B) 25%
 - C) 75%
 - D) 100%
53. The wing of a bat, flipper of a whale and hand of a man have common pattern of arrangement of bones but functions are different, indicating divergent evolution. These organs are called as _____
- A) Homologous organs
 - B) Analogous organs
 - C) Vestigial organs
 - D) Sports
54. Tiny air sacs in the lungs with single cell sickness helps in gaseous exchange with capillaries are called as _____.
- A) Gyrus
 - B) Microvilli
 - C) Alveoli
 - D) Mesosomes
55. In Platyhelminthes, _____ are specialized types of cells for secretion of waste materials.
- A) Flame cells
 - B) Nephridia
 - C) Metanephridia
 - D) Malpighian tubules

56. Choose the synonym of the underlined word in the sentence from the alternatives given:

It is very difficult to retain all that you hear in the class.

- A) preserve
- B) recall
- C) keep
- D) deserve

57. Choose the antonym of the word underlined in the following sentence from the alternatives given below:

The inhabitants of the island were barbarians.

- A) Civilized
- B) Cruel
- C) Uncivilized
- D) Bad

58. Choose the accurate spelling of the word from the choices given below:

- A) Pessenger
- B) Passenger
- C) Pasanger
- D) Pesanger

59. Choose the correct option of one word substitute for the description given below:

A paper written by hand

- A) Handicraft
- B) Manuscript
- C) Handiwork
- D) Thesis

60. Choose the correct option of one word substitute for the description given below:

A person who knows many foreign languages

- A) Linguist
- B) Grammarian
- C) Polyglot
- D) Bilingual

61. Choose the appropriate phrase from the options given below to fill in blank to make a meaningful sentence

I have never seen _____ animal before.

- A) so large
- B) any larger
- C) as large
- D) such a large

62. Choose the appropriate word from the options given below to fill in blank to make a meaningful sentence

If we manage to _____ our natural resources, we will leave a better planet for our next generations.

- A) uphold
- B) restrain
- C) cherish
- D) conserve

63. Choose from the options given below the correct meaning of the idiom

A black sheep

- A) An unlucky person
- B) An ugly person
- C) Someone who is disgrace to the family
- D) A sheep that is black

64. Choose from the options given below the correct meaning of the idiom **to go the extra mile**
- A) to get an unexpected bonus
 - B) to make a special effort to achieve something
 - C) to lose one's way and walk aimlessly
 - D) a vehicle which is very fuel efficient
65. Fill in the blank with the appropriate phrasal verb from the options given below to make a meaningful sentence.
The company had to _____ the meeting due to unforeseen circumstances.
- A) Call off
 - B) Call over
 - C) Calling in
 - D) Run out
66. Fill in the blank with the appropriate phrasal verb from the options given below to make a meaningful sentence.
The committee needs to _____ the issues before making a decision.
- A) Sort off
 - B) Sort out
 - C) Come out
 - D) Take after
67. Identify the pair of appropriate articles from the options given below:
We saw ____ lion in ____ Safari.
- A) an, the
 - B) a, an
 - C) an, an
 - D) a, the

68. Identify appropriate articles from the options given below

I just have _____ one rupee coin with me.

- A) a
- B) an
- C) the
- D) a/an

69. Identify appropriate preposition from the options given below:

The old man suffered _____ a heart attack

- A) from
- B) of
- C) in
- D) By

70. Identify the pair of appropriate prepositions from the options given below:

We will go _____ Delhi _____ air.

- A) on, at
- B) for, on
- C) to, by
- D) on, by

71. Which of the following sentences has the grammatically correct tag question?

- A) It isn't too cold today, isn't it?
- B) It isn't too cold today, does it?
- C) It isn't too cold today, is it?
- D) It isn't too cold today, hasn't it?

72. Which of the following options is the correct active voice form of the sentence?

The roof was damaged by the storm.

- A) The damage of roof by the storm.
- B) The roof damage are due to storm.
- C) The storm damaged the roof.
- D) The roof can get damaged because of storm.

73. Which of the following options is the correct verb form to make the sentence grammatically correct?

He ___ to school everyday.

- A) is going
- B) goes
- C) go
- D) have gone

74. Choose the correct option indicating grammatically accurate subject-verb agreement:

One of my books _____ missing.

- A) am
- B) is
- C) has
- D) are

75. Identify the grammatically correct sentence from the options given:

- A) She preferred coffee than tea
- B) She preferred coffee to tea
- C) She preferred coffee for tea
- D) She preferred coffee from tea

Read the passage below and choose the right answers to the **five questions 76 - 80** that follows:

For most of history, dancing has been part of social or religious celebrations. Dancing is an amazing art form intended to highlight the beauty of movement and the human body. Dancing takes place in many countries around the world. Although the general idea of dancing has remained the same, the actual dances that people perform have changed a lot over time.

In America, dancing changed greatly in the 1960s. Before then, dancing almost always was conducted with a partner. But during the 60s, this changed. You no longer had to dance with a partner. New dances were created that people could do alone on the dance floor.

Most of these dances had striking names, such as the Mashed Potato, the Funky Chicken, and the Swim. These names may sound odd, but they make sense when you see the dance moves. To do the Mashed Potato, you walk backwards, twisting your ankles to grind your feet, as if you are mashing potatoes with your feet. To do the Funky Chicken, you tuck your hands into your armpits like chicken wings and flap them up and down. To do the Swim, you wave your arms in front of you as if swimming in the water. These dances were not difficult to do, and lots of people even made them up as they went along.

Over fifty years later, it has become very common for people to dance alone on the dance floor instead of with a partner. Sometimes you still see people doing the dances described above, although many different dances have been created since then. One thing these popular dances have always had in common is there is usually one song that makes them famous. Yet over time the names of dances have become even stranger. For example, the recent dance called Chicken Noodle Soup looks nothing like chickens or soup. This means that today it is often hard to tell what a dance will look like based on the name alone.

76. The main reason why dances in the 1960s were different from earlier dances is that they
- A) had funny names
 - B) were not religious
 - C) did not require a partner
 - D) were more difficult to do

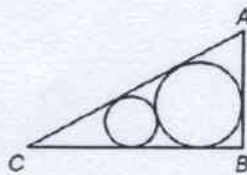
77. Using the information in the passage as a guide, we can understand that dancers who tuck their hands in their armpits and flap their arms up and down are doing the
- A) Mashed Potato
 - B) Swim
 - C) Funky Chicken
 - D) Chicken Noodle Soup
78. Based on information in the passage, it can be understood that dances in the 1960s like the Funky Chicken and the Swim were named for the
- A) clothes that the dancers wore
 - B) way that the dancers moved
 - C) songs that made them popular
 - D) dancers who made them popular
79. According to the author, how the names of dances changed over time?
- A) They have become stranger.
 - B) They have become less confusing.
 - C) They have become more interesting.
 - D) They have become longer.
80. Using the passage as a guide, we can understand that dances from the 1960s are different from the dances today because back then
- A) the names made sense once you saw the dance
 - B) people did not make things up on the dance floor
 - C) people usually danced to songs with a partner
 - D) a dance was often made popular by one song
81. Assume July 1st is Monday. Let A be the number of Mondays in July and B be the number of Sundays in July. The value of $(A \times B)^2$ is
- A) 625
 - B) 400
 - C) 100
 - D) 256

82. P, Q, R, S, T and U are sitting in a row facing North. T and U are in Centre. T is immediate neighbour of R. P and Q are at extreme ends. R sits to the immediate right of Q. Who is to the left of P?
- A) U
 - B) R
 - C) T
 - D) S
83. If the Day on January 26th of 2020 is Sunday, what is the day on January 26th 2024?
- A) Wednesday
 - B) Monday
 - C) Friday
 - D) Thursday
84. A can do a work in 30 days, B can do the same work in 48 days. After working alone for 20 days A left and B started working, how long will B take to complete the work?
- A) 24 days
 - B) 16 days
 - C) 38 days
 - D) 28 days
85. Oasis : Sand :: Island: _____
- A) Water
 - B) Sea
 - C) River
 - D) Waves
86. If PRLN : XZTV :: JLFH : _____
- A) NRTP
 - B) RNPT
 - C) NRPT
 - D) RTNP

87. Find the missing number in the series 0, 6, 24, 60, _____, 210.

- A) 120
- B) 122
- C) 240
- D) 290

88. In the given figure, ABC is a right-angled triangle. $\angle ABC = 90^\circ$ and $\angle ACB = 60^\circ$. If the radius of the smaller circle is 2 cm, then what is the radius (in cm) of the larger circle?



- A) 4
- B) 5
- C) 6
- D) 7

89. A train 100 m long running at uniform speed crosses a station which is 500 m long in 25 seconds. How long will it take for the train to pass a station that is 380 m long?

- A) 19 seconds
- B) 20 seconds
- C) 21 seconds
- D) 22 seconds

90. In an examination, 48% of candidates passed in science and 56% failed in mathematics. If 32% failed in both subjects, then what percent of students pass in both subjects?

- A) 24 %
- B) 22 %
- C) 32 %
- D) 28 %

91. Who said the famous slogan, '*Tum Mujhe Khoon Do, Main Tumhe Aazadi Dunga*'?
- A) Rabindranath Tagore
 - B) Bhagat Singh
 - C) Netaji Subhas Chandra Bose
 - D) Mangal Pandey
92. The World Health Day is celebrated on _____
- A) 1st March
 - B) 7th April
 - C) 6th October
 - D) 10th December
93. How many countries share their borderline with India?
- A) 5 countries
 - B) 6 countries
 - C) 7 countries
 - D) 8 countries
94. Which planet is known as the Red Planet?
- A) Mercury
 - B) Venus
 - C) Earth
 - D) Mars
95. What is the Expansion of DRDL?
- A) Defence Research and Defense Laboratory
 - B) Defence Research and Development Laboratory
 - C) Defence Research and Development Library
 - D) Defence Reality and Development Laboratory

96. Which part of the Central Nervous System controls "Reflex Actions"?
- A) Mesencephalon
 - B) Rhombencephalon
 - C) Medulla Oblongata
 - D) Spinal Cord
97. Vedantham Satyanarayana is known to be the greatest guru of which of the following dance forms?
- A) Odissi
 - B) Kathak
 - C) Bharatanatyam
 - D) Kuchipudi
98. What does the "Page Layout" tab allow you to adjust?
- A) Inserting hyperlinks
 - B) Margins, orientation, and size
 - C) Fonts and paragraphs
 - D) Text color
99. Aman Sehrawat, who recently won a bronze medal at Paris Olympics 2024, is associated with which sports?
- A) Wrestling
 - B) Badminton
 - C) Cricket
 - D) Hockey
100. Which of the following is the highest award (in the order of precedence) for military services in India?
- A) Ashok Chakra
 - B) Kirti Chakra
 - C) Param Vir Chakra
 - D) Veer Chakra

ROUGH WORK