

1. Two bodies A and B of definite shape are placed near one another. Electrostatic attraction is found between the bodies, then
 - a) both bodies must be positively charged
 - b) both bodies must be negatively charged
 - c) both bodies must be oppositely charged
 - d) body A may be neutral
2. Two charges of value $2\mu\text{C}$ and $-50\mu\text{C}$ are placed at in distance 80 cm apart. Calculate the distance of the point from the smaller charge, where the intensity will be zero.
 - a) 20 cm
 - b) 35 cm
 - c) 30 cm
 - d) 25 cm
3. When two bodies A and B are rubbed against each other, 10^9 electrons are transferred from **B to A**. The charge on **A** is
 - a) -0.016 nC
 - b) -0.16 nC
 - c) -1.6 nC
 - d) 16 nC
4. A capacitor of capacity $0.1\text{ }\mu\text{F}$ connected in series to a resistor of $10\text{ M}\Omega$ is charged to a certain potential and then made to discharge through resistor. The time in which the potential will take to fall to half its original value is (Given, $\log_{10}2 = 0.3010$)
 - a) 2 s
 - b) 0.693 s
 - c) 0.5 s
 - d) 1.0 s

5. Calculate the potential of the big drop, if eight charged water drops with a radius of 1 mm and a charge of 10^{-10}C merge into a single drop.
- a) 3200 V
 - b) 4000 V
 - c) 3600 V
 - d) 4200 V
6. A battery of emf 10V and internal resistance 0.5Ω is connected across a variable resistance R. The value of R for which the power delivered in it is maximum, is given by
- a) 2Ω
 - b) 0.25Ω
 - c) 1Ω
 - d) 0.5Ω
7. If R_1 and R_2 are respectively the filament resistances of a 400W bulb and a 200W bulb, designed to operate on the same voltage, then
- a) $R_1 = 2R_2$
 - b) $R_2 = 2R_1$
 - c) $R_2 = 4R_1$
 - d) $R_1 = 4R_2$
8. Ohm's law says
- a) $V = IR$
 - b) $V/I = \text{constant}$
 - c) Both a and b are correct
 - d) Both a and b are incorrect

9. Calculate the force acting between two small magnets, placed in end on position 0.1 m apart from their centers. (Given, magnetic moment of each magnet is 5 Am^2).

a) 0.6 N

b) 0.8 N

c) 0.15 N

d) 0.2 N

10. In a permanent magnet at room temperature

a) *magnetic moment of each molecule is zero*

b) *the individual molecules have non zero magnetic moment which are all perfectly aligned*

c) *domains are partially aligned*

d) *domains are all perfectly aligned*

11. A proton and an α - particle moving with the same kinetic energy enter a uniform magnetic field normally. The ratio of their circular paths will be in ratio

a) $1 : 1$

b) $2 : 1$

c) $1 : 2$

d) $4 : 1$

12. The angle between geographical meridian and magnetic meridian is called

a) *Angle of dip*

- b) angle of declination*
 - c) latitude*
 - d) longitude*
13. The earth's magnetic field always has a horizontal component except at
- a) the equator*
 - b) the poles*
 - c) a latitude of 60°*
 - d) a latitude of 45°*
14. The sum and the difference of self-inductances of two coils are 13 H and 5 H respectively. The maximum mutual inductances of two coils is
- a) 6 H*
 - b) 5 H*
 - c) $\sqrt{65}$ H*
 - d) 18 H*
15. Lenz's law of electromagnetic induction corresponds to the
- a) law of conservation of charge*
 - b) law of conservation of energy*
 - c) law of conservation of momentum*
 - d) law of conservation of angular momentum*
16. If a dry cell of $\text{emf} = 1.5 \text{ V}$ is connected across the primary of a step-up transformer of turn ratio 3 : 5, then calculate the voltage developed across the secondary.
- a) 30 V*
 - b) 5 V*
 - c) Zero*
 - d) None of the above*
17. Find the average power per unit area at distance of 2 m from a small bulb, if the bulb emits 20 W of electromagnetic radiation uniformly in all directions.
- a) 0.69 W/m^2*
 - b) 0.56 W/m^2*
 - c) 0.78 W/m^2*
 - d) 0.39 W/m^2*

18. Find the speed of light in air, if an electromagnetic wave is travelling in air whose dielectric constant is $k = 1.006$.
- a) $3 \times 10^8 \text{ m/s}$
 - b) $3.88 \times 10^8 \text{ m/s}$
 - c) $2.5 \times 10^8 \text{ m/s}$
 - d) $4.6 \times 10^8 \text{ m/s}$
19. A beautiful girl with two normal eyes wants to see full width of her face by a plane mirror. The eye to eye and ear to ear distances of her face are 4 inch and 6 inch respectively. Find the minimum width of the required mirror.
- a) 1 inch
 - b) 2 inch
 - c) 3 inch
 - d) 4 inch
20. A ray of light falls on a plane mirror. When the mirror is turned, about an axis at right angle to the plane of the mirror through 20° , the angle between the incident ray and new reflected ray is 45° . Find the angle between the incident ray and original reflected ray.
- a) 15°
 - b) 30°
 - c) 45°
 - d) 60°
21. In an interference pattern, the position of zeroth order maxima is 4.8 mm from a certain point P on the screen. The fringe width is 0.2 mm. The position of second minima from point P is
- a) 5.1 mm
 - b) 5 mm
 - c) 4 mm
 - d) 5.2 mm
22. In Young's double slit experiment, the spacing between the slits is 'd' and wavelength of light used is $6000 \text{ \AA}$. If the angular width of a fringe formed on a distant screen is 1° , then calculate 'd'.
- a) 1 mm

- b) 0.05 mm
c) 0.03 mm
d) 0.01 mm
23. The energy that should be added to an electron to reduce its de-Broglie wavelength from 1 nm to 0.5 nm is
a) *four times the initial energy*
b) *equal to the initial energy*
c) *twice the initial energy*
d) *thrice the initial energy*
24. The voltage applied to an electron microscope to produce electrons of wavelength 0.50 Å is
a) 602 V
b) 50 V
c) 138 V
d) 812 V
25. Calculate the energy required to excite an electron in hydrogen atom from the ground state to the next higher state, if the ionisation energy for the hydrogen atom is 13.6 eV.
a) 3.4 eV
b) 10.2 eV
c) 12.1 eV
d) 1.3 eV
26. Find the mass of electron in atomic mass unit.
a) 0.0005498
b) 0.5119
c) 0.5498

d) *None*

27. How long will it take for 75% of the atoms of a certain radioactive element, originally present to disintegrate? The half-life of the element is 10 days.

a) *240 days*

b) *3.6 days*

c) *15.6 days*

d) *4.15 days*

28. Zener breakdown in a semiconductor diode occurs when

a) *forward current exceeds certain value*

b) *reverse bias exceeds certain value*

c) *forward bias exceeds certain value*

d) *potential barrier is reduced to zero*

29. Application of a forward bias to a p-n junction

a) *increases the number of donors on the n – side*

b) *increases the electric field in the depletion zone*

c) *increases the potential difference across the depletion zone*

d) *widens the depletion zone*

30. The conductivity of a semiconductor increases with

increase in temperature because

a) *number density of free current carriers increases*

b) *relaxation time increases*

c) both number density of carriers and relaxation time

increase

d) number density of current carriers increases,

relaxation time decreases but effect of decrease in

relaxation time is much less than increase in number

density

CHEMISTRY

31. Which of the following prefixes is used to denote 10^{-12} in the SI system?
- a) nano
 - b) pico
 - c) femto
 - d) atto
32. The uncertainty principle in quantum mechanics was proposed by ____.
- a) Werner Heisenberg
 - b) Erwin Schrödinger
 - c) Max Plank
 - d) Niels Bohr
33. What is the common name for the elements in Group 17 of the periodic table?
- a) chalcogens
 - b) halogens
 - c) noble gases
 - d) lanthanides
34. What is the common hybridisation scheme involved in molecules with square pyramidal shape?
- a) dsp^2
 - b) sp^3
 - c) sp^3d^2
 - d) sp^3d
35. The highest temperature at which a substance can be liquified is known as the ____.
- a) Boyle temperature

- b) critical temperature
c) boiling point
d) Kelvin temperature
36. Which of the following options corresponds to the molecular formula of a hydronium ion?
a) H_3O^+
b) H_2O
c) H_4O^+
d) OH^-
37. What is the oxidation state of each oxygen atom in a peroxide molecule (O_2^{2-})?
a) +1
b) -2
c) 0
d) -1
38. The process in which lime is added to water in order to remove the hardness of water is known as ____.
a) Calgon's method
b) Ion-exchange method
c) Synthetic resin method
d) Clark's method
39. Which of the following has the highest melting point?
a) Lithium
b) Sodium
c) Potassium
d) Rubidium
40. The molecular formula for orthoboric acid and diborane are ____ and ____ respectively.
a) H_3BO_3 and B_2H_6
b) $\text{Na}_2\text{B}_4\text{O}_7$ and H_3BO_3
c) B_2H_6 and B_2O_3
d) H_3BO_3 and HBO_2
41. The tendency of carbon atoms to link with one another through covalent

bonds to form chains and rings is known as ____.

- a) catenation
- b) valency
- c) ionization
- d) allotrope

42. The chemical formula of anisole is ____.

- a) $\text{C}_6\text{H}_5\text{NH}_2$
- b) $\text{C}_6\text{H}_5\text{COCH}_3$
- c) $\text{C}_6\text{H}_5\text{OCH}_3$
- d) CH_3COCH_3

43. The number of hydrogen atoms in a cyclopentane molecule is ____.

- a) 6
- b) 10
- c) 14
- d) 12

44. In thin layer chromatography, the relative adsorption of different components of a mixture is expressed in terms of ____.

- a) absorption index
- b) retardation factor
- c) elution value
- d) conjugation

45. The lowest layer of atmosphere is known as ____.

- a) troposphere
- b) stratosphere
- c) ionosphere
- d) mesosphere

46. Which of the following molecules exist in the tetragonal crystal system?

- a) NaCl
- b) CaSO_4
- c) BaSO_4
- d) ZnO

47. The number of atoms present per unit cell in a face centered unit cell is ____.

- a) 1

- b) 2
c) 3
d) 4
48. 'For any solution, the partial vapour pressure of each volatile component in the solution is directly proportional to its mole fraction.' This is the statement of ____.
- a) Raoult's law
b) Henry's law
c) Dalton's law
d) Gay-Lussac's law
49. The number of carbon atoms and five membered rings in buckminsterfullerene are ____, respectively.
- a) 6 and 12
b) 20 and 12
c) 60 and 12
d) 12 and 20
50. What is the appropriate unit for the rate constant of a reaction with an overall order of two?
- a) $\text{mol}^{-1}\text{L s}^{-1}$
b) $\text{molL}^{-1} \text{s}^{-1}$
c) s^{-1}
d) mol L^{-1}
51. Which of the following enzymes is responsible for the conversion of proteins to amino acids inside the stomach?
- a) Invertase
b) Diastase
c) Maltase
d) Pepsin
52. Sphalerite and haematite are ores of ____ and ____, respectively.
- a) Zinc, iron
b) Copper, zinc
c) Copper, iron
d) Zinc, copper

53. What is the number of covalent bonds in HNO_3 ?
- 1
 - 2
 - 3
 - 4
54. Which pair of compounds demonstrates structural isomerism?
- Glucose and Fructose
 - Butane and Isobutane
 - Ethene and Propene
 - Trans-2-butene and Cis-2-butene
55. Aryl halides give analogous compounds when treated with sodium in dry ether, in which two aryl groups are joined together. This reaction is called ____.
- Sandmeyer reaction
 - Fittig reaction
 - Etard reaction
 - Kolbe reaction
56. The synthesis of aldehydes from nitriles can be done by ____.
- Cannizzaro Reaction
 - Wurtz Reaction
 - Stephen reaction
 - Fittig reaction
57. Among the given options, which compound exhibits the largest pK_b value?
- N,N-Dimethylmethanamine
 - N-Ethylethanamine
 - Phenylmethanamine
 - N-Methylaniline
58. The alternate name for Vitamin B6 is ____.
- Thiamine
 - Riboflavin
 - Pyridoxine
 - Ascorbic acid
59. Which polymer is widely utilized in the production of paints and lacquers?
- Glyptal

- b) Bakelite
 - c) Polyvinyl chloride
 - d) Polypropene
60. Which of the following is an example of a bactericidal antibiotic?
- a) Penicillin
 - b) Erythromycin
 - c) Tetracycline
 - d) Chloramphenicol

Mathematics

61. If $n(U) = 20, n(A) = 12, n(B) = 9$ and $n(A \cap B) = 4$, where U is the universal set, A and B are subsets of U , then $n[(A \cup B)^c]$ is equal to
- a) 17
 - b) 9
 - c) 11
 - d) 3
62. Which of the following is the null set?
- a) $\{0\}$
 - b) $\{\}$
 - c) $\{x : x^2 = -1\}$
 - d) Both a and b
63. The principal value of $\sin^{-1}\left(-\frac{1}{2}\right)$ is equal to
- a) $\frac{\pi}{6}$
 - b) $\frac{\pi}{3}$
 - c) $-\frac{\pi}{3}$
 - d) $-\frac{\pi}{6}$
64. The second term of a GP is 6, and the fifth term is 48. Then the common ratio of the GP is
- a) 5
 - b) 4
 - c) 2
 - d) 3

65. If $A = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$, then the cofactor of element a is
- $e \times i - h \times f$
 - $d \times i - g \times f$
 - $d \times h - e \times g$
 - $b \times h - c \times g$
66. If $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, $J = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$, then B can expressed as
- $I \cos \theta - J \sin \theta$
 - $I \cos \theta + J \sin \theta$
 - $J \cos \theta + I \sin \theta$
 - $-I \cos \theta + J \sin \theta$
67. If $A = \begin{bmatrix} \cos \alpha & -\sin \alpha & 0 \\ \sin \alpha & \cos \alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$, then A^{-1} is equal to
- A
 - $-A$
 - $\text{adj}(A)$
 - $-\text{adj}(A)$
68. If A and B are symmetric matrices and $AB = BA$, then $A^{-1}B$ is
- Symmetric matrix
 - Identity matrix
 - Skew-symmetric matrix
 - None of the above
69. Let $A = \begin{pmatrix} 1 & 0 \\ 2 & 1 \end{pmatrix}$ then A^n is
- $\begin{pmatrix} 1 & 0 \\ 2n & 1 \end{pmatrix}$
 - $\begin{pmatrix} 1 & 0 \\ n & 1 \end{pmatrix}$
 - $\begin{pmatrix} 1 & 0 \\ 2^n & 1 \end{pmatrix}$
 - $\begin{pmatrix} n & 0 \\ 2 & n \end{pmatrix}$
70. If $f(x) = \log(\sec x + \tan x)$, then $f'(x)$ is

- a) $\sin x$
- b) $\cos x$
- c) $\tan x$
- d) $\sec x$

71. The value of $\int_0^\pi \sin^2 \theta \, d\theta$ is

- a) $\frac{\pi}{2}$
- b) π
- c) $\frac{\pi}{4}$
- d) $\frac{\pi}{3}$

72. If $y = \sqrt{\log x + \sqrt{\log x + \cdots \dots \infty}}$ then $\frac{dy}{dx}$ is

- a) $\frac{x}{(2y-1)}$
- b) $\frac{x}{(2y+1)}$
- c) $\frac{1}{x(2y-1)}$
- d) $\frac{1}{x(2y+1)}$

73. The solution of the differential equation $\frac{dy}{dx} = 2x$, given that $y(1) = 3$, is

- a) $y = x^2 - 2$
- b) $y = x^2 + 2$
- c) $y = 2x^2 - 3$
- d) $y = 2x^2 + 3$

74. The value of $y = \sin(\sin x)$, then $\frac{d^2y}{dx^2} + \tan x \frac{dy}{dx}$ is

- a) $-y \cos^2 x$
- b) 0
- c) y
- d) $\sin^2 x$

75. The value of $\int x \log x \, dx$ is equal to

- a) $x \log x - x + c$
- b) $\frac{1}{x} + c$
- c) $e^x + c$
- d) $\log x + c$

76. The cross product of vectors $\vec{a} = (1, 2, 3)$ and $\vec{b} = (4, 5, 6)$ is
- $(-3, -6, -3)$
 - $(-6, 3, -6)$
 - $(3, 6, 3)$
 - $(-3, 6, -3)$
77. The center of the circle $x^2 + y^2 + 6x + 8y - 96 = 0$ is
- $(-3, -4)$
 - $(3, 4)$
 - $(4, 3)$
 - $(-4, -3)$
78. The angle between two vectors a and b is 60° , and $|a| = 5$ and $|b| = 7$. Then, the dot product of a and b is
- 8.25
 - 35
 - 17.5
 - 25
79. Which of the following is not true
- $A - B \subseteq A$
 - $B' - A' \subseteq A$
 - $A \subseteq A - B$
 - $A \cap B \subseteq A$
80. Given two points $A(1, 2)$ and $B(4, 6)$, the equation of the line passing through these points is
- $y = \frac{4}{3}x + \frac{2}{3}$
 - $y = -\frac{4}{3}x + \frac{2}{3}$
 - $y = \frac{4}{3}x - \frac{2}{3}$
 - $y = -\frac{4}{3}x - \frac{2}{3}$
81. The value of $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x \sin x}$ is
- 1
 - $\frac{1}{2}$
 - 0

d) -1

82. The value of $\lim_{x \rightarrow 0} 2^{-\frac{1}{x^2}}$ is

a) 0

b) 2

c) $\frac{1}{2}$

d) Does not exist

83. The eccentricity of ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$ is

a) $\frac{7}{16}$

b) $\frac{5}{4}$

c) $\frac{\sqrt{7}}{4}$

d) $\frac{\sqrt{7}}{2}$

84. The focus of parabola with equation $x^2 = 100y$ is

a) $(0,25)$

b) $(0, -25)$

c) $(25,0)$

d) $(-25,0)$

85. The marks obtained by 10 students in a class are: 45, 55, 65, 75, 85, 95, 100, 90, 80, 70. The mean of the marks is

a) 75

b) 76

c) 78

d) 79

86. If birth of male child and birth of female child are equal probable, then the probability that at least one of the three children born to a couple is male equal to

a) $\frac{4}{5}$

b) $\frac{8}{7}$

c) $\frac{7}{8}$

d) $\frac{1}{2}$

87. The probability that at least one of A and B occur is 0.6. If A and B occur simultaneously with probability 0.3, then $P(A') + P(B')$ is
- a) 0.9
 - b) 1.1
 - c) 1.2
 - d) 0.18
88. If two dice are rolled, the probability of getting a sum greater than 8 is
- a) $\frac{2}{18}$
 - b) $\frac{5}{18}$
 - c) $\frac{1}{9}$
 - d) $\frac{1}{18}$
89. If two independent events A and B have probabilities 0.3 and 0.5 respectively, then the probability that both occur is
- a) 0.8
 - b) 0.2
 - c) 0.12
 - d) 0.15
90. The probability that a leap year has 52 Sundays is
- a) $\frac{2}{7}$
 - b) $\frac{3}{7}$
 - c) $\frac{5}{7}$
 - d) $\frac{4}{7}$

ENGLISH

Choose the synonym of the following word:

91. Altruistic
- a) Selfish
 - b) Generous
 - c) Cruel
 - d) Mean
92. Meticulous
- a) Careless

- b) Hasty
- c) Detailed
- d) Messy

93. Choose the correct sentence:

- a) He is the best player in the team.
- b) He is best player in the team.
- c) He is better player in the team.
- d) He is the better player in the team.

Choose the correct answers.

94. I will go to the park _____ it stops raining

- a) If
- b) Unless
- c) Until
- d) While

95. She _____ to the market every morning.

- a) go
- b) goes
- c) going
- d) gone

96. Choose the correct meaning of the word "prodigy".

- a) A beginner
- b) A genius or extra ordinary talent
- c) A normal person
- d) A lazy individual

97. Which of the following sentences is grammatically correct?

- a) She can sing well
- b) She can sings well
- c) She can singing well
- d) She can sing to well

98. What is the meaning of the phrase "to cut corners"?

- a) To take shortcuts and reduce quality
- b) To make something square
- c) To argue or dispute

- d) To improve the quality of work

99. Choose the correct form of the verb

I wish I _____ a car.

- a) Have
- b) Had
- c) Will have
- d) Would have

100. Choose the passive form of the following sentence:

The engineer designs the system.

- a) The system is designed by the engineer
- b) The system designs by the engineer
- c) The system was designed by the engineer
- d) The system design is by the engineer

101. Read the passage and choose the correct answer.

"Engineers are problem-solvers. They apply scientific principles to design systems, machines, and structures that improve human life. Engineers work in a wide variety of fields such as civil, mechanical, and electrical engineering."

What is the main role of engineer

- a) They improve human life by solving problems
- b) They work only in mechanical engineering
- c) They design systems for entertainment.
- d) They only build buildings.

102. Identify the error in the following sentence:

The engineers has completed the construction of the bridge.

- a) has
- b) completed
- c) construction
- d) bridge

103. Choose the correct form of the adjective.

This is the _____ book I've ever read

- a) More interesting
- b) Most interesting

- c) Interesting
- d) Interestingest

104. Select the correct form of the verb.

By the time we arrive, the meeting _____.

- a) Is starting
- b) Has started
- c) Will start
- d) Will have started

105. Select the correct sentence

- a) The teacher asked us to read the chapters carefully
- b) The teacher asked we to read the chapters carefully.
- c) The teacher asked us read the chapters carefully.
- d) The teacher asked us reading the chapters carefully.

106. Choose the correct preposition to complete the sentence

The engineer is responsible _____ the design of the new system

- a) For
- b) To
- c) with
- d) about

107. Choose the sentence where the adverb is used correctly:

- a) He runs very quick.
- b) He runs quick.
- c) He runs quickly.
- d) He quickly runs.

108. Identify the adverb in the sentence:

The students worked extremely hard during the exams.

- a) Worked
- b) Hard
- c) Extremely
- d) During

109. Select the correct preposition to fill in the blank:

The meeting is scheduled _____ 10 AM.

- a) For
- b) At
- c) On
- d) In

Choose the meaning of the italicized phrases in the following sentences.

110. Mary is feeling a bit *under the weather* today, so she decided to stay home.

- a) Physically unwell
- b) Extremely happy
- c) Experiencing good weather
- d) Feeling confused

111. The test was a *piece of cake*; I finished it in no time.

- a) A delicious dessert
- b) An easy task
- c) A large portion of food
- d) A complicated problem

112. When Sarah missed the meeting without notifying anyone, she found herself *in hot water*."

- a) In a difficult or troublesome situation
- b) In the kitchen
- c) In a relaxing place
- d) In a cold situation

113. Choose the sentence that uses the correct form of the verb:

- a) The team is playing well today.
- b) The team are playing well today.
- c) The team have played well today.
- d) The team has played well today.

114. Identify the correct form of the verb:

By the time we arrive, the meeting _____ already started.

- a) has
- b) have
- c) had
- d) will have

115. Choose the correct conjunction:

I will go to the meeting _____ I finish my work.

- a) and
- b) or
- c) unless
- d) until

116. Identify the correct use of the apostrophe:

- a) The dogs bone is buried in the yard.
- b) The dog's bone is buried in the yard.
- c) The dogs' bone is buried in the yard.
- d) The dogs' bones is buried in the yard.

117. Choose the sentence with the correct punctuation:

- a) Can you meet me at 3 o'clock, or later?
- b) Can you meet me at 3 o'clock or later?
- c) Can you meet me at 3 o'clock, or, later?
- d) Can you meet me at 3 o'clock or, later

118. Choose the correct passive form of the sentence:

The manager will review the report."

- a) The report will reviewed by the manager.
- b) The report will be reviewed by the manager.
- c) The report reviewed by the manager.
- d) The report is reviewed by the manager.

119. Which sentence is using a relative clause correctly?

- a) The book which I borrowed is interesting.
- b) The book I borrowed which is interesting.
- c) The book, which I borrowed is interesting.
- d) The book which borrowed I is interesting.

120. Which of the following prefixes means "not" or "opposite of"?

- a) Re-
- b) Un-
- c) Pre-
- d) Dis-

LOGICAL REASONING

Section 1: Analytical Reasoning

121. Choose the odd pair:

- (A) Sun: Light
- (B) Candle: Wax
- (C) Fire: Heat
- (D) Book: Knowledge

122. If A is the brother of B, B is the sister of C, and C is the father of D, how is A related to D?

- (A) Uncle
- (B) Brother
- (C) Father
- (D) Grandfather

123. Arrange the sequence logically: Milk, Cow, Grass, Dairy.

- (A) Grass, Cow, Milk, Dairy
- (B) Dairy, Milk, Grass, Cow
- (C) Cow, Grass, Milk, Dairy
- (D) Grass, Milk, Cow, Dairy

124. If a cube has an edge of 4 cm, what is its volume?

- (A) 16 cm^3
- (B) 32 cm^3
- (C) 64 cm^3
- (D) 48 cm^3

Section 2: Analogies

125. Find the analogy: Lion is to Pride as Bee is to?

- (A) Hive
- (B) Colony
- (C) Swarm
- (D) Buzz

126. Complete the analogy: Glove is to Hand as Sock is to?

- (A) Foot
- (B) Shoe
- (C) Leg
- (D) Toe

127. Fill in the blank: Knife is to Cut as Pen is to?

- (A) Ink
- (B) Write
- (C) Paper
- (D) Point

128. Choose the correct analogy: Book is to Author as Painting is to?

- (A) Canvas
- (B) Painter
- (C) Frame
- (D) Viewer

129. Analogous pair: Winter is too Cold as Summer is to?

- (A) Hot
- (B) Sweat
- (C) Vacation
- (D) Beach

Section 3: Cause and Effect

130. Statement 1: The water level in the reservoir is rising rapidly.

Statement 2: It has been raining heavily for several days.

- (A) Statement 1 is the cause and Statement 2 is the effect.
- (B) Statement 2 is the cause and Statement 1 is the effect.
- (C) Both are independent events.
- (D) Both are effects of a common cause.

131. Statement 1: People are spending more time indoors.

Statement 2: A new wave of flu has spread across the city.

- (A) Statement 1 is the cause and Statement 2 is the effect.
- (B) Statement 2 is the cause and Statement 1 is the effect.
- (C) Both are independent events.
- (D) Both are effects of a common cause.

132. Statement 1: Students are performing better in their exams.

Statement 2: A new teaching method was introduced this semester.

- (A) Statement 1 is the cause and Statement 2 is the effect.
- (B) Statement 2 is the cause and Statement 1 is the effect.
- (C) Both are independent events.
- (D) Both are effects of a common cause.

133. Statement 1: There was a power failure in the city last night.

Statement 2: The streets were dark and deserted.

- (A) Statement 1 is the cause and Statement 2 is the effect.
- (B) Statement 2 is the cause and Statement 1 is the effect.
- (C) Both are independent events.
- (D) Both are effects of a common cause.

134. Statement 1: Prices of vegetables have dropped sharply.

Statement 2: There has been a good harvest this season.

- (A) Statement 1 is the cause and Statement 2 is the effect.

- (B) Statement 2 is the cause and Statement 1 is the effect.
- (C) Both are independent events.
- (D) Both are effects of a common cause.

Section 4: Logical Games and Puzzles

135. **Puzzle:** Four friends \u2013 A, B, C, and D \u2013 are sitting in a line.

- A is not at the extreme ends.
- C is to the left of A.
- B is at one of the ends.

Who is sitting in the middle?

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

136. **Puzzle:** There are 3 doors. Behind one door is a prize; the other two are empty.

- You choose a door.
- The host opens another door, which is empty.
- You are given a chance to switch your choice.

What should you do to maximize your chances of winning?

- (A) Stay with the original choice.
- (B) Switch to the other door.
- (C) It doesn't matter; both choices are equal.
- (D) Ask the host to reveal the prize.

137. **Logical Game:** A farmer needs to cross a river with a wolf, a goat, and a cabbage.

- He can carry only one item at a time.
- The wolf cannot be left alone with the goat, and the goat cannot be left alone with the cabbage.

What is the minimum number of crossings required?

- (A) 5
- (B) 6
- (C) 7

- (D) 8

138. **Logical Game:** You have 3 jars: one contains apples, one contains oranges, and one contains a mix of both. All jars are mislabelled.

- By picking one fruit from one jar, can you correctly relabel the jars?
- (A) Yes
- (B) No
- (C) Only if you pick from the mixed jar
- (D) Only if you pick from the single-fruit jars

139. **Puzzle:** Two trains are 100 km apart and are traveling towards each other at speeds of 50 km/h each. A bird flying at 100 km/h starts from one train and flies back and forth between the trains until they meet.

What is the total distance travelled by the bird?

- (A) 50 km
- (B) 100 km
- (C) 200 km
- (D) 150 km

Section 5: Letter and Symbol Series

140. **What comes next in the series? A, Z, B, Y, C, X, ?**

- (A) D
- (B) W
- (C) E
- (D) V

141. **Complete the series: @, #, @, #, @, ?**

- (A) #
- (B) @
- (C) *
- (D) \$

142. What comes next in the series? AB, BC, CD, DE, ?

- (A) EF
- (B) DF
- (C) FG
- (D) CE

143. Choose the correct continuation of the series: P, Q, R, T, U, ?

- (A) S
- (B) V
- (C) W
- (D) O

144. *Which symbol completes the series: &, %, , &, %, ?

- (A) %
- (B) &
- (C) *
- (D) #

Section 6: Logical Problems

145. A man bought 3 bananas for ₹15 and 5 apples for ₹40. How much does he pay for 6 bananas and 10 apples?

- (A) ₹100
- (B) ₹110
- (C) ₹120
- (D) ₹130

146. A clock shows 9:15. What is the angle between the hour and minute hands?

- (A) 90°
- (B) 97.5°
- (C) 100°
- (D) 85°

147. A train travels 100 km in 2 hours and 150 km in the next 3 hours. What is its average speed?

- (A) 40 km/h
- (B) 50 km/h
- (C) 60 km/h
- (D) 70 km/h

148. If two pencils cost ₹6, what is the cost of 20 pencils?

- (A) ₹30
- (B) ₹40
- (C) ₹50
- (D) ₹60

149. A room has 4 walls, and each wall needs 3 liters of paint. If 1 liter of paint costs ₹200, what is the total cost of painting the room?

- (A) ₹2400
- (B) ₹3000
- (C) ₹3600
- (D) ₹4800

Section 7: Making Judgments

150. **Statement:** Many students in urban schools score higher marks compared to rural schools.
Conclusion: Urban schools have better teaching staff. Students in rural schools are less intelligent.

- (A) Only conclusion 1 follows.
- (B) Only conclusion 2 follows.
- (C) Both conclusions follow.
- (D) Neither conclusion follows.