Section 1: English

1. Which of the following words is an adverb?

   (A) tall   (B) beautifully

   (C) quick   (D) should

2. Choose the correct preposition to fill up the blank in the following sentence:

   We cordially invite you .... our Annual Day Celebrations.

   (A) to   (B) on

   (C) for   (D) over

3. In which of the following sentences does the subject and verb agree?

   (A) Every boy and girl were given prizes.

   (B) Every boy and girl are given prizes.

   (C) Every boy and girl was given a prize.

   (D) None of these.

4. Choose the correct reported speech form of the following direct speech utterance:

   She said to me, "Your mother was looking for you".

   (A) She said to me that her mother was looking for me.

   (B) She asked me if my mother had been looking for me.

   (C) She told me that my mother had been looking for me.

   (D) She told me that my mother had been looking for you.

5. From the options, choose the correct simple sentence form of the following complex sentence:

   When the man saw his young grandchild, he smiled with happiness.

   (A) The man saw his young grandchild and smiled with happiness.

   (B) The man seeing his young grandchild, smiled with happiness

   (C) The man saw his young grandchild smiling with happiness.

   (D) Seeing his young grandchild, the man smiled with happiness.

6. Choose from the options the correct meaning of the idiom 'the apple of one's eye'

   (A) very dear

   (B) a tearful eye

   (C) the most tender part of the eye

   (D) None of the above

7. Choose the correct word from the homophones to fill up the blank:

   He...................... his bicycle quite comfortably.

   (A) road   (B) rode

   (C) rowed   (D) none of the above

8. Find the correct meaning of the homonym used in the following sentence:

   Try not to be mean towards the underprivileged.

   (A) average   (B) imply

   (C) not nice   (D) none of the above

9. Complete the collocation: "I was running late so I only had time for a .... shower."

   (A) short   (B) quick

   (C) fast   (D) none of the above

10. Choose the correct question for the part underlined in the following sentence:

    Peter runs with his dog on Sundays.

    (A) What does Peter do on Sundays?

    (B) When does Peter run with his dog?

    (C) Whom does Peter run with on Sundays?

    (D) Who runs with the dog on Sundays?

11. Write the domain of the real valued function

$$\frac{x+1}{x^2 - 10x + 21}$$

   (A) $x > 7$ and $x < 3$ (B) $x \in (3, 7)$

   (C) $x \le 7$ and $x \ge 3$ (D) $x \ge 7$ and $x \le 3$

12. Find the value of x if $x + 6, x + 12, x + 15$ are consecutive terms of a Geometric progression and also find the 6th term if $x + 6$ is the first term.

   (A) $x = -7, t_6 = \dfrac{-1}{2}$

   (B) $x = -18, t_6 = \dfrac{-3}{8}$

   (C) $x = 5, t_6 = 21$

   (D) $x = \dfrac{-3}{4}, t_6 = \dfrac{-3}{16}$

13. Find the value of a and b if the following polynomial is a perfect square $4x^4 - 12x^3 + 37x^2 + bx + a$

   (A) $a = 40, b = 38$

   (B) $a = -44, b = -27$

   (C) $a = 49, b = -42$

   (D) $a = 51, b = -31$

14. If α and β are the roots of $p^2 - 7p - 30 = 0$ then, find the equation whose roots are α^2 and β^2.

   (A) $p^2 - 100p + 900 = 0$

   (B) $p^2 + 77p + 210 = 0$

   (C) $2p^2 - 21p + 30 = 0$

   (D) $p^2 - 109p + 900 = 0$

15. AD is the bisector of the $\lfloor BAC$ of a triangle ABC. If $AB = 1.5$ cm, $AC = 3.5$ cm, $BD = x$, $DC = 7 - x$. Find BC and what theorem is used to find BC?

   (A) $BC = 8$ cm Thales theorem

   (B) $BC = 7.8$ Proportionality theorem

   (C) $BC = 7$ Angle bisector theorem

   (D) $BC = 7.5$ Pythagoras theorem

16. Let ABC be a triangle and D, E, F are points on BC, CA, AB respectively. Then the cevians AD, BE and CF are concurrent if and only if

   (A) $AD^2 + BE^2 + CF^2 = 0$

   (B) $\dfrac{BD}{DC} \times \dfrac{CE}{EA} \times \dfrac{AF}{FB} = 1$

   (C) $AD \times BE \times CF = AB \times BC \times CA$

   (D) $AD^2 + BE^2 + CF^2 = AB^2 + BC^2 + CA^2$

17. If the points $P(-1, a), Q(3, b), C(5, -1)$ are collinear and $2a + b - 10 = 0$ then, what are the values of a and b?

   (A) $a = 5, b = -3$ (B) $a = 4, b = 2$

   (C) $a = -1, b = 3$ (D) $a = 4, b = -3$

18. The mean, variance and standard division of first 25 natural numbers are

   (A) 14, 21, 4.5

   (B) 13, 52, 7.2

   (C) 15, 50, 7

   (D) 13.5, 48, 6.4

19. The 15th term of an A.P is -2 and the sum of the first 13 terms is 234. Find the first term, common difference and sum to 10 terms.

   (A) $a = 7, d = \dfrac{3}{2}, S_{10} = 100$

   (B) $a = 35, d = \dfrac{-3}{2}, S_{10} = 175$

   (C) $a = 33, d = \dfrac{-5}{2}, S_{10} = 217.5$

   (D) $a = -32, d = 5, S_{10} = 168.5$

20. Which of the following statements is/are true for the matrices A, B and C?

   (i) $AB = BA$ always

   (ii) $(A + B)^2 = A^2 + 2AB + B^2$

   (iii) $(A^T)^T = A$

   (iv) All unit matrix is diagonal matrix

   (v) A is 2×3 matrix, B is 3×5 matrix then AB is 2×5 matrix

   (A) All (B) (i), (ii) and (iii)

   (C) (iii), (iv), (v) (D) (ii), (iii), (iv) & (v)

21. In $\triangle PQR$, if $AB \parallel QR$, $PA = x$, $AQ = 2x + 7$, $PB = x + 4$, $BR = 4x + 5$ then, find the value of x and the lengths of the sides PQ and PR

   (A) $x = 7, PQ = 28, PR = 44$

   (B) $x = -2, PQ = 3, PR = 17$

   (C) $x = 2, PQ = 15, PR = 19$

   (D) $x = 7, PQ = 21, PR = 37$

22. The angle of elevation of a flag on a school building is $45°$, moving 40 m towards the building the angle of elevation is found to be $60°$. What is the height of the flag from the ground?

   (A) 40 m   (B) 94.64 m

   (C) 72 m   (D) 54.64 m

23. A solid right circular cone of diameter 14 cm and height 8 cm is melted to form a hollow sphere. If the external diameter of the sphere is 10 cm, find the internal diameter.

   (A) 6 cm   (B) 9 cm

   (C) 4 cm   (D) 8 cm

24. The mean and variance of the salary of 5000 workers are 2500 and 81 respectively. The coefficient of variation of the data is

   (A) $\dfrac{81}{25}$ (B) $\dfrac{9}{25}$

   (C) $\dfrac{3}{5}$ (D) 0.5

25. There are 18 girls and 12 boys in a class. 2/9 of the girls and 1/4 of the boys walk to school. One of the students who walk to school is chosen at random. If the chosen student is a boy, then the probability is

   (A) $\dfrac{3}{11}$ (B) $\dfrac{3}{7}$

   (C) $\dfrac{4}{7}$ (D) $\dfrac{12}{31}$

Section 3: Science

26. Suppose you are in some unknown planet and you would like to calculate the acceleration due to gravity (g′) on its surface. If the density of the planet is twice of that of earth and the radius is half the radius of the earth, then

   (A) $g' = 2g$ (B) $g' = \dfrac{g}{2}$

   (C) $g' = g$ (D) $g' = 4g$

27. When light moves from one transparent medium to another transparent medium its................ remains unchanged

   (A) Speed   (B) Frequency

   (C) Wavelength   (D) Intensity

28. The sky appears red in the morning and evening and blue in the noon is due to

   (A) Raman scattering

   (B) Mie scattering

   (C) Rayleigh scattering

   (D) Inelastic scattering

29. What is the equivalent resistance across P and Q in the given following resistor network?

   (A) $R\dfrac{5}{3}$ (B) $R\dfrac{10}{3}$

   (C) $R\dfrac{13}{8}$ (D) $R\dfrac{5}{8}$

30. **Statement A:** When a liquid taken in a container of high coefficient of linear expansion is heated, its level goes down.

   Statement 2: The heat is first absorbed by the container before it reaches the liquid, as a result of which the container expands first.

   (A) Both statements are correct and statement B correctly explains statement A.

   (B) Both statements are correct but statement B does not correctly explain statement A.

   (C) Statement A alone is correct.

   (D) Statement B alone is correct.

31. Which of the following statements are wrong?

    (1) Blue vitriol is $CuSO_4.10H_2O$

    (2) White vitriol is $CaSO_4.2H_2O$

    (3) Green vitriol is $FeSO_4.7H_2O$

    (4) Gypsum is $MgSO_4.7H_2O$

    (A) 1, 2 & 3 only

    (B) 2, 3 & 4 only

    (C) 1, 2 & 4 only

    (D) 3 & 4 only

32. The following reaction can be classified as .... reaction.

    $$NaCl + AgNO_3 \longrightarrow AgCl + NaNO_3$$

    (A) Double displacement

    (B) Decomposition

    (C) Simple displacement

    (D) Direct combination

33. The diagrams show the nuclei of four different atoms.

Q	R	S	T	key
10 p 10 n	10 p 12 n	12 p 14 n	14 p 14 n	p = proton n = neutron

    Which two atoms are isotopes of each other?

    (A) Q and R   (B) Q and T

    (C) R and S   (D) S and T

34. The correct order of separation of sand, sodium chloride, water and oil is

    (A) Separating funnel, decantation and evaporation

    (B) Decantation, separating funnel and evaporation

    (C) Evaporation, separating funnel and decantation

    (D) Decanation, evaporation and separating funnel.

35. pH of 0.001 M HCl is _____

    (A) 1   (B) 3

    (C) 4, 5   (D) 1.5

36. What is the advantage of presence of 4 chambered heart in our body?

    (A) it is maintaining continuous supply of blood.

    (B) it is regulating continuous supply of blood to brain.

    (C) it is maintaining complete separation of oxygenated blood from deoxygenated blood.

    (D) it has no advantage.

37. Secondary growth is different from lateral growth. How?

    (A) Secondary growth is caused by cambium which results in increase in girth of the plant.

    (B) Lateral growth does not occur in dicot plants.

    (C) Secondary growth occurs in most of the monocot plants.

    (D) Lateral growth occurs from terminal bud not from vascular cambium.

38. The significance of chloroplast and mitochondria respectively are

    (A) Synthesis and storage

    (B) Anabolic and catabolic activities

    (C) Disintegration and synthesis

    (D) Both (A) and (C)

39. How can you recognize leech as annelidan?

    (A) Presence of bisexual character in a body.

    (B) Presence of well developed sense organs.

    (C) Presence of segmentally arranged organs.

    (D) Presence of nephridial tubules.

40. **Assertion (A):** In plants fertilization is carried out by the fusion of two pairs of cells.

    Reason (R): Two male gametes fuse with two female cells.

    (A) Both A and R are true. R explains A

    (B) Both A and R are false.

    (C) A is true but R is false

    (D) A is true but R does not explain A.

41. The next term in the sequence:
81, 3, 27, 9, 9, 27, 3, ?

    (A) 18   (B) 81

    (C) 9   (D) 1

42. Let us consider '+' means '−' ; '−' means '×'; '×' means '÷'; '÷' means '+';   means   . If $30 \times 5 + 8 \div x = 8$ then, the value of x is

    (A) 4   (B) 19

    (C) 10   (D) 16

43. In the Venn diagram, the rectangle represents the people who like to read books, the square represents the people who like cricket, the circle represents the people who like kabaddi, the triangle represents the people who like hockey.
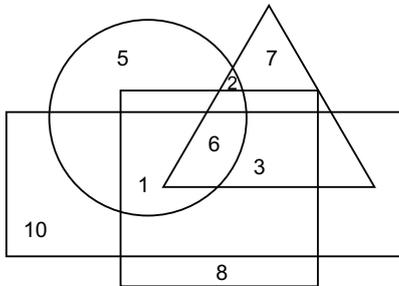

    Which number will represent the people who like reading books, cricket and hockey?

    (A) 9   (B) 3

    (C) 1   (D) 10

44. Anbu walks 16 kms towards south to reach A. From there he walks 4 kms towards north to reach B. then he walks 5 kms towards west to reach C. the distance between the starting point and C is

    (A) 10 kms   (B) 13 kms

    (C) 16 kms   (D) 25 kms

45. 'A' is poorer than 'B', but not as poor as 'C'. 'D' is not as poor as 'A'. who is the poorest of all?

    (A) D   (B) C

    (C) B   (D) A

46. Select the appropriate Venn diagram representing Doctors, Women and Teachers:

    P   Q   R   S   T
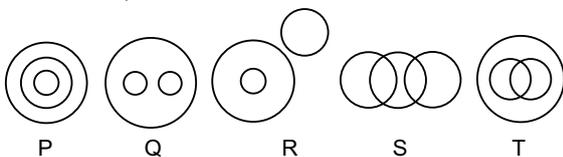
    (A) Diagram (P)   (B) Diagram (Q)

    (C) Diagram (R)   (D) Diagram (S)

47. Show below are three different positions of the same dice. Find the number on the face opposite the face showing 3.
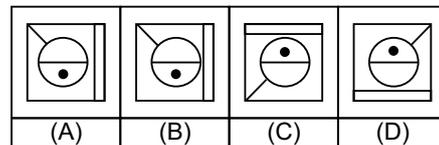

    (i)   (ii)   (III)
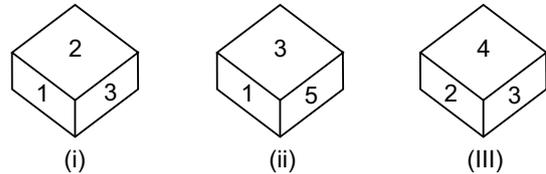
    (A) 6   (B) 2

    (C) 5   (D) 4

48. Out of the given answer figures, which is the correct one to replace the question mark (?) in the problem figure.

    Problem figure:

    Answer figure:

    (A)   (B)   (C)   (D)
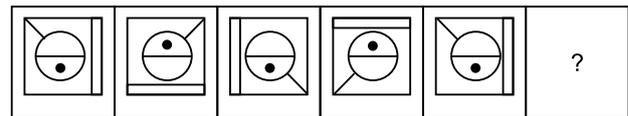
49. Kunal ranked sixteenth from the top and twenty ninth from the bottom among those who passed an examination. Six boys did not participate in the competition and five failed in it. How many boys were there in the class?

    (A) 35   (B) 45   (C) 55   (D) 50

50. In the following questions, two statements followed by two conclusions are given. Mark your answer.

    Statements: 1. Some trees are birds.

                   2. All birds are snails.

    Conclusions: I. Some snails are trees.

                   II. Some birds are not trees.

    (A) Only conclusion I follows.

    (B) Only conclusion II follows.

    (C) Either conclusion I or II follows.

    (D) Neither conclusion I nor II follows.

Section 5: General Knowledge

51. World Yoga Day is celebrated on ....

    (A) 15th August   (B) 21st June

    (C) 10th September   (D) 6th November

52. The Rs.500 and Rs.1000 notes were demonetized on ....

    (A) 8th November 2016   (B) 6th December 2017

    (C) 8th October 2015   (D) 6th November 2014

53. Which field of study is correctly matched?

    (A) Kalology – Fingerprints

    (B) Graphology – Handwriting

    (C) Selenology – Earthquakes

    (D) Cytology – Birds

54. What is the fear of foreigners called?

    (A) Bibliophobia   (B) Bathophobia

    (C) Zenophobia   (D) Hydrophobia

55. The Indian Parliament was rocked by the Pegasus issue. The Pegasus spyware takes its name from which kind of Greek mythological figure?

    (A) Unicorn

    (B) Buffalo like creature

    (C) A creature with the head of a human and the body of a horse

    (D) A winged horse

56. Which Catholic Christian priest was responsible for founding of Protestant Christianity?

    (A) John Calvin   (B) Martin Luther

    (C) Zwingli   (D) Jon Knox

57. Name the first woman swimmer to cross the seven seas.

    (A) Bula Choudhury

    (B) Katie Ledecky

    (C) Janet Evans

    (D) Dawn Fraser

58. Who founded the Davis Cup?

    (A) Alexander Davis   (B) John Davis

    (C) Frank Davis   (D) Dwight Davis

59. Which city in India has been recently declared as 'UNESCO city of Literature' the first Indian city to have this distinction?

    (A) Panaji   (B) Bengaluru

    (C) Mysore   (D) Kozhikode

60. A new currency called 'ZiG' has been introduced in _____ in 2024.

    (A) Czech Republic

    (B) Zimbabwe

    (C) Zambia

    (D) Zanzibar