General Intelligence and Reasoning

1. Select the set in which the numbers are related in the same way as the numbers of the following set.

   (NOTE: Operations should be performed on the whole number, without breaking down the number into its constituent digits. For example: 13 – Operations on 13 such as adding/subtracting/multiplying, etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is NOT allowed.)

   (16, 7, 81)

   (24, 16, 64)

   1. (13, 7, 36)   **2.** (48, 39, 18) **3.** (37, 25, 100) **4.** (21, 19, 8)

2. In the following question, select the missing number from the given series.

   67, 46, 24, 1, – 23, ?

   1. – 48   **2.** – 38   **3.** – 46   **4.** – 50

3. Select the option figure in which the given figure (X) is embedded as its part (rotation is NOT allowed).

   1.   **2.**

   3.   **4.**

4. Select the option that is related to the fifth number in the same way as the second number is related to the first number and the fourth number is related to the third number.

   68 : 19 :: 76 : 21 :: 164 : ?

   1. 45   **2.** 39   **3.** 43   **4.** 41

5. In a certain code language 'COMMUNITY' is written as 'YITUNMCOM' and 'AUTHORITY' is written as 'YITORHAUT'. How will 'ISOLATION' be written in that language?

   1. NIAOTLISO   **2.** NIOATILSO

   3. NIOATLIOS   **4.** NIOATLISO

6. In a certain code language 'BOTTLE' is written as '148', 'SIPPER' is written as '166'. How will 'BUMPER' be written in that language?

   1. 160   **2.** 170   **3.** 150   **4.** 180

7. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster.

   ACCUSED : UCCASDE :: FACTORY : TCAFOYR :: DYNAMIC : ?

   1. YNMICAD **2.** DNYMACI **3.** ANYDMCI **4.** DANYMIC

8. Select the figure from among the given option that can replace the question(?) in the following series.

9. A # B means A is the sister of B.

   A @ B means A is the son of B.

   A & B means A is the father of B.

   A % B means A is the mother of B.

   If W & Q # T & Y @ M% K, then how is Q related to K?

   1. Mother's sister   **2.** Sister

   3. Father's sister   **4.** Father's mother

10. Read the given statement(s) and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts decide which of the given conclusions logically follow(s) from the statement(s).

    Statements:

    Some pencils are rods.

    No rod is a door.

    All balls are rods.

    Conclusions:

    I.   Some pencils being balls is a possibility.

    II. No ball is a door

    III. All rods are balls

    IV. No pencil is a door.

    1. Only conclusions I, II and IV follow.

    2. Only conclusions I and II follow.

    3. Only conclusion I follows.

    4. Only conclusions II and III follow.

11. Select the word-pair that best represents a similar relationship to the one expressed in the given pair of words.

    (The words must be considered as meaningful English words and not be related to each other based on the number of letters/number of consonants/vowels in the word.)

    Rice : Carbohydrates

    1. Eggplant : Vegetable   **2.** Flesh : Chicken

    3. Cottage cheese : Protein   **4.** Orange : Fruit

12. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

    NTR, TCE, ZLR, FUE,?

    1. LMR   **2.** LDR   **3.** RNQ   **4.** RMO

13. Which of the following letter-clusters will replace the question mark (?) in the given series?

    DBK, GDL, JFM, MHN,?

    1. QKN   **2.** PKO   **3.** PJO   **4.** QJO

14. Select the figure that will come next in the following figure series.

15. If A × B means that A is the brother of B, A – B means that A is the sister of B, A + B means that A is the father of B, then which of the following expressions shows that P is the father of R?
1. P + Q × R　**2.** P × Q + R **3.** P + Q ÷ R　**4.** P – Q × R

16. In the following question below are given some statements followed by some conclusions based on those statements. Taking the given statements to be true even if they seem to be variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows the given statements.
Statements:
I. No A is B.　　II. No C is B.
Conclusions:
I. Some C are not A.　　II. Some A are B.
1. Neither conclusion follows.
2. Only conclusion II follows.
3. Only conclusion I follows.
4. Both conclusions I and II follow.

17. By interchanging the given two numbers which of the following equations will be correct?
4 and 6
1. 4 ÷ 2 + 3 – 6 × 5 = – 14　**2.** 9 ÷ 3 + 6 × 5 – 4 = 18
3. 4 × 3 + 6 – 2 ÷ 1 = 21　　**4.** 4 – 6 ÷ 2 + 3 × 5 = 20

18. Select the odd groups of numbe ₹ (NOTE: Operations should be performed on the whole numbers without breaking down the number into constituent digits. For example: 13–Operations on 13 such as adding/subtracting/multiplying, etc to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations in 1 and 3 is not allowed.)
1. (14 – 28 – 41)　　　　**2.** (16 – 32 – 64)
3. (18 – 36 – 72)　　　　**4.** (12 – 24 – 48)

19. Select the option that is related to the fourth term in the same way as the first term is related to the second term and the fifth term is related to the sixth term.
16 : 91 :: ? 161 :: 18 : 120
1. 22　　　**2.** 21　　　**3.** 20　　　**4.** 24

20. Select the correct combination of mathematical signs to sequentially replace the * signs and to balance the given equation.
50 * 10 * 20 * 5 * 105
1. ÷, ×, +, =　**2.** ×, –, +, = **3.** ÷, ×, –, =　**4.** ×, ÷, +, =

21. After arranging the given words according to dictionary order, which word will come in the 'Third' position?
1. Overwork　　　　　2. Overwrought
3. Overwhelming　　　4. Overweight
5. Overweening
1. Overwhelming　　　　**2.** Overwrought
3. Overweight　　　　　**4.** Overweening

22. Which of the following interchange of numbers and mathematical signs would make the given equation correct?
28 + 7 × 10 ÷ 5 – 20 = 5
1. 10 and 20, × and +　　**2.** 5 and 20, – and ÷
3. 7 and 28, × and ÷　　　**4.** 5 and 10, + and ÷

23. Three of the following letter-clusters are alike in some manner and hence form a group. Which letter-cluster does not belong to that group?
1. PONM　　**2.** EDCB　　**3.** SRQP　　**4.** BYXW

24. A paper is folded and cut as shown below. How will it appear when unfolded?
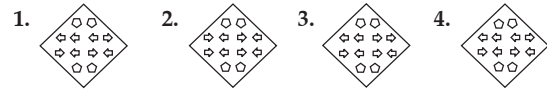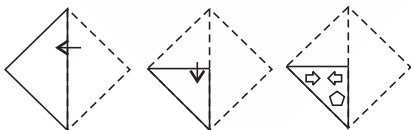
25. Select the option in which the given figure is embedded (rotation is NOT allowed.)
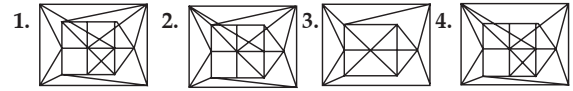
General Awareness

26. In which year was Asha Bhosle's name entered into the Guinness Book of World Records for the most studio recordings?
1. 2017　　　**2.** 2020　　　**3.** 2014　　　**4.** 2011

27. Which article of the Indian Constitution is related with the special provisions with respect to the State of Sikkim?
1. Article 371 C　　　　**2.** Article 371
3. Article 371 F　　　　**4.** Article 371 A

28. Which of the following statements is correct with respect to the Sangam literature?
I. These texts were supposed to be composed and compiled in assemblies of poets.
II. The Sangam literature compiled in assemblies of poets was in the city of Madurai.
1. Neither I nor II　　　　**2.** Both I and II
3. Only I　　　　　　　**4.** Only II

29. Which of the following have mountain range young fold mountains?
1. Appalachians mountain range
2. Alps mountain range
3. Aravali mountain range
4. Ural mountain range

30. Identify a fomite from the following.
1. Drinking water　　　　**2.** Blood
3. Saliva　　　　　　　**4.** Glass

31. Kullu Dussehra is a colourful festival majorly celebrated in which state/union territory?
1. Delhi　　　　　　　**2.** Telangana
3. Uttar Pradesh　　　　**4.** Himachal Pradesh

32. Peat coal has _____ carbon and _____ moisture content?
1. high, low　　**2.** low, high　　**3.** high, high　**4.** low, low

33. After the _____, Mahatma Gandhi called off the Non-Cooperation Movement.
1. Jallianwala Bagh Massacre **2.** Chauri Chaura incidence
3. Bengal partition　　　　**4.** Round Table conferences

34. The Kashi Yatra Scheme was introduced by the government of _____.
1. Karnataka　　　　　　**2.** Uttar Pradesh
3. Punjabi　　　　　　　**4.** Kerala

35. The national highway network connecting Delhi, Mumbai, Chennai and Kokata is called _____.
1. Diamond Quadrilateral　**2.** Diamond Polygon
3. Golden Polygon　　　　**4.** Golden Quadrialateral

36. Synecology can be defined as which of the following?
1. A branch of science that deals with the interrelationship of individual species with its environment.
2. A branch of science that deals with the interrelationship of two species.
3. A branch of science that deals with the interrelationship of the whole biome.
4. A branch of ecology that deals with the structure, development and distribution of ecological communities.

37. 'Thaipoosam' festival is celebrated in which state of India?
    1. Bihar   2. Andhra Pradesh
    3. Tamil Nadu   4. Goa

38. The Kuchipudi dance form originated in which of the following states of India?
    1. Uttar Pradesh   2. Kerala
    3. Assam   4. Andhra Pradesh

39. The SI unit of speed is _____.
    1. m/s   2. km/s   3. km/h   4. m/h

40. On the occasion of Teacher's Day 2022, the Indian Science Technology and Engineering Facilities Map (I-STEM) launched an initiative to strengthen the efforts of scientifically inclined women. What is the name of this initiative?
    1. KUSUM   2. KALYAN   3. WEST   4. NAMASTE

41. The first English Factory in Bengal was set up on the banks of river ''Hugli'' in _____.
    1. 1671   2. 1641   3. 1661   4. 1651

42. In which of the following cities did Prime Minister Narendra Modi participate in 2019 as part of the celebration of International Day Yoga on June 21?
    1. Ranchi   2. Lucknow   3. New Delhi   4. Chandigarh

43. What should be the standard length of a tennis court according the laws of the International Tennis Federation (ITF), 2021?
    1. 23.77 m   2. 22.45 m   3. 26.41 m   4. 25.34 m

44. Article 20 of the Constitution of India deals with _____.
    1. protection of life and personal liberty
    2. protection in respect of conviction for offences
    3. abolition of untouchability
    4. right education

45. Who is the father of the modern ecology?
    1. Robert Brown   2. Charles Darwin
    3. E.P. Odum   4. Robert Hook

46. Which of the following Indian states receives rainfall during October and November due to the North-East monsoon?
    1. Uttar Pradesh   2. Maharashtra
    3. Madhya Pradesh   4. Tamil Nadu

47. Who is the Ex-officio Chairman of NITI Aayog?
    1. President   2. Prime Minister
    3. Home Minister   4. Finance Minister

48. Which of the following statements is true?
    (A) Wage bill of the government is a capital expenditure.
    (B) Disinvestment by the government in a company is a capital receipt.
    1. Only (A)   2. Neither (A) nor (B)
    3. Both (A) and (B)   4. Only (B)

49. Who has been appointed as the 37th CRPF Director General?
    1. Rajendra Kumar   2. Sujoy Lal Thaosen
    3. Anil Chauhan   4. Vijay Jasuja

50. Who among the following gave up his traditional profession and took to arms, successfully established the kingdom in Karnataka?
    1. Vasudeva Kanva
    2. Gurjara-Pratihara Harichandra
    3. Pushyamitra Shunga   4. Kadamba Mayurasharman

Quantitative Aptitude

51 $\triangle ABC \sim \triangle DEF$ and the perimeters of these triangles are 32 cm and 12 cm, respectively. If DE = 6 cm, then what will be the length of AB?
    1. 16 cm   2. 14 cm   3. 12 cm   4. 18 cm

52. The bar graph given below shows the percentage distribution of the total production of six different types of cars by a car manufacturing company over 2 years.

Percentage of Six different types of Cars manufactured by a Company over Two Years

2000 Total No. of Cars Produced = 3,50,000
2001 Total No. of Cars Produced = 4,40,000
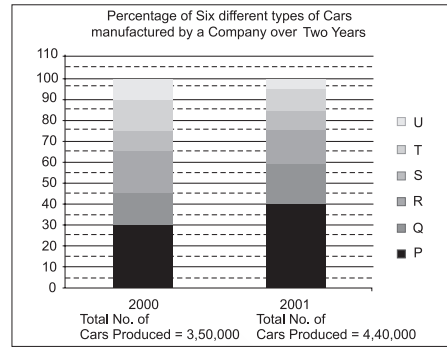
If 75% of the T type cars produced in each years were sold by the company, how many T type cars remain unsold?
    1. 23,500   2. 22,000   3. 24,125   4. 25,000

53. The table given below shows the number of working days of a company in 5 years.

Years	Working days
P	110
Q	310
R	160
S	60
T	210

What is the ratio of the number of working days in the year R to the number of working days in the year T ?
    1. 16 : 21   2. 15 : 22   3. 21 : 17   4. 21 : 16

54. The monthly income of Mr Roy is ₹ 18,000. He took a loan of ₹ 30,000 on simple interest for 3 years at the rate of 5% per annum. The amount that he will be paying as simple interest in 3 years is what per cent of his monthly salary?
    1. 30%   2. 35%   3. 20%   4. 25%

55 When $m^{12} - 1$ is divided by m + 1, the remainder is:
    1. 1   2. 2   3. 0   4. – 1

56. The table given below shows the number of salesman in five companies.

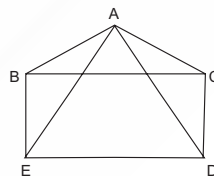| Companies	Salesman
J	45
K	20
L	40
M	15
N	25

Number of salesman in J is what per cent of the number of salesman in K?
    1. 250 per cent   2. 150 per cent
    3. 125 per cent   4. 225 per cent

57. Ramesh purchases a table and a chair for ₹ 3,900. He sells the table at a profit of 8% and the chair at a profit of 16%. He earns a profit of ₹ 540. What is the difference between the original price of the table and the chair?
    1. ₹ 2,000   2. ₹ 1,800   3. ₹ 1,900   4. ₹ 1,700

58. Which of the following statements is correct?
    I. If x = 12, y = – 2 and z = – 10, then $x^3 + y^3 + z^3 = 360$.
    II. If $x + y = 48$ and $4xy = 128$, then $4x^2 + 4y^2 = 4480$.
    1. Neither I nor II   2. Only I
    3. Both I and II   4. Only II

59. The number of units manufactured by a company A was 12,500 units in 2019 and 10,625 units in 2020. While in company B, the production fell from 34,000 units in 2019 to 30,600 units in 2020. If X and Y are the percentage decrease in the number of units manufactured by company A and B, respectively from 2019 to 2020, then what will be the ratio of X and Y ?
    1. 5 : 3   2. 3 : 4   3. 3 : 2   4. 8 : 5

60. Study the given graph and answer the following question.

Number of Lecturers recruited (in hundreds) in three different states in five different years

■ A ■ B ■ C

Year	A	B	C
2017	10	14	22
2018	23	52	48
2019	52	56	22
2020	15	58	35
2021	75	55	38
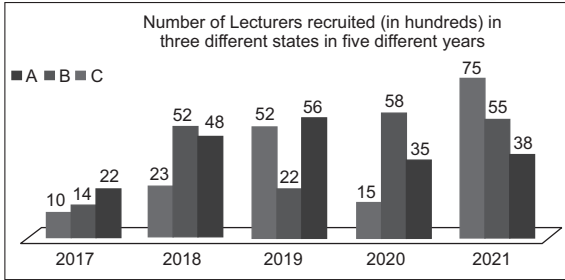
The number of lecturers recruited in state B in the years 2019 was what percentage of the number of lecturers recruited in state C in the year 2021? (correct to 2 decimal places)
1. 56.25%   2. 50.25%   3. 48.62%   4. 57.89%

61. The circumference of the circles is 110 cm and 330 cm, respectively. What is the difference between their radii?
1. 70 cm   2. 15 cm   3. 46 cm   4. 35 cm

62. If $k + \dfrac{1}{k} + 2 = 0$ and $k < 0$, then what is the value of $k^{11} + \dfrac{1}{k^4}$?
1. 0   2. – 2   3. – 1   4. – 17

63. If $\sec^2 A + \tan^2 A = 3$, then what is the value of cot A?
1. $\dfrac{1}{\sqrt{3}}$ 2. 0   3. 1   4. $\sqrt{3}$

64. An article costs ₹4,000 to a shopkeeper, who marks its price at ₹8,400. The shopkeeper sells it to a customer at a discount of 25%. The customer gets a further discount of 15% on the discounted price if the customer redeems a coupon issued by the store previously. What is the profit percentage (to the nearest integer) earned by the shopkeeper in this transaction?
1. 34%   2. 51%   3. 42%   4. 36%

65. If the numerical value of twice the curved surface area of a right circular cylinder is equal to the numerical value of its volume, then what is the numerical value of the radius of the base of the cylinder?
1. 2   2. 3   3. 5   4. 4

66. If $x + \dfrac{1}{x} = 6$, then find the value of $\dfrac{3x}{2x^2 - 5x + 2}$.
1. 1   2. $\dfrac{3}{7}$ 3. $\dfrac{2}{3}$ 4. 0

67. The hour hand moves through 4 hours and has a length of 6 cm. Find the area (in cm², rounded off to two decimal places) of the sector covered by the hour hand.
1. 32.69   2. 30.67   3. 37.71   4. 35.75

68. If θ is an acute angle and tan θ + cot θ = 2, then the value of $\tan^{200} θ + \cot^{200} θ$ is:
1. 1   2. 2   3. – 1   4. 0

69. In the figure, if BCDE is a square and ABC is an equilateral triangle, then ∠ ADC is:

1. 45°   2. 30°
3. 60°   4. 15°

70. The salaries of Rida and Riya are in the ratio of 3 : 5, respectively. If the salary of each one is increased by. 5,000, then the new ratio becomes 5 : 7. What is Riya's present salary?
1. ₹ 12,500   2. ₹ 7,500   3. ₹ 2,500   4. ₹ 10,000

71. Ram, Shyam, Rohan, Reeta and Mukesh are five members of a family who are weighed consecutively and their average weight is calculated after each member is weighed. If the average weight increases by 2 kg each time , how much heavier is Mukesh than Ram?
1. 14 kg   2. 18 kg   3. 16 kg   4. 12 kg

72. A is 20% more efficient than B. How much time will they working together to complete a job which A alone could have done in 29 days?
1. $\dfrac{145}{11}$ 2. $\dfrac{116}{11}$ 3. $\dfrac{203}{11}$ 4. $\dfrac{174}{11}$

73. Determine the LCM of two numbers if their HCF is 9 and their ratio is 14 : 19.
1. 2,394   2. 3,990   3. 1,592   4. 3,192

74. In ΔPQR, ∠ Q = 90°, PQ = 8 CM and ∠ PRQ = 45°. Find the length of QR.
1. 6 cm   2. 3 cm   3. 5 cm   4. 8 cm

75. In a 1,000 m race, Arjun, Balaji and Charan are running. Arjun beats Balaji by 100 m, and Balaji beats Charan by 100 m. In the next 1000 m race (the speeds are the same as in the previous), Balaji gives Charan a head start of 100 m, and Arjun gives Balaji a head start of 100 m. Find the distance by which the winner is ahead of the person just behind him.
1. 100 m   2. 40 m   3. 30 m   4. 11.12 m

English Comprehension

76. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

One of the students is always / late to the class; he has been warn / by the teacher many time; / but still, he keeps on being late.
1. One of the students is always
2. but still, he keeps on being late
3. by the teacher many times;
4. late to the class; he has been warn

77. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully.

The percentage of employees who called in sick and the number of employees who left their jobs within 2 years (were reflective of the level of job satisfaction).
1. are reflective of the level of job satisfaction
2. is reflective of the level of job satisfaction
3. has reflected the level of job satisfaction
4. were reflective on the level of job satisfaction

78. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to from a meaningful and coherent paragraph.
   A. Omnivores get energy and nutrients from plant and animal materials by digesting carbs, protein, fat and fibre and metabolising the nutrients and energy of the sources ingested.
   B. The many diverse animals categorised as omnivores can be divided into sub-categories based on their dietary habits.
   C. An omnivore is an animal that can feed and thrive on both, plant and animal substances.
   D. They also have the capacity to integrate food sources like algae, fungus and bacteria into their diet.
   1. CABD   2. ACDB   3. CADB   4. DCBA

79. Select the most appropriate synonym of the underlined word in the following sentence.

Roads in villages during rainy seasons become muddy.
1. fuzzy   2. filthy   3. blurred   4. unsoiled

80. Select the most appropriate synonym of the underlined word.

   The poet managed to paint a <u>vivid</u> picture of the landscape by the river through words.
   1. Metaphoric　　　　　2. Evocative
   3. Contemporary　　　　4. Blurred

81. Select the option that expresses the given sentence in active voice.

   I was fascinated by the novel.
   1. The novel was fascinated to me.
   2. The novel fascinated me.
   3. The novel fascinate me.
   4. The novel fascinates me.

82. Select the INCORRECTLY spelt word in the following sentence.

   There lies no guarantee that the hierchical structural framework between the elite and downtrodden sections of the society is right.
   1. hierchical　　　　　2. guarantee
   3. structural　　　　　4. downtrodden

83. Select the sentence that contains no spelling errors.
   1. Diabeties is a chronic disease.
   2. Diabetes is a chronic disease.
   3. Daibetes is a chronic disease
   4. Diabites is a chronic disease.

84. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

   The man who / was committed / the theft last night / was caught this evening.
   1. was caught this evening　2. was committed
   3. The man who　4. the theft last night

85. Select the most appropriate option that can substitute the underlined segment in the given sentence.

   Health club membership has grown <u>by leaps and bounds</u> after the pandemic.
   1. slowly and gradually
   2. full of speed and excitement
   3. hurriedly
   4. very quickly

86. Select the most appropriate meaning of the given idiom.

   Steer clear of
   1. Show someone how to do a job or activity
   2. Be very easy.
   3. Avoid someone or something because it is dangerous for you
   4. Be mentally and physically exhausted

87. Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution'.

   The student decided to surprise <u>their teacher on her birthday</u>.
   1. their teacher at her birthday
   2. there teacher on her birthday
   3. her teacher on her birthday
   4. No substitution

88. Select the option that expresses the given sentence in active voice.

   The driver was taken to the nearest dispensary by the beggars.
   1. The beggars take the driver to the nearest dispensary.
   2. The beggars took the driver to dispensary.
   3. The beggars took the driver to the nearest dispensary.
   4. To the nearest dispensary, the beggars took the driver.

89. Select the most appropriate option that can substitute the underlined segment in the given sentence.

   He <u>was sitting besides his</u> best friend during the event.
   1. was sitting about his　　2. was sitting beside his
   3. were sitting besides his　4. was sitting besides her

90. Select the most appropriate synonym of the underlined word in the given sentence.

   The efforts of the doctors came to a <u>futile</u> end with the death of the patient.
   1. Fruitless　2. Enriching　3. Startling　4. Terrifying

91. Complete the following collocation.

   When I got the job, I knew what _____ money really is.
   1. effort-earned　　　　2. soft-earned
   3. hard-earned　　　　 4. honest-earned

92. Rearrange the parts of the sentence in correct order.

   Russell Wilson, an NFL
   P. about Naomi Osaka saying that her
   Q. has been spectacular to watch
   R. humility and dedication to others
   S. player for the Seattle Seahawks, wrote
   1. SPRQ　　2. PRQS　　3. RPQS　　4. QPRS

93. Select the most appropriate collocating word to fill in the blank.

   This statement of the political leader has created _____ confusion.
   1. utter　　2. heavy　　3. weighty　　4. vast

94. Select the most appropriate synonym of the underlined word.

   Marcella seemed <u>morose</u> and downcast when she refused to have dinner.
   1. Jocund　　2. Excited　　3. Gloomy　　4. Liberal

95. Select the correct direct form of the given sentence.

   Shravan said that the prisoner had slept throughout the journey.
   1. Shravan said, "The prisoner sleeps throughout the jounrney."
   2. Shravan said, "The prisoner had been sleeping throughout the journey."
   3. Shravan says, "The prisoner has slept throughout the journey."
   4. Shravan said, "The prisoner had slept throughout the journey."

Comprehension:

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

Comics have (1) ———— many superheroes. Bantul, the great was (2) ———— in the year 1965 in the backdrop of the Indo-Pak war. Indrajal comics was set up in 1964 and (3) ———— Aabid Surti, who gave birth to a character called Bhadur in 1976 wearing kurta and jeans. Raj comics too (4) ———— into this sphere with their (5) ———— toons Nagraj, Tiranga and Shakti together called Brahman Rakshak (protectors of the universe).

96. Select the most appropriate option to fill in blank number 1.
   1. built　　　　　　2. produced
   3. fabricated　　　 4. manufactured

97. Select the most appropriate option to fill in blank number 2.
   1. generated　2. inspired　3. promoted　4. created

98. Select the most appropriate option to fill in blank number 3.
   1. employed　2. ordered　3. contracted　4. authorised

99. Select the most appropriate option to fill in blank number 4.
   1. invaded　2. penetrated　3. entered　4. pierced

100. Select the most appropriate option to fill in blank number 5.
   1. noted　　2. influential　3. famous　4. good

Answer Key

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

Answers with Explanations

General Intelligence and Reasoning

1. Option (1) is correct.
Explanation: Given that:
(16, 7, 81)
(24, 16, 64)
Logic follows: (16, 7, 81)
∴ $(16 - 7)^2 = 81$
Similarly, (24, 16, 64)
∴ $(24 - 16)^2 = 64$
Hence,
(13, 7, 36)
∴ $(13 - 7)^2 = 36$

2. Option (1) is correct.
Explanation: Given series is as follows:
67, 46, 24, 1, –23, ?
Logic is as follows:

67	46	24	1	–23	–48
–21 →	–22 →	–23 →	–24 →	–25 →	

3. Option (3) is correct.
Explanation:
Find the embedded part from the options figure is as follows:
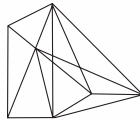
4. Option (3) is correct.
Explanation: Given that:
68 : 19 :: 76 : 21 :: 164 : ?
Logic is as follows: -
$19 \times 4 = 76 - 8 = 68$
$21 \times 4 = 84 - 8 = 76$
Similarly,
$? \times 4 - 8 = 164$
$? \times 4 = 164 + 8$
$? \times 4 = 172$
$? = 43$

5. Option (4) is correct.
Explanation: Given that:
'COMMUNITY' is written as 'YITUNMCOM'
'AUTHORITY' is written as 'YITORHAUT'
Logic is as follows:
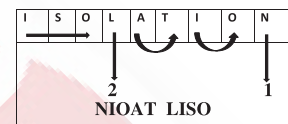
YITUN MCOM

Similarly,

YITOR HAUT

Hence,

NIOAT LISO

6. Option (3) is correct.
Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

Now,

B	O	T	T	L	E	2 + 15 + 20 + 20 + 12 + 5
2	15	20	20	12	5	= 74 × 2 = 148

Similarly,

S	I	P	P	E	R	19 + 9 + 16 + 16
19	9	16	16	5	18	+ 5 + 18 = 83 × 2 = 166

Hence,

B	U	M	P	E	R	2 + 21 + 13 + 16 + 5 + 18
2	21	13	16	5	18	= 75 × 2 = 150

7. Option (3) is correct.
Explanation: Given that:
ACCUSED : UCCASDE :: FACTORY : TCAFOYR :: DYNAMIC : ?
Logic is as follows: -

UCCASDE

Similarly,
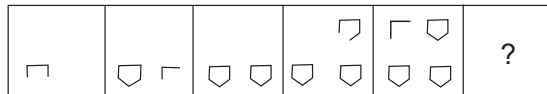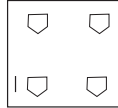

TCAFOYR

Hence,

ANYDMCI
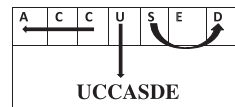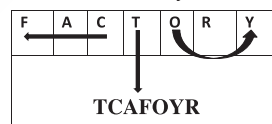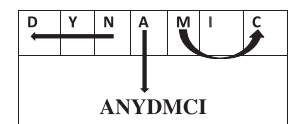
8. Option (4) is correct.
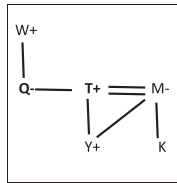**Explanation:**

Logic:

The sides in the smaller figure are increasing with every step.
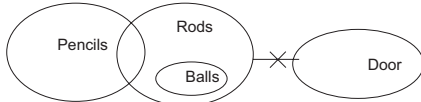
9. **Option (3) is correct.**

Explanation: Given that:

A # B means 'A is the sister of B'.

A @ B means 'A is the son of B'.

A & B means 'A is the father of B'.

A % B means 'A is the mother of B'.

W & Q # T & Y @ M % K

10. **Option (2) is correct.**

Explanation:

(1) There is no definite relation between pencils and balls. Hence, the possibility is true.

(2) It is clear that ball cannot overlap with Door. Hence, the conclusion is True.

(3) Some rods are balls but cannot say definitely about all.

(4) Some pencils are not the door but cannot say definitely about all.

Note: Only the conclusions I and II Follow.

11. **Option (3) is correct.**

Explanation: Given that:

Rice : Carbohydrates

As, rice is a source of carbohydrates.

Similarly, cottage cheese is a source of protein.

12. **Option (2) is correct.**

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

Given that: NTR, TCE, ZLR, FUE, ?

N	T	R
14	20	18

+6   +9   +13

T	C	E
20	3	5

+6   +9   +13

Z	L	R
26	12	18

+6   +9   +13

F	U	E
6	21	5

+6   +9   +13

L	D	R
12	4	18
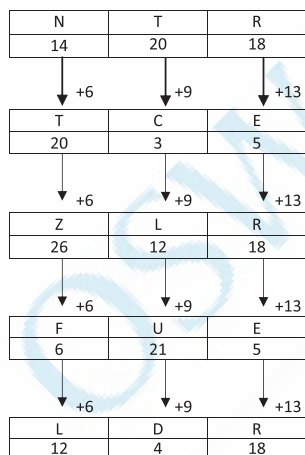
13. **Option (3) is correct.**

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

Given series is as follows:

DBK, GDL, JFM, MHN, ?

D	B	K
4	2	11

+3   +2   +1

G	D	L
7	4	12

+3   +2   +1

J	F	M
10	6	13

+3   +2   +1

M	H	N
3	2	1

+3   +2   +1

P	J	O
16	10	15
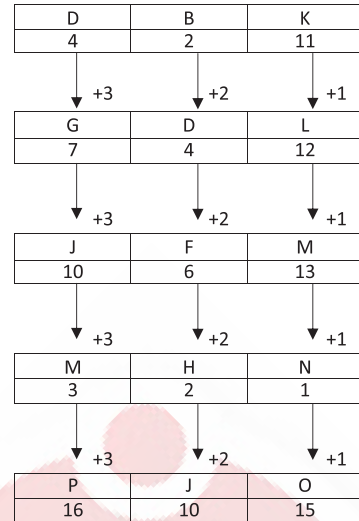
14. **Option (4) is correct.**

Explanation:

Logic: Each figure is rotated 45 degrees clockwise.
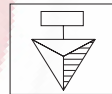
15. **Option (1) is correct.**

Explanation:

If A × B means that A is the brother of B

A – B means that A is the sister of B

A + B means that A is the father of B

(1) P+Q×R
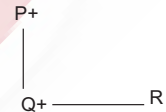
16. **Option (1) is correct.**
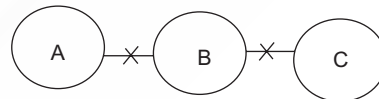
Explanation:

(1) There is no definite relation between C and A. Hence, there will not be any definite relation between them.

(2) Since No A is B. Hence, some A are B not follow.

17. **Option (1) is correct.**

Explanation: According to the BODMAS rule,

B	Bracket in order (), [], {}
O	Of
D	Division (÷)
M	Multiplication(×)
A	Addition (+)
S	Subtraction (–)

Interchange 4 and 6

(1) $4 \div 2 + 3 - 6 \times 5 = -14$

$6 \div 2 + 3 - 4 \times 5 = -14$

$3 + 3 - 4 \times 5 = -14$
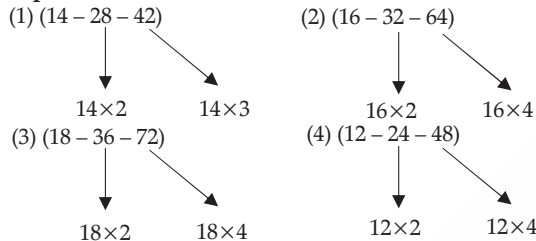
$6 - 20 = -14$

$-14 = -14$

(2) $9 \div 3 + 6 \times 5 - 4 = 18$
$$9 \div 3 + 4 \times 5 - 6 = 18$$
$$3 + 4 \times 5 - 6 = 18$$
$$3 + 20 - 6 = 18$$
$$23 - 6 = 18$$
$$17 \neq 18$$
(3) $4 \times 3 + 6 - 2 \div 1 = 21$
$$6 \times 3 + 4 - 2 \div 1 = 21$$
$$6 \times 3 + 4 - 2 = 21$$
$$18 + 4 - 2 = 21$$
$$22 - 2 = 21$$
$$20 \neq 21$$
(4) $4 - 6 \div 2 + 3 \times 5 = 20$
$$6 - 4 \div 2 + 3 \times 5 = 20$$
$$6 - 2 + 3 \times 5 = 20$$
$$6 - 2 + 15 = 20$$
$$21 - 2 = 20$$
$$19 \neq 20$$

18. Option (1) is correct.
Explanation:

(1) $(14 - 28 - 42)$

$14 \times 2 \quad\quad 14 \times 3$

(2) $(16 - 32 - 64)$

$16 \times 2 \quad\quad 16 \times 4$

(3) $(18 - 36 - 72)$

$18 \times 2 \quad\quad 18 \times 4$

(4) $(12 - 24 - 48)$

$12 \times 2 \quad\quad 12 \times 4$

19. Option (2) is correct.
Explanation: $16 : 91 :: ? : 161 :: 18 : 120$
Logic: $16 \times 6 - 5 = 91$
$21 \times 8 - 7 = 161$
$18 \times 7 - 6 = 120$
Hence, 21 is the correct answer.

20. Option (1) is correct.
Explanation: According to the BODMAS rule,

B	Bracket in order (), [], {}
O	Of
D	Division (÷)
M	Multiplication (×)
A	Addition (+)
S	Subtraction (–)

By checking options one by one and interchanging accordingly.
$50 * 10 * 20 * 5 * 105$
(1) $\div, \times, +, =$
$$50 \div 10 \times 20 + 5 = 105$$
$$5 \times 20 + 5 = 105$$
$$100 + 5 = 105$$
$$105 = 105$$
(2) $\times, -, +, =$
$$50 \times 10 - 20 + 5 = 105$$
$$500 - 20 + 5 = 105$$
$$505 - 20 = 105$$
$$485 \neq 105$$
(3) $\div, \times, -, =$
$$50 \div 10 \times 20 - 5 = 105$$
$$5 \times 20 - 5 = 105$$
$$100 - 5 = 105$$
$$95 \neq 105$$
(4) $\times, \div, +, =$
$$50 \times 10 \div 20 + 5 = 105$$
$$50 \times 0.5 + 5 = 105$$
$$25 + 5 = 105$$
$$30 \neq 105$$

21. Option (1) is correct.
Explanation:

Over-weening	Over-weight	Over-whelming	Over-work	Over-wrought

Hence, overwhelming will come at the third position.

22. Option (4) is correct.
Explanation: According to the BODMAS rule,

B	Bracket in order (), [], {}
O	Of
D	Division (÷)
M	Multiplication(×)
A	Addition (+)
S	Subtraction (–)

By checking options one by one and interchanging accordingly.
$28 + 7 \times 10 \div 5 - 20 = 5$
(1) 10 and 20 , × and +
$$\text{LHS} = 28 \times 7 + 20 \div 5 - 10$$
$$= 28 \times 7 + 4 - 10$$
$$= 196 + 4 - 10$$
$$= 200 - 10 = 190 \neq 5$$
(2) 5 and 20, – and ÷
$$\text{LHS} = 28 + 7 \times 10 - 20 \div 5$$
$$= 28 + 7 \times 10 - 4$$
$$= 28 + 70 - 4$$
$$= 98 - 4 = 94 \neq 5$$
(3) 7 and 28 , × and ÷
$$\text{LHS} = 7 + 28 \div 10 \times 5 - 20$$
$$= 7 + 2.8 \times 5 - 20$$
$$= 7 + 14 - 20$$
$$= 21 - 20 = 1 \neq \text{RHS}$$
(4) 5 and 10 ,+ and ÷
$$\text{LHS} = 28 \div 7 \times 5 + 10 - 20$$
$$= 4 \times 5 + 10 - 20$$
$$= 20 + 10 - 20$$
$$= 10 \neq \text{RHS}$$

Hence, no option is the correct.

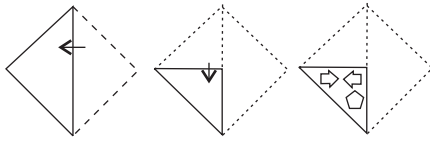**23. Option (4) is correct.**
Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

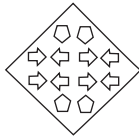| P −1 gives	O	−1	N	−1	M
16	15		14		13
E −1 gives	D	−1	C	−1	B
5	4		3		2
S −1 gives	R	−1	Q	−1	P
19	18		17		16
B −3 gives	Y	−1	X	−1	W
2	25		24		23

24. Option (2) is correct.
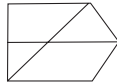Explanation:

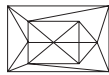The logic of symmetry will be followed here. Hence,

25. Option (3) is correct.
Explanation:

Logic:

General Awareness

26. Option (4) is correct.
Asha Bhosle's name entered into the Guinness Book of World Records for most studio recording singles in 2011. She has recorded up to 11,000 solos, duets and chorus-backed songs in over 20 Indian languages since 1947.

27. Option (3) is correct.
Article 371-F of Indian Constitution is related with the special provisions with respect to the State of Sikkim. Sikkim was declared as the 22nd state of India via the Constitution (36th Amendment) Act 1975. This amendment led to the addition of Article 371-F in the Indian Constitution.

It states that Legislative Assembly of Sikkim shall consist of a minimum of 30 members. It has one Lok Sabha seat and the state is divided into one Parliamentary constituency.

Article 371-A is related to special provisions for Nagaland.

Article 371-C is related to the special provisions for Manipur.

Article 371 is related to authority of President in context of governors of Maharashtra and Gujarat.

28. Option (2) is correct.
Sangam period was the period between third century BC and third century AD in South India. Cheras, Pandyas and Cholas ruled South India during the Sangam period. The Sangam academies flourished under the Pandya Kings of Madurai. Sangam literature is often known as 'the poetry of Noble ones.' It is South India's earliest known literature and was presided over by Ancient Tamil Siddhar Agastyar. It is believed to be written by 473 poets, 102 of whom were anonymous. Based on the context and interpretation, Sangam literature can be divided into Akam and Puram. Akam is related to emotions and sentiments and Puram is related to exploits and heroic achievements in the setting of battle and public life.

According to the legends, there were three Sangams (Academy of Tamil poets) held in the ancient South India popularly called Muchchangam.

29. Option (2) is correct.
Alps mountain range is young fold mountains. They are the highest and extensive mountain range in Europe and were formed approximately 65 million years ago.

Fold mountains are created due to overlapping of tectonic plates. The young fold mountains are Himalayas and Alps. The old fold mountains are Appalachians and Ural.

Appalachian Mountains are mountains in eastern to north eastern North America. They were formed roughly 480 million years ago. These mountains form the oldest mountain chain in North America and they stretch for 1,500 miles in Canada and the United States.

Aravali mountain range is present in North West India and the highest peak is Guru Shikhar on Mount Abu. It starts near Delhi, runs through Southern Haryana, Rajasthan, and ends in Gujarat. It is considered as the oldest geological feature on Earth.

Ural mountain range is in Eurasia and runs from Russia to Kazakhstan. The region is one of the largest centres of metallurgy and heavy industry production in Russia.

30. Option (4) is correct.
Glass is a fomite. Fomite are the non-living objects that may be contaminated and it can transmit infection.

Saliva is the watery fluid present in mouth. It is secreted by salivary grands and it contains enzymes that are important for digestion of different components of food.

Blood is the red coloured fluid connective tissue that delivers nutrients and oxygen from to different parts of the body. It is made up of – plasma, red blood cells, white blood cells and blood platelets.

31. Option (4) is correct.
Kullu Dussehra is a colourful festival majorly celebrated in Himachal Pradesh. It is the inter-national mega festival celebrated in Dhalpur maidan in the Kullu valley. It comes in the month of October and is celebrated on the tenth day of rising moon. The festival is believed to be celebrated by Raja Jagat Singh, who ruled Kullu from 1637 to 1672. Kullu Dussehra is related to Lord Raghunath ji and is not related with the conquering of Rama over Ravana. The devotees in Kullu carry out a procession wherein they carry the idols of different Gods from their home on their heads to meet Lord Raghunath in the temple. The festival is the Guinness World Record Holder of the year 2016 when it brought together over 9,000 dancers on the same platform.

32. Option (2) is correct.
Peat coal has low carbon and high moisture content. Peat contains 20–30% of carbon content. It has a lot of moisture and burns like wood to give less heat, emits more smoke and leaves a lot of ash. As it is the first stage in the formation of coal, it consists of partly decayed plants and animals. The next stage of coalification is peat becoming lignite.

Lignite is brown coal and has 25% – 35% carbon content. It is dark to black brown in colour and is mainly used in electricity generation.

Subbituminous coal is black in colour and is not shiny at all. It is also mainly used in electricity generation. It has 35% – 45% carbon value.

Bituminous coal has a high heating value with a carbon content of 45% – 86% carbon.

Anthracite coal has 86% – 97% carbon and has the highest heating value of all ranks of coal. It is referred to as hard coal.

33. Option (2) is correct.
After the Chauri Chara incidence, Mahatma Gandhi called off the Non-Cooperation movement. Chauri Chaura incident took place on 4 February 1922 at Chauri Chaura in Gorakhpur district of Uttar Pradesh. The police fired on the protestors participating in the Non-Cooperation movement and in retaliation the protesters had set the police station on fire. This led to the halt of Non-Cooperation movement on a national level.

Partition of Bengal occurred before 1919. The first Partition of Bengal occurred on 16 October 1905. It was announced on 19 July 1905 by the then Viceroy of India–Lord Curzon. This was done as British considered Bengal as a large province to be singly administered. The partition led to the division

into West and East Bengal, where West Bengal was a Hindu majority and East Bengal was a muslim majority region. The West Bengal, Odisha and Bihar were the part of Western region and the Eastern region included Assam and East Bengal. However, Hindus opposed the division while it was favoured by the Muslims.

34. Option (1) is correct.
The Kashi Yatra Scheme was introduced by the government of Karnataka. Under this scheme, poor and financially weak citizens of the state are encouraged to undertake Kashi pilgrimage. The state government provides a financial assistance of ₹ 5,000 to the pilgrims to conduct a pilgrimage to the Kashi Vishwanath Temple in Varanasi, Uttar Pradesh. This benefit would be availed once in a life time.

35. Option (4) is correct.
The national highway network connecting Delhi, Mumbai, Chennai and Kolkata is called Golden quadrilateral. It is a highway network of 5,846 km and was developed by the National Highways Authority of India (NHAI). This project includes the North-South corridor connecting Srinagar (Jammu and Kashmir) and Kanyakumari (Tamil Nadu), as well as the East-West corridor connecting Silchar (Assam) and Porbandar (Gujarat).

Diamond quadrilateral is a project of the Indian railways that aims to establish a high speed rail network in India. It will be connecting four metro cities namely–Delhi, Mumbai, Kolkata and Chennai. The Mumbai–Chennai route (1,284 km) is the shortest among all.

36. Option (4) is correct.
Synecology can be defined as a branch of ecology that deals with the structure, development and distribution of ecological communities. It deals with interaction among two or more species. It is also known as Community or Population ecology.

Autecology is the study of the interaction between individual species with their environment.

37. Option (3) is correct.
'Thaipoosam' festival is celebrated in Tamil Nadu. This festival is celebrated by Hindu Tamil Community on the full moon in the Tamil month of Thai which falls in January/February. It celebrates the birth anniversary of Lord Murugan. Lord Murugan is referred as Subramanium who is the youngest son of Lord Shiva and Goddess Parvati.

38. Option (4) is correct.
The Kuchipudi dance form originated in Andhra Pradesh. It is one of the eight major Indian classical dances and originated from Kuchipudi village, Andhra Pradesh. It is a dance–drama performance with its roots to the Sanskrit Natya Shastra. Kuchipudi style was conceived by Siddhendra Yogi . It is a combination of Tandava (the majestic, masculine) and and Lasya (lyrical graceful and feminine energy). This dance is executed on a brass plate and moving the plate to the accompaniment of Carnatic music.

Raaslila, Ramlila, Khayal, Nautanki and Naqal are the famous dances of Uttar Pradesh.

Kathakali, Mohiniyattam, Thirvathirakali, Ottam-thullal and Kolkalli are the famous dances of Kerala.

Bihu, Satriya Nritya, Barpeta's Bhortal Nritya, Tea Folk's Jhumur Dance, Bagurumba and Deodhani are the famous dances of Assam.

39. Option (1) is correct.
The SI unit of speed is m/s. Speed is defined as the rate of change of distance with time. It is a scalar quantity which means it is a physical quantity that has only magnitude and no direction.

40. Option (3) is correct.
On the occasion of Teacher's Day 2022, the Indian Science Technology and Engineering facilities Map (I-STEM) launched an initiative named WEST to strengthen the efforts of scientifically inclined women.

WEST stands for Women in Engineering, Science and Technology. This will cater to women with a STEM background and empower them to contribute to the science, technology and innovation ecosystem. There shall be a separate platform to scientifically inclined women researchers, scientists and technologists for pursuing research in basic or applied sciences in frontier areas of science and engineering.

Teacher's day is observed on 5 September every year which is the birth anniversary of Dr. Sarvepalli Radhakrishnan, the second President of India.

41. Option (4) is correct.
The first English Factory in Bengal set up on the banks of river "Hugli" in 1651. The British started building a fort around this company in 1656 and convinced merchants to settle near the fort.

In order to build and develop trade relations with India, the East India Company first travelled by sea to Surat in the year 1608.

On June 23, 1757, the British East India Company defeated the Nawab of Bengal Siraj-Ud-Daulah and his French allies in the Battle of Plassey.

42. Option (1) is correct.
Prime Minister Narendra Modi participated in 2019 as part of the celebration of International Day of Yoga on June 21 in Ranchi.

International Yoga Day is observed on 21 June every year to spread awareness about the benefits of yoga. It was celebrated for the first time in the year 2015 under the initiative of Prime Minister Narendra Modi. It is a United Nations day and the approval was given by the United Nations General Assembly on 11 December 2014.

43. Option (1) is correct.
The standard length of a tennis court according the laws of the International Tennis Federation (ITF), 2021 in 23.77 m. It should be 10.97 m wide for a doubles tennis court, 8.23 m wide for singles.

A net is used to divide the area in half. This net should be 1.07 m high at the posts, 0.914 m high in the centre. The net posts are 0.914 m outside the double court on each side or, for a singles net, 0.914 m outside the singles court on each side. The size of the court is measured to the outside of the respective baselines and sidelines. The service lines (T) are centred and the ball must completely miss the line to be considered out. The centre service line is 5 cm, the other lines are between 2.5 cm and 5 cm wide, whereas the baseline may be up to 10 cm wide.

ITTF was founded on 1 March 1913 and is headquartered in London, United Kingdom.

44. Option (2) is correct.
Article 20 of the Constitution of India deals with protection in respect of conviction for offences. It provides three kinds of protection against arbitrary or excessive punishment to an accused person. These are:

I. No ex-post facto law – No one can be convicted for an act that was not an offence at the time of its commission, and no one can be given punishment greater than what was provided in the law prevalent at the time of its commission.

II. No double jeopardy – No one can be prosecuted and punished for the same offence more than once.

III. No self-incrimination – No person accused of any offence can be compelled to give witness against his or her own self.

Article 21 – Protection of life and personal liberty

Article 21 – A Right to elementary education

Article 17 – Abolition of untouchability

45. Option (3) is correct.
E.P. Odum is the father of modern ecology. Ecology is the study of relationships between living organisms and their physical environment.

Charles Darwin is considered as the 'father of evolutionary biology'. He is credited for his theory of natural selection.

Robert Brown is a Scottish Botanist best known for his discovery of cell and stomata.

Robert Hooke discovered cell.

46. Option (4) is correct.

Tamil Nadu receive rainfall during October and November due to the North-East monsoon. During winters the Northeast trade winds are present in the country and when the winds blow from sea to land, it picks up moisture from the sea and brings rainfall in the country. Due to the geographical location, the east coast receives rainfall as the north east trade winds blow from sea to land in this location. Hence, the coast of Tamil Nadu receives winter rainfall.

47. Option (2) is correct.

Prime Minister is the ex-officio chairman of Niti Aayog. NITI Aayog stands for National Institution for Transforming India. It was formed on 1 January 2015 and it replaced Planning Commission of India. It is the public policy think tank of the Government of India. The NITI Aayog council comprises all the state Chief Ministers, along with the Chief Ministers of Delhi and Puducherry, Lieutenant Governors of all UTs, and a vice-chairman nominated by the Prime Minister.

Its current CEO is Parameswaran Iyer.

48. Option (4) is correct.

Capital expenditure is an estimated expenditure that creates assets for the government and reduces the liabilities. These include expenditure on lands and building, purchase of shares, expenditure on machinery and equipment.

Revenue expenditure is the day to day expenditure that government incurs to ensure the normal functioning. Wage bills, defence purchases fall under this category.

Capital receipts are the ones that reduces assets of the government or they can create liabilities.

Disinvestment by the government is a capital receipt, loans given by central government to state government.

Revenue receipts are the money received by government through normal business operation, which neither create any liability nor cause any reduction in the assets of the government.

49. Option (2) is correct.

Sujoy Lal Thaosen has been appointed as the 37th CRPF Director General. CRPF stands for Central Reserve Police Force and comes under the Ministry of Home Affairs (MHA). It assists the State/Union Territories in police operations to maintain law and order and counter-insurgency. It was formed on 27 July 1939 and is headquartered in New Delhi.

50. Option (4) is correct.

Kadamba Mayurasharman gave up his traditional professions and took to arms, successfully established kingdom in Karnataka. He established Kadamba dynasty and was a learned Brahman. He was the most powerful administrator of Kdamaba dynasty. It is believed that he came to receive education at Kanchi but was insulted by Pallava officials and to avenge the insult he took up military as his profession.

Vasudeva Kanva was the founder of the Kanva dynasty and was originally a minister of last Shunga ruler Devabhuti.

Quantitative Aptitude

51. Option (1) is correct.

We have,

$\Delta ABC \sim \Delta DEF$, DE = 6 cm

Perimeter of ΔABC = 32 cm

Perimeter of ΔDEF = 12 cm

By property of similar triangles,

$\Rightarrow \quad \dfrac{\text{perimeter of } \Delta ABC}{\text{perimeter of } \Delta DEF} = \dfrac{\text{side of } \Delta ABC}{\text{side of } \Delta DEF}$

$\Rightarrow \quad \dfrac{\text{perimeter of } \Delta ABC}{\text{perimeter of } \Delta DEF} = \dfrac{AB}{DE}$

$\Rightarrow \quad \dfrac{32}{12} = \dfrac{AB}{6}$

$\Rightarrow \quad AB = 16 \text{ cm}$

52. Option (3) is correct.

Total T type cars produced in year 2,000

= 15% of 3,50,000 = 52,500

Total T type car produced in year 2001

= 10% of 4,40,000 = 44,000

Number of cars sold in both years

= 75% of (52,500 + 44,000) = 72,375

So, number unsold cars in both the years

= (52,500 + 44,000) – 72,375 = 24,125

53. Option (1) is correct.

Number of working days in year R = 160 days

Number of working days in year T = 210 days

So, required ratio = 160 : 210 = 16 : 21

54. Option (4) is correct.

Monthly income of Roy = ₹ 18,000

Loan amount = ₹ 30,000

Rate of interest = 5% per annum

So, after 3 years SI = $\dfrac{30{,}000 \times 5 \times 3}{100}$ = ₹ 4,500

Required percentage = $\dfrac{4{,}500}{18{,}000} \times 100$ = 25%

55. Option (3) is correct.

We have,

$a^2 - b^2 = (a + b)(a - b)$ and

$a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

so, $m^{12} - 1$

$= (m^6 - 1)(m^6 + 1) = (m^3 - 1)(m^3 + 1)(m^6 + 1)$

$= (m^3 - 1)(m + 1)(m^2 + 1 - m)(m^6 + 1)$

So, $(m^3 - 1)(m + 1)(m^2 + 1 - m)(m^6 + 1)$ will be divisible by $m + 1$.

Hence, remainder would be 0.

56. Option (4) is correct.

Number of salesman in J = 45

Number of salesman in K = 20

Required percentage = $\dfrac{45}{20} \times 100$ = 225%

57. Option (2) is correct.

Let the price of table = ₹ x

Then, price of chair = ₹ $(3{,}900 - x)$

As given in the question,

$\Rightarrow \quad \dfrac{8}{100} \times x + \dfrac{16}{100} \times (3{,}900 - x) = 540$

$\Rightarrow \quad 8x + 16(3{,}900 - x) = 54{,}000$

$\Rightarrow \quad 8x + 62{,}400 - 16x = 54{,}000$

$\Rightarrow \quad 8x = 62{,}400 - 54{,}000$

$\Rightarrow \quad 8x = 8{,}400$

$\Rightarrow \quad x = 1{,}050$

So, the price of table = ₹ 1,050

Price of chair = 3,900 – 1,050 = ₹ 2,850

Required difference = 2,850 – 1,050 = ₹ 1,800

58. Option (1) is correct.

Statement 1: $x = 12, y = -2, z = -10$

Then, $x^3 + y^3 + z^3 = 12^3 + (-2)^3 + (-10)^3$
$= 1,728 - 8 - 1,000 = 720$
So, statement 1 is wrong.
Statement 2: $x + y = 48$ and $4xy = 128$
Then, $(x + y)^2 = 2,304$
$\Rightarrow$ $x^2 + y^2 + 2xy = 2,304$
So, $4(x^2 + y^2 + 2xy) = 4 \times 2,304$
$\Rightarrow$ $4x^2 + 4y^2 = 9216 - 8xy$

$$= 9216 - 8 \times \frac{128}{4}$$
$$= 9216 - 256 = 8,960$$

Hence, statement 2 is also wrong.

59. Option (3) is correct.
Percentage decrease in the number of units manufactured by company A from 2019 to 2020

$$= \frac{12500 - 10625}{12500} \times 100 = 15\%$$

Percentage decrease in the number of units manufactured by company B from 2019 to 2020

$$= \frac{34000 - 30600}{34000} \times 100 = 10\%$$

Required ratio = 15 : 10 = 3 : 2

60. Option (4) is correct.
The number of lecturers recruited in state B in the year 2019 = 22
The number of lecturers recruited in state C in the year 2021 = 38

Required percentage = $\frac{22}{38} \times 100 = 57.89\%$

61. Option (4) is correct.
The circumference of first circle = 110 cm
We know that the circumference of a circle = $2\pi r$
So, $2\pi r_1 = 110$

$\Rightarrow$ $2 \times \frac{22}{7} \times r_1 = 110$

$\Rightarrow$ $r_1 = \frac{110 \times 7}{2 \times 22} = 17.5$

The circumference of second circle = 330 cm
So, $2\pi r_2 = 330$

$\Rightarrow$ $2 \times \frac{22}{7} \times r_2 = 330$

$\Rightarrow$ $r_1 = \frac{330 \times 7}{2 \times 22} = 52.5$

So, the difference between their radii
$$= 52.5 - 17.5 = 35 \text{ cm}$$

62. Option (1) is correct.
We have, $k < 0$,

$k = -1$ is satisfying the equation $k + \frac{1}{k} + 2 = 0$.

So, value of $k^{11} + \frac{1}{k^4} = (-1)^{11} + \frac{1}{(-1)^4} = -1 + 1 = 0$

63. Option (3) is correct.
We have,
$$\sec^2 A + \tan^2 A = 3$$
$\Rightarrow$ $\dfrac{1}{\cos^2 A} + \dfrac{\sin^2 A}{\cos^2 A} = 3$

$\Rightarrow$ $1 + \sin^2 A = 3\cos^2 A$
$\Rightarrow$ $1 + (1 - \cos^2 A) = 3\cos^2 A$

$\Rightarrow$ $2 - \cos^2 A = 3\cos^2 A$
$\Rightarrow$ $4\cos^2 A = 2$

$\Rightarrow$ $\cos^2 A = \dfrac{1}{2}$

$\Rightarrow$ $\cos A = \dfrac{1}{\sqrt{2}}$

Now, $\sin A = \sqrt{(1 - \cos^2 A)} - \sqrt{\left(1 - \dfrac{1}{2}\right)} = \dfrac{1}{\sqrt{2}}$

So, $\cot A = \dfrac{\cos A}{\sin A} = \dfrac{\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = 1$

64. Option (1) is correct.
The cost price of article = ₹ 4,000
The marked price of article = ₹ 8,400
After allowing a discount of 25%, the selling price

$$= 8,400 \times \frac{75}{100} = ₹ 6,300$$

After allowing further a discount of 15%, the selling price

$$= 6,300 \times \frac{85}{100} = ₹ 5,355$$

So, profit percentage = $\dfrac{5,355 - 4,000}{4,000} \times 100$

$$= 33.875 \approx 34\%$$

65. Option (4) is correct.
We have, curved surface area of a right circular cylinder
$= 2\pi rh$
volume of a right circular cylinder = $\pi r^2 h$
as given in the question,
$\Rightarrow$ $2 \times 2\pi rh = \pi r^2 h$
$\Rightarrow$ $r = 4$

66. Option (2) is correct.
We have, $x + \dfrac{1}{x} = 6$

$\Rightarrow$ $x^2 + 1 = 6x$
$\Rightarrow$ $x^2 - 6x + 1 = 0$
$\Rightarrow$ $2x^2 - 12x + 2 = 0$
$\Rightarrow$ $2x^2 - 5x = 7x - 2$

Now, value of $\dfrac{3x}{2x^2 - 5x + 2} = \dfrac{3x}{(7x - 2) + 2}$

$\Rightarrow$ $\dfrac{3x}{7x} = \dfrac{3}{7}$

67. Option (3) is correct.
As given in the question,
Radius of circle = hour hand length = 6 cm
Angle covered in four hours = $30° \times 4 = 120°$

We have, Area of sector of circle = $\dfrac{\theta}{360°} \times \pi r^2$

$$= \dfrac{120°}{360°} \times \pi \times 6^2 = \dfrac{1}{3} \times \dfrac{22}{7} \times 36 = 37.71 \text{ cm}^2$$

68. Option (2) is correct.
Given in the question, $\tan \theta + \cot \theta = 2$ [where $\theta < 90°$]
so, $\theta = 45°$ and $\tan \theta = \cot \theta = 1$
now, $\tan^{200}\theta + \cot^{200}\theta = 1^{200} + 1^{200} = 1 + 1 = 2$

69. Option (4) is correct.
As shown in diagram,
$\triangle ABC$ is equilateral,
So, AB = BC = CA and $\angle ABC = \angle BCA = \angle BAC = 60°$
In square BCDE,

BC = CD = DE = EB and ∠BCD = ∠CDE = ∠DEB =
∠EBC = 90°

Now in ΔACD,

∠ACD + ∠CDA + ∠DAC = 180°

Where, AC = CD

So, ∠CDA = ∠DAC

Now, ∠ACD + ∠CDA + ∠CDA = 180°

⇒ (90° + 60°) + 2∠ADC = 180°

[as ∠ACD = ∠ACB + ∠BCD]

⇒ ∠ADC = 15°

70. Option (1) is correct.

We have,

Ratio of salaries of Rida and Riya = 3 : 5

Let the salaries of Rida and Riya be $3x$ and $5x$.

As given in the question,

$$\Rightarrow \frac{3x + 5,000}{5x + 5,000} = \frac{5}{7}$$

$$\Rightarrow 21x + 35,000 = 25x + 25,000$$

$$\Rightarrow x = \frac{10,000}{4} = 2,500$$

Riya's present salary = $3x + 5,000$

= 3 × 2,500 + 5,000 = ₹ 12,500

71. Option (3) is correct.

Let the age of Ram = x kg

As per the question,

The age of shyam = $x + d$ kg

The age of Rohan = $x + 2d$ kg

The age of Reeta = $x + 3d$ kg

The age of Mukesh = $x + 4d$ kg

Average age of Ram and Shyam = $\dfrac{x + x + d}{2} = x + \dfrac{d}{2}$

Average age of Ram, Shyam and Rohan

$$= \frac{x + x + d + x + 2d}{3} = x + d$$

Average age of Ram, Shyam, Rohan and Reeta

$$= \frac{x + x + d + x + 2dx + 3d}{4} = x + \frac{3}{2}d$$

Average age of Ram, Shyam, Rohan, Reeta and Mukesh

$$= \frac{x + x + d + x + 2d + x + 3d + x + 4d}{5} = x + 2d$$

From above expression of average weights, it is increasing

by $\dfrac{d}{2}$ every time.

As given in the question,

$$\Rightarrow \qquad \frac{d}{2} = 2$$

$$\Rightarrow \qquad d = 4$$

So, difference between the age of Ram and Mukesh

$$= x + 4d - x = 4 \times 4 = 16 \text{ kg}$$

72. Option (4) is correct.

We have,

A is 20% more efficient than B.

Let efficiency of B = $5x$

So, efficiency of A = $6x$

A alone can finish the job in 29 days.

So, total work = $29 \times 6x = 174x$ units

Time taken by them together to finish the job

$$= \frac{174x}{5x + 6x} = \frac{174x}{11x} = \frac{174}{11} \text{ days}$$
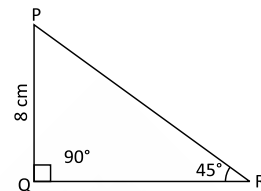
73. Option (1) is correct.

We have,

Ratio of numbers = 14 : 19

And HCF of both numbers = 9

So, LCM of both numbers = 14 × 19 × 9 = 2,394

74. Option (4) is correct.

As shown in diagram,

In ΔPQR,

$$\angle PQR = 90°, \angle PRQ = 45°$$

Then, ∠RPQ = 180° – (90° + 45°) = 45°

∴ ∠PRQ = ∠RPQ

So, PQ = QR = 8 cm

75. Option (1) is correct.

We have,

The length of race track = 1,000 m

Ratio of distance covered by Arjun and Balaji

= 1,000 : 900 = 10 : 9

Ratio of distance covered by Balaji and Charan

= 1,000 : 900 = 10 : 9

Now the ratio of distance covered by Arjun , Balaji and Charan

= 100 : 90 : 81 = 1,000 : 900 : 810

As given in the question, for the next 100 m race Balaji gives Charan ahead start of 100 m.

So, Charan starts from 910 m and reached at (910 + 810) = 1,720 m

And Arjun gives Balaji ahead start of 100 m.

So, Balaji starts from (900 + 100) = 1,000 m and reached at (1,000 + 900) = 1,900 m

At same time, Arjun reached at (1,000 + 1,000) = 2,000 m

So, Arjun is winner and beats Balaji by (2,000 – 1,900) = 100 m.

English Comprehension

76. Option (4) is correct.

'Has been' is used in passive voice of present perfect tense. In present perfect tense, the past participle is used. So, there is an error in option (4), making it the correct answer. The correct phrase will be 'late to the class; he has been warned'.

77. Option (1) is correct.

The subject of the sentence is 'percentage' and 'number'. So, the subject is plural. So, the verb should also be plural. Also, the tense used in the sentence is present simple as it talks of a general truth.

(1) The verb is plural. The rest of the sentence is grammatically correct. So, option (1) is the correct answer.

(2) The verb is singular.

(3) The verb is singular.

(4) The tense used in the phrase is past simple tense, which is used to denote a past action.

78. Option (3) is correct.

Sentence C introduces an 'omnivore', which is what the other three sentences are also talking about. So, C shall begin the

sequence, eliminating options (2) and (4). Between (1) and (3), we can clearly see that CA is a mandatory pair while both the options differ in the placement of sentences D and B. Now, sentences A and D talk of food habits while sentence B talks of omnivores being divided into subcategories on the basis of food habits. So, we can clearly see that sentences A and D should come together. So, CADB is the correct sequence.

79. Option (2) is correct.
'Muddy' is to be covered in or full of mud.
(1) 'Fuzzy' means having a frizzy texture or appearance.
(2) 'Filthy' means very dirty. It is the close synonym of the given word.
(3) 'Blurred' refers to something that is unable to see or be seen clearly.
(4) 'Unsoiled' means not stained or dirty.

80. Option (2) is correct.
'Vivid' means producing powerful feelings or strong, clear images in the mind.
(1) 'Metaphoric' means figurative.
(2) 'Evocative' means bringing strong images, memories, or feelings to mind. It is the synonym of the given word.
(3) 'Contemporary' means living or occurring at the same time.
(4) 'Blurred' refers to something that is unable to see or be seen clearly.

81. Option (2) is correct.
The subject and object of the passive voice sentence are interchanged for the active voice. However, 'by' used in the passive voice sentence is skipped in active voice.
(1) 'To' is generally used before an indirect object, which is missing in this sentence.
(2) This option is grammatically correct.
(3) This option has a subject verb disagreement. 'Novel' is singular and hence should take the singular verb 'fascinates/fascinated', depen-ding on the correct tense.
(4) This option is in present simple tense. We don't change the tense while changing the voice of the sentence. The original sentence is in past simple tense. So, this option is incorrect.

82. Option (1) is correct.
(1) The correct spelling of the word is 'hierarchal', which describes something related to a system of organising people into different ranks or levels of importance, for example in society or in a company.
(2) 'Guarantee' is a formal assurance that certain conditions will be fulfilled.
(3) 'Structural' means relating to or forming part of the structure of a building or other item.
(4) 'Downtrodden' means oppressed or treated badly by people in power.

83. Option (2) is correct.
The correct spelling of the word is 'Diabetes', which refers to a disease in which the body's ability to produce or respond to the hormone insulin is impaired, resulting in abnormal metabolism of carbohydrates and elevated levels of glucose in the blood.

84. Option (2) is correct.
A man cannot be committed but can commit a mistake. So the error is in option (2), making it the correct answer. The correct phrase is 'had committed'.

85. Option (4) is correct.
'By leaps and bounds' means with startlingly rapid progress.

86. Option (3) is correct.
'Steer clear of' means take care to avoid or keep away from.

87. Option (4) is correct.
The sentence is grammatically correct.

88. Option (3) is correct.
The subject and object of the active voice sentence are interchanged for a passive voice sentence. However, the tense remains the same. The given sentence is in simple past tense. So, the active voice sentence should also take the same tense.
(1) This option is in present simple tense.
(2) This option is in past simple tense, but the adjective 'nearest' is missing in this option.
(3) This option is in past simple tense and has all the information.
(4) The option is in past simple tense, but the structure of the sentence is incorrect. The correct structure of the sentence is subject + verb + object (Direct and Indirect).

89. Option (2) is correct.
'Besides' means in addition to or apart from; this is incorrect in the given context. The preposition to be used here is 'beside' which means next to.
(1) The preposition 'about' isn't used with the verb 'sit'.
(2) This option is grammatically correct.
(3) There is subject verb disagreement in this option. The subject is singular. Hence, the verb should also be singular, 'was'.
(4) The subject is 'he'. Hence, the possessive pronoun to be used will be 'his'.

90. Option (1) is correct.
'Futile' means incapable of producing any useful result or pointless.
(1) 'Fruitless' means unproductive or useless. It is the synonym of the given word.
(2) 'Enriching' means to improve or enhance the quality or value of something.
(3) 'Startling' means very surprising, astonishing, or remarkable.
(4) 'Terrifying' means causing extreme fear.

91. Option (1) is correct.
The correct phrase is 'hard-earned money', which refers to money that someone deserves because they have worked hard for it. The other phrases aren't correct.

92. Option (1) is correct.
The subject and an adjective describing the subject is already given. The adjective describes the noun 'player'. So, S should begin the sequence. The only option that begins with S is option (1), making it the correct answer. So, the correct sequence is SPRQ.

93. Option (1) is correct.
The blank needs an adjective which can describe the noun 'confusion'.
(1) 'Utter' means complete or absolute. This option fits the context.
(2) 'Heavy' means of great weight. This word cannot be used to describe confusion.
(3) 'Weighty' means heavy. It cannot be used as an adjective to describe confusion.
(4) 'Vast' means of very great extent or quantity. This word also doesn't fit in the context.

94. Option (3) is correct.
'Morose' means sullen, unhappy or annoyed.
(1) 'Jocund' means cheerful and light-hearted.
(2) 'Excited' means very enthusiastic and eager.
(3) 'Gloomy' means causing gloom, dismal or depressing. It is an appropriate synonym of the given word.

(4) 'Liberal' means willing to respect or accept behaviour or opinions different from one's own.

95. Option (4) is correct.

When we change direct speech into indirect speech, we go one tense back. An exception to this rule is the past perfect tense. If the direct speech is past perfect tense, then the indirect speech also follows the same tense. So, here the direct speech should also use past perfect tense.

(1) The direct speech is present simple tense.

(2) The direct speech is in past perfect continuous tense.

(3) The direct speech is in present perfect tense.

(4) The direct speech is in past perfect tense.

96. Option (2) is correct.

The sentence talks of comics making superheroes.

(1) 'Built' is to construct something by putting parts or material together. It cannot be used for superheroes.

(2) 'Produced' is to make or manufacture from components or raw materials. It is also used to talk of making something using creative skills.

(3) 'Fabricated' is to construct or manufacture an industrial product, especially from prepared components.

(4) 'Manufactured' is to produce on a large scale using machinery.

97. Option (4) is correct.

The blank is used to mention what happened to Bantul, a superhero, in the year 1965.

(1) 'Generated' is to produce or give rise to something. It cannot be used in context of a creative skill.

(2) 'Inspired' is to motivate or encourage someone to do something. The superhero wasn't inspired.

(3) 'Promoted' is to support or actively encourage someone. The superhero wasn't encouraged to do something.

(4) 'Created' is to bring something into existence. The superhero came into existence.

98. Option (1) is correct.

The blank needs a verb for the subject 'Indrajal comics' and the object 'Aabid Surti'.

(1) 'Employed' is to have a paid job or to be hired. Only this option fits in the context.

(2) 'Ordered' is to give an authoritative instruction to do something. The word doesn't fit in the given context.

(3) 'Contracted' is to enter into a formal and legally binding agreement. An indirect object is required for this word, and that is missing from the sentence.

(4) 'Authorised' is to give official permission for or approval to someone or something. There is no suggestion of an official permission.

99. Option (3) is correct.

The sentence talks of Raj Comics going into the sphere of superheroes.

(1) 'Invaded' is to approach or intrude on. It has a negative tone and hence, doesn't fit in the context.

(2) 'Penetrated' is to go into or through something, especially with force or effort. This word also doesn't fit in the context.

(3) 'Entered' is to come into or to be introduced into something. This word has a neutral tone.

(4) 'Pierced' is to force a way through or penetrate. So, this word also has a negative tone and doesn't fit in the context.

100. Option (3) is correct.

The blank needs an adjective for the noun 'toons'.

(1) 'Noted' means well-known by reputation or celebrated. This word is used for distinguished people or things, which is not in line with the meaning given in the sentence.

(2) 'Influential' means having great influence on someone or something.

(3) 'Famous' means known about by many people.

(4) 'Good' is used to show approval.