STAFF SELECTION COMMISSION

COMBINED GRADUATE LEVEL (TIER-I)

SOLVED PAPER

(14th July 2023: Shift-1)

Time Allotted: 1 hour **Max marks:** 200

General Intelligence and Reasoning

1. Select the option figure which is embedded in the given figure. (Rotation is NOT allowed).

1.  **2.**  **3.**  **4.** 

2. Select the option that represents the correct order of the given words as they would appear in an English dictionary.

1. Warriors 2. Warehouse 3. Warcraft
4. Warranty 5. Wardrobe 6. Wardenship

1. 3, 6, 5, 2, 1, 4 **2.** 3, 5, 6, 2, 1, 4
3. 3, 5, 6, 2, 4, 1 **4.** 3, 6, 5, 2, 4, 1

3. Three statements are given, followed by four conclusions numbered I, II, III and IV. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:
Some desks are trays.
Some trays are plates.
Some plates are desks.
Conclusions:
I. All desks are plates. II. All plates are desks.
III. Some plates are trays. IV. All trays are desks.

1. Only conclusion III follows
2. Only conclusion IV follows
3. Only conclusion II follows
4. Only conclusion I follows

4. Select the option that is related to the third word in the same way as the second word is related to the first word. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)

Skin : Touch :: Nose : ?

1. Smell **2.** Taste **3.** Nose ring **4.** Sweat

5. Ganesh was taking a walk with his mother's brother's father's grand-daughter. Who was he walking with?

1. Daughter **2.** Mother
3. Cousin **4.** Grand-daughter

6. Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.

T e 2 9 E K P
M ———— N

1. ⊥ ϭ ƨ ∂ E Ƙ Ь **2.** ⊥ ϭ Ƨ ϭ E Ƙ Ь
3. ٩ ⊁ Ǝ ϱ Ƨ ɔ T **4.** ⊥ ϭ Ƨ ∂ E Ƙ Ь

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

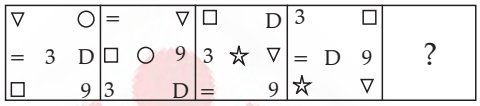
UV, OY, IB, EE, ?

1. ZK **2.** AH **3.** BI **4.** BH

8. The second number in the given number-pairs is obtained by performing certain mathematical operation(s) on the first number. The same operation(s) is/are followed in all the number-pairs except one. Find that odd number-pair.

1. 20 : 11 **2.** 6 : 4 **3.** 15 : 9 **4.** 12 : 7

9. Select the figure that will replace the question mark (?) in the following figure series.



1.  **2.**  **3.**  **4.** 

10. Three different positions of the same dice are shown. Find the number on the face opposite the face showing '1'.

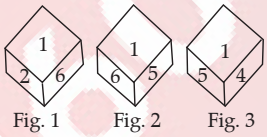


Fig. 1 Fig. 2 Fig. 3

1. 6 **2.** 2 **3.** 3 **4.** 4

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

(55, 11, 25)
(64, 16, 16)

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 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)

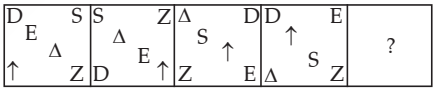
1. (33, 11, 9) **2.** (33, 11, 22) **3.** (33, 11, 3) **4.** (33, 11, 10)

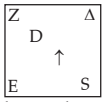
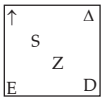
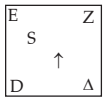
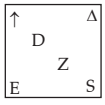
12. Select the option that is related to the sixth letter-cluster in the same way as the first letter-cluster is related to the second letter-cluster and the third letter-cluster is related to the fourth letter-cluster.

HMD : KOE : : BNQ : EPR :: ? : FLV

1. SJE **2.** UJC **3.** EJS **4.** CJU

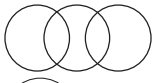
13. Select the figure from the options that can replace the question mark (?) and complete the given pattern.

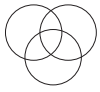


1.  **2.**  **3.**  **4.** 

14. Select the Venn diagram that best illustrates the relationship between the following classes.

Ticket, Aeroplane, Rail

1.  **2.** 

3.  **4.** 

15. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the odd letter-cluster.
1. BFJN **2.** DHLP **3.** HJKP **4.** JNRV

16. 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.
5 : 45 :: 3 : 3 :: 6 : ?
1. 90 **2.** 106 **3.** 110 **4.** 96

17. Which of the following numbers will replace the question mark (?) in the given series?
8, 15, 26, ?, 56, 75
1. 39 **2.** 41 **3.** 35 **4.** 43

18. Select the option that is related to the third term in the same way as the second term is related to the first term and the sixth term is related to the fifth term.
7183 : 3850 :: 6957 : ? :: 8972 : 5639
1. 3426 **2.** 3624 **3.** 3246 **4.** 3642

19. Three different positions of the same dice are shown. Find the number on the face opposite the face showing '4'.

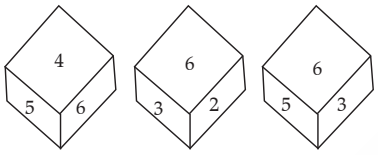


Fig. 1 Fig. 2 Fig. 3

1. 5 **2.** 6 **3.** 2 **4.** 3

20. 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.
625 : 5 :: 2560 : 8 :: 5000 : ?
1. 9 **2.** 12 **3.** 10 **4.** 15

21. In a certain code language, 'ASK' is written as '62' and 'BYE' is written as '64'. How will 'CRY' be written in that language?
1. 68 **2.** 72 **3.** 86 **4.** 92

22. Select the correct combination of mathematical signs that can sequentially replace the * signs and balance the given equation.
256 * 4 * 9 * 3 * 14 = 51
1. × + − ÷ **2.** ÷ × − + **3.** × ÷ + − **4.** ÷ − × +

23. Select the option that represents the letters that, when placed from left to right in the following blanks, will complete the letter-series.
C L _ V E C _ _ W E C L O _ _ C _ O _ E
1. O L P X E L Y **2.** O L O Y E L Z
3. O L O X F M Y **4.** O L O X E L Y

24. In a certain code language, 'TABLE' is coded as ELEAT and 'SWING' is coded as GNLWS. How will 'FRAME' be coded in the same language?
1. EMERF **2.** EMDRF **3.** ERMDF **4.** MEDFR

25. Which two signs should be interchanged to make the given equation correct?
588 ÷ 28 × 32 + 72 – 160 = 760
1. – and + **2.** ÷ and – **3.** + and × **4.** ÷ and +

General Awareness

26. The length of the badminton court for singles is:
1. 13.44 m **2.** 13.55 m **3.** 14 m **4.** 13.40 m

27. Who is the Administrative Head of the Indian Audit and Accounts Department?
1. Accountant General
2. Principal Accountant General
3. Director General
4. The Comptroller and Auditor General

28. Which of the following is the largest pan-India scheme to strengthen health care infrastructure across the country with focus on primary, secondary and tertiary care services?
1. LaQshya **2.** AB-PMJAY **3.** PM-ABHIM **4.** PM-MI

29. Which of the following festivals is associated with the term 'ties of protection'?
1. Baisakhi **2.** Karwa Chauth
3. Chhath Pooja **4.** Raksha Bandhan

30. In October 2021, 19-year-old _____ won the silver medal at the World Wrestling Championship.
1. Anshu Malik **2.** Seema Bisla
3. Sanju Devi **4.** Sonam Malik

31. _____ emerged as the poorest state as per the first-ever Multi-dimensional Poverty Index (MPI) prepared by Niti Aayog and launched in November 2021.
1. Bihar **2.** Madhya Pradesh
3. Uttar Pradesh **4.** Mizoram

32. The consumption of fixed capital is also known as _____.
1. depreciation **2.** net investment
3. appreciation **4.** gross investment

33. The Vedic Aryans lived in the area called Sapt-Sindhu, which means area drained by seven rivers. One of the rivers among the seven is Jhelum. What was its ancient name?
1. Askini **2.** Parushni **3.** Vipash **4.** Vitasta

34. In Chola administration, _____ was the assembly in the villages which were inhabited predominantly by the Brahmanas.
1. Ur **2.** Khilya **3.** Nagaram **4.** Sabha

35. Which of the following states is NOT a part of the Tapi Basin?
1. Rajasthan **2.** Maharashtra
3. Madhya Pradesh **4.** Gujarat

36. Which of the following is used as a cooling medium for the Large Hadron Collider (LHC) and the superconducting magnets in MRI scanners and NMR spectrometers?
1. Neon **2.** Chlorine **3.** Argon **4.** Helium

37. In 2018, Google Doodle celebrated the 100th birthday of Mrinalini Sarabhai. She is an exponent of which of the following dance forms?
1. Bharatanatyam and Kathakali
2. Odissi and Kathak
3. Kuchipudi and Bharatanatyam
4. Yakshagana

38. Bharatanatyam expresses South Indian religious themes and spiritual ideas of _____.
1. Sufism **2.** Shaivism **3.** Buddhism **4.** Jainism

39. Who among the following musicians is popular for his mastery over the musical instrument Sitar?
1. Ali Akbar Khan **2.** Vilayat Khan
3. Bahadur Khan **4.** Amjad Ali Khan

40. Which of the following countries was the host of AFC Women's Asia Cup Football–2022?
1. Japan **2.** Bangladesh
3. India **4.** China

41. Ms. Bhakti Pradip Kulkarni was conferred with the Arjuna Award 2022 for her outstanding contribution in which of the following sports?
1. Table Tennis **2.** Chess
3. Badminton **4.** Wrestling

42. Who among the following was the founder of 'Tiger Legion' or 'Free India Legion'?
1. Vinayak Damodar Savarkar
2. Subhash Chandra Bose
3. Sohan Singh Bhakhna
4. Lala Hardayal

43. Name a reproductive strategy in which parasites take advantage of the care of other individuals of the same species or different species to raise their young.
1. Brood parasitism **2.** Sexual parasitism
3. Klepto parasitism **4.** Competitive parasitism

44. On the basis of tribal population (2011), identify the option that arranges the following states in ascending order.
A. Madhya Pradesh B. Maharashtra C. Odisha
1. (C), (B), (A) **2.** (B), (A), (C) **3.** (C), (A), (B) **4.** (B), (C), (A)

45. In which industrial policy was the investment limit for tiny industry/unit increased to ₹2 lakh?
1. 1977 **2.** 1991 **3.** 1980 **4.** 1956

46. Which scientist thought of the concept of steady state of the universe?
1. Harold Jeffrey **2.** Edwin Hubble
3. Fred Hoyle **4.** Pierre-Simon Laplace

47. Match the columns.

Column-A (Class)	Column-B (Common name)
i. Chlorophyceae	a. Brown algae
ii. Phaeophyceae	b. Green algae
iii. Rhodophyceae	c. Blue-green algae
iv. Cyanophyceae	d. Red algae

1. i-b, ii-c, iii-a, iv-d **2.** i-b, ii-a, iii-d, iv-c
3. i-d, ii-c, iii-b, iv-a **4.** i-a, ii-b, iii-c, iv-d

48. Ryotwari system of revenue collection in India, introduced by the British, was based on the _____.
1. Smith's theory of rent **2.** Ricardian theory of rent
3. Malthusian theory of rent **4.** Marx's theory of rent

49. Who received the Nobel Prize in 1901 for 'recognition of the extraordinary services rendered by the discovery of the laws of chemical dynamics and osmotic pressure in solutions'?
1. Hermann Emil Fischer **2.** Jacobus Henricus van 't Hoff
3. Svante August Arrhenius **4.** Henri Moissan

50. Which of the following Articles of the Indian Constitution are related to citizenship?
1. Articles 15 to 21 **2.** Articles 5 to 11
3. Articles 2 to 4 **4.** Articles 25 to 31

Quantitative Aptitude

51. If A is 95% of B, then what percent of A is B?
1. $110\frac{3}{19}\%$ **2.** $104\frac{7}{19}\%$ **3.** $108\frac{17}{19}\%$ **4.** $105\frac{5}{19}\%$

52. The marked price of mustard oil is 25% more than its cost price. At what percentage less than the marked price should it be sold to have no profit and no loss?
1. 15% **2.** 20% **3.** 18% **4.** 22%

53. A can complete a piece of work in 25 days while B can complete the same work in 30 days. They work on alternate basis, starting with A. Both A and B follow this pattern for 5 days and then A leaves the work. In how many days will B finish the remaining work?
1. $24\frac{2}{5}$ **2.** $5\frac{2}{5}$ **3.** $5\frac{3}{5}$ **4.** $24\frac{3}{5}$

54. As part of his journey, a person travels 120 km at 80 km/h, the next 100 km at 40 km/h, and comes back to the starting point at 75 km/h. The average speed of the person throughout the journey (approximately) is:
1. 63.46 km/h **2.** 58.74 km/h **3.** 68.15 km/h **4.** 49.58 km/h

55. 8 men can complete a work in 45 days. 8 women can complete the same work in 18 days. In how many days will 5 men and 8 women, together, complete the same work?
1. $13\frac{1}{5}$ **2.** $12\frac{4}{5}$ **3.** $14\frac{2}{5}$ **4.** $15\frac{3}{5}$

56. 625 + 626 + 627 + 628 is divisible by:
1. 256 **2.** 254 **3.** 255 **4.** 259

57. Study the given table and answer the question that follows. The table shows the classification of 100 students based on the marks obtained by them in History and Geography in an examination.

Subject	Marks out of 50				
	40 and above	30 and above	20 and above	10 and above	0 and above
History	9	32	80	92	100
Geography	4	21	66	81	100
Average (Aggregate)	7	27	73	87	100

Based on the table, what is the number of students scoring less than 20% marks in aggregate?
1. 13 **2.** 11 **3.** 10 **4.** 12

58. Two concentric circles are of radii 10 cm and 6 cm. Find the length of the chord of the larger circle which touches the smaller circle.
1. 8 cm **2.** 16 cm **3.** 12 cm **4.** 9 cm

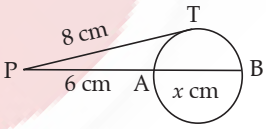
59. If $\sin(a+b) = 1$ and $\cos(a-b) = \frac{1}{2}$, then find a.
1. 75° **2.** 30° **3.** 15° **4.** 45°

60. A train 900 m long is running at 108 km/h. How long will it take to clear a 900 m long platform completely?
1. 60 s **2.** 45 s **3.** 30 s **4.** 18 s

61. If $7b - \frac{1}{4b} = 7$, then what is the value of $16b^2 + \frac{1}{49b^2}$?
1. $\frac{80}{49}$ **2.** $\frac{104}{7}$ **3.** $\frac{120}{7}$ **4.** $\frac{7}{2}$

62. If $m\angle C = m\angle Z$ and AC = XZ, then which of the following conditions is necessary for ΔABC and ΔXYZ to be congruent?
1. $AB = AC$ **2.** $BC = YZ$ **3.** $AB = XY$ **4.** $BC = AB$

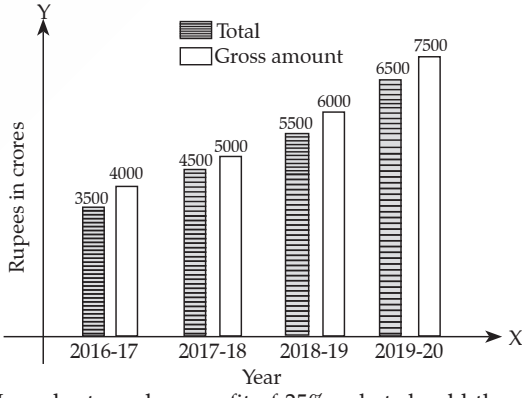
63. In the given figure, PAB is a secant and PT is a tangent to the circle from P. If PT = 8 cm, PA = 6 cm and AB = x cm, then the value of x is:



1. $\frac{14}{9}$ **2.** $\frac{1}{3}$ **3.** $\frac{14}{3}$ **4.** $\frac{4}{3}$

64. A shopkeeper offers the following two discount schemes.
(A) Buy 3 get 4 free (B) Buy 5 get 6 free
Which scheme has the maximum discount percentage?
1. A
2. A does not give any discount
3. A and B both have the same discount percentage
4. B

65. The following bar chart represents the gross amount (in ₹ lakhs) and total cost (in ₹ lakhs) of a firm.



In order to make a profit of 25%, what should the gross amount have been (in ₹ crores) in 2019-2020, if the total cost remained the same?
1. 7800 **2.** 8000 **3.** 8250 **4.** 8125

66. In what time will ₹10,000 at 4% per annum, produce the same interest as ₹ 8,000 does in 4 years at 5% simple interest?
1. 5 years **2.** 3 years **3.** 4 years **4.** 6 years

67. A man, a boy and a woman can finish a work in 10 days, 15 days and 30 days, respectively. In how many days can the work be finished by a man, a woman and a boy when all of them work together?
1. 10 **2.** 5 **3.** 8 **4.** 6

68. If $\cos\theta = \frac{\sqrt{3}}{2}$, then $\tan^2\theta \cos^2\theta = ?$
1. $\frac{1}{\sqrt{3}}$ **2.** $\frac{1}{4}$ **3.** $\frac{1}{2}$ **4.** $\sqrt{3}$

69. What is the value of $(3x^3 + 5x^2y + 12xy^2 + 7y^3)$, when $x = -4$ and $y = -1$?
1. – 329 **2.** – 359 **3.** – 361 **4.** – 327

70. If the four numbers, 39, 117, 17 and y are in proportion, then find the value of y.
1. 49 **2.** 51 **3.** 57 **4.** 85

71. The volume of a sphere of radius 4.2 cm is: $\left(\text{Use } \pi = \frac{22}{7}\right)$
1. 278.234 cm^3 **2.** 312.725 cm^3 **3.** 297.824 cm^3 **4.** 310.464 cm^3

72. If $(a + b + c) = 16$, and $(a^2 + b^2 + c^2) = 90$, find the value of $(ab + bc + ca)$.
1. 84 **2.** 83 **3.** 82 **4.** 81

73. If $\{(3\sin\theta - \cos\theta)/(\cos\theta + \sin\theta)\} = 1$, then the value of $\cot\theta$ is:
1. 3 **2.** 0 **3.** 1 **4.** 2

74. Two runners, Sony and Mony, start running on a circular track of length 200 m at speeds of 18 and 24 km/h, respectively, in the same direction. After how much time from the start will they meet again at the starting point?
1. 120 s **2.** 110 s **3.** 100 s **4.** 90 s

75. What will be the remainder when $(265)^{4081} + 9$ is divided by 266?
1. 8 **2.** 6 **3.** 1 **4.** 9

English Comprehension

76. The following sentence has been split into four segments. Identify the segment that contains an error.
Neetu have been/waiting for me/since 10 o'clock /in the morning.
1. Neetu have been **2.** in the morning
3. since 10 o'clock **4.** waiting for me

77. Select the most appropriate ANTONYM of the underlined word.
Her dog can climb <u>under</u> the fence.
1. Over **2.** Sink **3.** Behind **4.** Beneath

78. Select the INCORRECTLY spelt word in the given sentence.
The village beggars, no longer ill at ease in the gathering of gliterring dignitaries, sat in their assigned rows and joked with vegetarian Brahmin apprentices.
1. assigned **2.** apprentices **3.** beggars **4.** gliterring

79. Select the option that expresses the given sentence in passive voice.
The company's board of directors will announce the financial results at the annual meeting tomorrow.
1. The financial results will have been announced by the company's board of directors at the annual meeting tomorrow.
2. The financial results are being announced by the company's board of directors at the annual meeting tomorrow.
3. The company's board of directors announced the financial results at the annual meeting tomorrow.
4. The financial results will be announced by the company's board of directors at the annual meeting tomorrow.

80. Select the grammatically correct sentence.
1. The participants of the competition are waiting for their turn curiously.
2. The participants of the competition has been waiting for their turn curiously.
3. A participants of the competition is waiting for their turn curiously.
4. The participants of the competition is waiting for their turn curiously.

81. Select the most appropriate ANTONYM of the underlined word in the given sentence.
Henry is so <u>servile</u> that other people take advantage of him.
1. Arrogant **2.** Sheepish **3.** Bickering **4.** Cunning

82. Select the option that can be used as a one-word substitute for the given group of words.
A thing fit to eat.
1. Eligible **2.** Digestible **3.** Curable **4.** Edible

83. Select the most appropriate meaning of the given idiom.
Lily-livered
1. Brave **2.** Comical **3.** Not brave **4.** Naughty

84. Select the most appropriate synonym of the given word.
Zealous
1. Enthusiastic **2.** Detached **3.** Apathetic **4.** Indifferent

85. Select the most appropriate option that can substitute the underlined word in the given sentence.
She had an ability to <u>persuade</u> others.
1. halt **2.** suppress **3.** outrage **4.** impress

86. Select the most appropriate option that can substitute the underlined segment in the given sentence.
We must remember that what we teach our children is what we <u>inculcate</u> in them.
1. endanger **2.** inspire **3.** instil **4.** import

87. Select the option that expresses the given sentence in passive voice.
He won't receive any better choice than this from anywhere.
1. Any better choice won't be received by him than this from anywhere.
2. Any better choice wouldn't have received by him than this from anywhere.
3. Any better choice shouldn't be received by him than this from anywhere.
4. Any better choice won't have been be received by him than this from anywhere.

88. Select the most appropriate synonym of the given word.
Feeble
1. Unheedful **2.** Strong **3.** Weak **4.** Baneful

89. Select the correct spelling of the underline word.
They denied having any <u>associasion</u> with the terrorists.
1. association **2.** asocciation **3.** assosiation **4.** association

90. Select the most appropriate meaning of the underlined idiom in the given sentence.
Pooja tried to explain the problem, but soon she tied herself up in knots.
1. Be forced to explain your actions and (probably) punished
2. Become very confused when you are trying to explain something
3. Make no progress in an argument or discussion
4. Won't modify an opinion or agree to even small changes that another person wants

91. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.
A. In Bihar and Central India, in particular, every district had smelters that used local deposits of ore to produce iron which was widely used for the manufacture of implements and tools of daily use.

B. The smelting was done by men while women worked on the bellows, pumping air that kept the charcoal burning.
C. But iron smelting in India was extremely common till the end of the nineteenth century.
D. Production of Wootz steel required a highly specialised technique of refining iron.
1. ACDB **2.** DCAB **3.** BCDA **4.** CBDA

92. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.
A. He repeated the experiment, increasing the amount until he had weighed up to a thousand pounds.
B. During the spring of 1717, the iron foundries in a remote district were often visited by a thin, middle-aged man with a notebook.
C. Three cauldrons were next prepared under his directions.
D. He would weigh out two pounds of iron, have them heated till they were red-hot and then weigh them again.
1. BDAC **2.** ABDC **3.** BCAD **4.** CABD

93. Select the most appropriate option to fill in the blank.
She is _____ a peacock in the blue satin saree.
1. very beautiful as **2.** so beautiful as
3. as beautiful as **4.** beautiful like

94. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.
A. The top band is made of saffron, which symbolises power and courage.
B. The constituent assembly adopted our national flag, Tiranga, which means tricolour, on 22nd July 1947.
C. As a symbol of nationalism and freedom, it is fashioned from khadi, which is domestically spun Indian cotton.
D. It features three horizontal stripes that are all the same width.
1. CBAD **2.** CBDA **3.** BCDA **4.** BDCA

95. Select the most appropriate homonym to fill in the blank.
The hunter dogs followed the hyena's _____.
1. sense **2.** scent **3.** cense **4.** cents

Comprehension:
In the following passage some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each number.
Human life is (1) _____ a unique blessing, which in turn depends on the (2) _____ of the Self. He who is not aware of the Self can neither have peace nor can he foster peaceful co-existence. We have to link our soul with God and body with the physical world for substance. (3) _____ the formless God is invisible to the naked eye, our mind often wanders wherever it goes. (4) _____ , we are unable to develop any love for the Divine. And religion like the white light of heavens (5) _____ multi-coloured fragmentations by the prisms of men and loses its gravity. Instead of uniting, it becomes a major dividing force. French philosopher Tail hard de Chardin, thinking deeply on meaning of our existence and relationship with the Divine, expounds, "we are not human beings having a spiritual experience, we are spiritual beings having a human experience".

96. Select the most appropriate option to fill in blank no. 1.
1. considering **2.** to consider **3.** considered **4.** consider

97. Select the most appropriate option to fill in blank no. 2.
1. witness **2.** known **3.** awareness **4.** aware

98. Select the most appropriate option to fill in blank no. 3.
1. Since **2.** From **3.** As per **4.** For

99. Select the most appropriate option to fill in blank no. 4.
1. As a result **2.** As a reaction
3. Causing **4.** As a reason

100. Select the most appropriate option to fill in blank no. 5.
1. break into **2.** breaks to **3.** break from **4.** breaks into

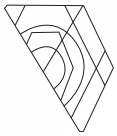
Answer Key

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

Answers with Explanations

General Intelligence and Reasoning

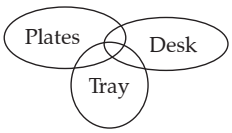
1. Option (2) is correct.
Explanation:


Logic:
Follow the logic and the pattern. Hence,

2. Option (4) is correct.
Explanation:

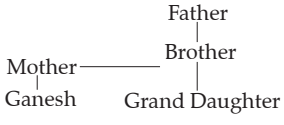
3. Warcraft	6. Wardenship	5. Wardrobe
2. Warehouse	4. Warranty	1. Warriors

3. Option (1) is correct.
Explanation: From the Venn diagram, only conclusion III follows.



4. Option (1) is correct.
Explanation: Skin : Touch :: Nose : smell
Logic: As touch is related to the skin in the same way Nose is related to smell.

5. Option (3) is correct.
Explanation:



Hence, Ganesh was walking with his cousin.

6. Option (4) is correct.
Explanation:

Te29EKP
M ——— N

Logic:
In the mirror image left becomes right and right becomes left. But in this case, the mirror is placed at the bottom hence everything will look inverted.

ꞱϬƧɘEKb

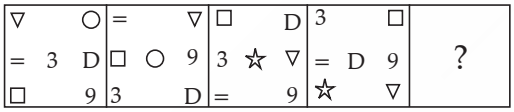
7. Option (2) is correct.
Explanation: UV, OY, IB, EE, AH
Logic: Table of Alphabetical series (point to remember)

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

U – 6 = O
O – 6 = I
I – 4 = E
E – 4 = A
V + 3 = Y
Y + 3 = B
B + 3 = E
E + 3 = H
Hence, AH is the correct answer.

8. Option (3) is correct.
Explanation: Solving by options:
20 ÷ 2 + 1 = 11
6 ÷ 2 + 1 = 4
15 ÷ 2 + 1 ≠ 9
12 ÷ 2 + 1 = 7

9. Option (3) is correct.
Explanation:



Logic: Check the position of 9 in alternative figure. After 2 figures a new letter will be added.

10. Option (3) is correct.
Explanation:

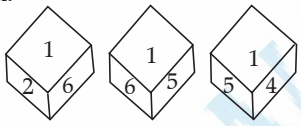


Fig. 1 Fig. 2 Fig. 3

Logic:
From figure 1 and 3
1 – 6 – 2
1 – 4 – 5
Opposite pairs:
6 – 4
2 – 5
1 – 3

11. Option (1) is correct.
Explanation: (55, 11, 25) (64, 16, 16)
Logic:

$\frac{55}{11} = 5$

Now, $(5)^2 = 25$

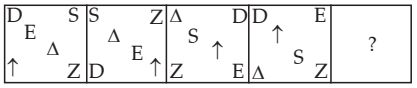
Same way, $\frac{64}{16} = 4$

Now, $(4)^2 = 16$

So, (33, 11, 9) is the correct answer.

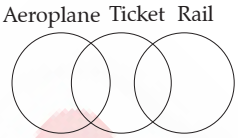
12. Option (4) is correct.
Explanation: HMD : KOE :: BNQ : EPR :: ? : FLV
Logic: H + 3 = K, M + 2 = O, D + 1 = E
B + 3 = E, N + 2 = P, Q + 1 = R
C + 3 = F, J + 2 = L, U + 1 = V
Hence, CJU is the correct answer.

13. Option (4) is correct.
Explanation:



Logic: Following the logic and the pattern.
Hence,

14. Option (1) is correct.
Explanation: Ticket, Aeroplane, Rail
Logic:



15. Option (3) is correct.
Explanation:
Logic:
B + 4 → F, F + 4 → J, J + 4 → N
D + 4 → H, H + 4 → L, L + 4 → P
H + 2 → J, J + 1 → K, K + 5 → P
J + 4 → N, N + 4 → R, R + 4 → V
Hence, HJKP is the correct answer.

16. Option (4) is correct.
Explanation: Given: 5 : 45 :: 3 : 3 :: 6 : ?
Logic:
For first pair ⇒ $(5)^1 \times (5-2)^2$
$= 5 \times 9 = 45$
For second pair ⇒ $(3)^1 \times (3-2)^2$
$= 3 \times 1 = 3$
So, for third pair ⇒ $(6)^1 \times (6-2)^2$
$= 6 \times 16$
$= 96$
Hence, the missing number is 96.

17. Option (1) is correct.
Explanation: 8, 15, 26, ?, 56, 75
Logic: Adding the prime numbers in each step:
8 + 7 = 15
15 + 11 = 26
26 + 13 = 39
39 + 17 = 56
56 + 19 = 75

18. Option (2) is correct.
Explanation: 7183 : 3850 :: 6957 : ? :: 8972 : 5639
Logic: 7183 – 3333 = 3850
8972 – 3333 = 5639
6957 – 3333 = 3624

19. Option (4) is correct.
Explanation:

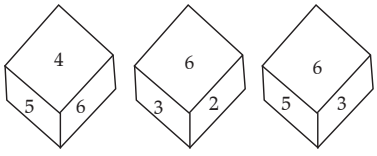


Fig. 1 Fig. 2 Fig. 3

Logic: 6 – 5 – 4
6 – 2 – 3
So, 3 is opposite to 4.

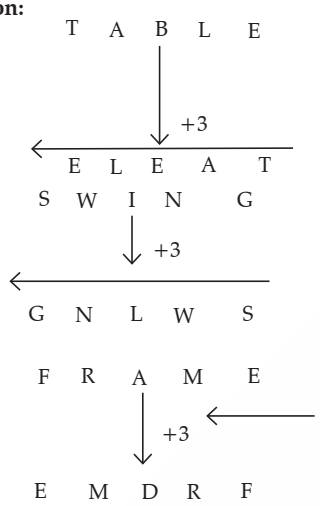
20. Option (3) is correct.
Explanation: Given: 625 : 5 :: 2560 : 8 :: 5000 : ?
Logic:
$625 \times 2 = 1250 = (5)^3 \times 10$
$2560 \times 2 = 5120 = (8)^3 \times 10$
So, $5000 \times 2 = 10000 = (10)^3 \times 10$
Hence, the missing number is 10.

21. Option (4) is correct.
Explanation:
ASK = 1 + 19 + 11 = 31 × 2 = 62
BYE = 2 + 25 + 5 = 32 × 2 = 64
CRY = 3 + 18 + 25 = 46 × 2 = 92

22. Option (4) is correct.
Explanation:
256 * 4 * 9 * 3 * 14 = 51
Logic:
256 ÷ 4 – 9 × 3 + 14
Using BODMAS Rule
64 – 27 + 14
78 – 27 = 51 = RHS

23. Option (4) is correct.
Explanation:
Logic: C L O V E C L O W E C L O X E C L O Y E

24. Option (2) is correct.
Explanation:



25. Option (1) is correct.
Explanation: 588 ÷ 28 × 32 + 72 – 160 = 760
Logic: Interchange – and +
588 ÷ 28 × 32 – 72 + 160
21 × 32 – 72 + 160
672 – 72 + 160
600 + 160 = 760

General Awareness

26. Option (4) is correct.
As an indoor game, the synthetic surface is often used over the wooden base as a badminton court. This synthetic surface is considered the best playing surface for a badminton court. This anti-slippery surface reduces the stress on your knees and ankles and provides a very good grip to jump and shift in any direction with ease. The length of a badminton court for singles is 44 feet (13.4 meters). The width of a singles court is 17 feet (5.18 meters), while the width of a doubles court is 20 feet (6.1 meters). The net is 760 millimeters (29.92 inches) high at the centre and 1550 millimeters (61.02 inches) high at the edges. The diagonal length of a badminton court is 48.30 feet (14.72 meters).

27. Option (4) is correct.
The Administrative Head of the Indian Audit and Accounts Department is the Comptroller and Auditor General of India (CAG). The CAG is an independent statutory authority that is responsible for auditing the accounts of the Union and State governments and public sector organizations. The CAG is also responsible for maintaining the accounts of State governments. The current CAG of India is G. C. Murmu. He was appointed as the CAG on 30 August 2022. Murmu is a former Lt. Governor of the Union Territory of Jammu and Kashmir. He is a member of the Indian Audit and Accounts Service (IA&AS). The CAG is assisted by a number of Deputy Comptrollers and Auditors General (DCAs), Additional Deputy Comptrollers and Auditors General (ADCAGs), Principal Accountants General (PAGs), Accountants General (AGs), and other officers. The CAG's office is located in New Delhi.

28. Option (3) is correct.
The largest pan-India scheme to strengthen healthcare infrastructure across the country with a focus on primary, secondary and tertiary care services is the Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (PM-ABHIM). It was launched by the Government of India in October 2021 with an outlay of ₹ 64,180 crore.
The PM-ABHIM aims to: Strengthen public health infrastructure, especially in critical care facilities and primary care in both urban and rural areas, Improve access to quality healthcare services for all citizens, and Promote research and innovation in the healthcare sector. The PM-ABHIM will be implemented in a phased manner over a period of five years. The first phase of the mission will focus on strengthening primary healthcare facilities, while the second phase will focus on strengthening secondary and tertiary care facilities.
The PM-ABHIM is a major step towards improving the healthcare infrastructure in India. It is expected to benefit millions of people across the country.

29. Option (4) is correct.
Raksha Bandhan is a Hindu festival that celebrates the ties of protection between siblings. On this day, sisters tie a rakhi (a sacred thread) on the wrists of their brothers, and brothers vow to protect their sisters. The festival is also celebrated by some Jains and Sikhs. The word "Raksha" means "protection" and "Bandhan" means "bond" or "tie". So, Raksha Bandhan literally means "the bond of protection".
The festival is celebrated on the full moon day of the month of Shravan (August-September). On this day, sisters pray for the long life and well-being of their brothers, and brothers promise to protect their sisters from all harm. Raksha Bandhan is a festival of love, affection, and protection. It is a day for siblings to reaffirm their love and commitment to each other. The other festivals mentioned are not associated with the term "ties of protection". Baisakhi is a harvest festival, Karwa Chauth is a festival of fasting by married women, and Chhath Pooja is a festival of thanksgiving to the Sun God.

30. Option (1) is correct.
Anshu Malik is an Indian freestyle wrestler who won the silver medal in the women's 57 kg event at the 2021 World Wrestling Championships held in Oslo, Norway. She is the first Indian wrestler to win a silver medal at the World Championships in the women's division. Malik was born in Jind, Haryana, India in 2001. She started wrestling at the age of 12 and quickly rose through the ranks. She won the gold medal at the 2018 Cadet World Championships and the silver medal at the 2019 Junior World Championships. In 2021, Malik made her senior international debut at the World Wrestling Championships. She won her first two matches but lost to two-time Olympic champion Helen Maroulis of the United States in the final. Despite the loss, Malik's silver medal was a historic achievement for Indian wrestling. Malik is a rising star in Indian wrestling and is expected to achieve even greater success in the future.

31. Option (1) is correct.
According to the report, 51.91 per cent of the population of Bihar is poor. Whereas Kerala is the least poor state in the country, only 0.71 percent of its population is poor.
Bihar's 51.88 percent population (the highest in the country) is malnourished, while Sikkim is the least malnourished state in the country. According to the data of the National Family Health Survey-4 (2015-16) report, 39.86 percent of the population of Bihar was away from access to electricity, while according to the provisional data of the National

Family Health Survey-5 (2019-20) Bihar's only 3.7 percent of the population is out of reach of electricity, which shows the remarkable progress of Bihar in the field of electricity.

Bihar has got a score of 0.265 in this multidimensional index, out of which the MPI score of rural areas is 0.286 and the MPI score of the urban areas is 0.117, which indicates that the rural areas of Bihar have more poverty. Kishanganj is the poorest district of Bihar, where 64.75 percent of the population is poor. On the other hand, Araria (64.65 percent), Madhepura (64.35 percent), East Champaran (64.13 percent) and Supaul (64.10 percent) are the poorest districts. Patna is the least poor district of Bihar, where only 29.20 percent of the population is poor. Bhojpur (40.50 percent), Siwan (40.55 percent), Rohtas (40.74 percent) and Munger (40.99 percent) are the least poor districts of Bihar.

32. Option (1) is correct.

Consumption of fixed capital is the decline in the value of fixed assets over time due to wear and tear, obsolescence, and accidental damage. It is also known as depreciation. Depreciation is a non-cash expense, which means that it does not involve the actual transfer of money. However, it is an important expense to consider when calculating the true cost of owning and operating a fixed asset. Net investment is the difference between gross investment and depreciation. Gross investment is the total amount of money spent on new fixed assets, while depreciation is the amount of money spent on replacing worn-out fixed assets. Net investment is the amount of money that is actually available to increase the stock of fixed assets. Appreciation is the opposite of depreciation. It is the increase in the value of a fixed asset over time due to factors such as inflation or technological improvements. Gross investment is the total amount of money spent on new fixed assets, including both replacement and expansion. Therefore, the consumption of fixed capital is also known as depreciation.

33. Option (4) is correct.

The correct answer is 4. Vitasta. The ancient name of the Jhelum River was Vitasta. It is mentioned in the Rig Veda, the oldest of the Hindu scriptures. The Rig Veda describes the Vitasta as a beautiful and sacred river. It is said that the river was born from the tears of the god Vishnu. The Vitasta River played an important role in the history of the Vedic Aryans. It was a major source of water for irrigation and drinking. The river was also a transportation route. The Vedic Aryans used the Vitasta River to travel between different parts of their territory. The Vitasta River is still an important river in the region. It is a major source of water for irrigation and drinking. The river is also a popular tourist destination. People come to the Vitasta River to enjoy its beauty and to participate in religious activities.

34. Option (4) is correct.

During the Chola rule in the Tamil country from the 9th to 13th century, there were several villages that were granted to Brahmins and referred to as Brahmadeya. These villages were predominantly inhabited by Brahmins, who formed an assembly known as Sabha to administer village affairs. The Chola Empire's administrative structure included provinces called Mandalams, which were further divided into districts known as Valanadus. At the local level, the taxation on land was managed by village assemblies, which also had the responsibility of maintaining irrigation tanks to support agricultural development. There were three distinct types of village assemblies: Ur: Comprising ordinary villagers, Sabha or Mahasabha: Comprising knowledgeable Brahmins, and Nagaram: Comprising merchants, traders, and artisans.

35. Option (1) is correct.

The Tapi River is a west-flowing river that originates in the Satpura Range in Madhya Pradesh and flows through the states of Maharashtra and Gujarat before emptying into the Arabian Sea. Rajasthan is not a part of the Tapi Basin. The other states that are part of the Tapi Basin are Maharashtra, Madhya Pradesh, and Gujarat. The basin spans the states of Madhya Pradesh, Maharashtra, and Gujarat and has an area of 65,000 square kilometres.

The basin is located on the Deccan plateau and is limited on the north by the Satpura range, on the east by the Mahadev Hills, on the south by the Ajanta Range and the Satmala Hills, and on the west by the Arabian Sea. The basin is important for irrigation, drinking water, and hydroelectric power generation. The Tapi River is a popular tourist destination. The river is known for its scenic beauty and its many waterfalls. The Tapi River is also an important fishing ground.

36. Option (4) is correct.

Helium is used as a cooling medium for the Large Hadron Collider (LHC) and the superconducting magnets in MRI scanners and NMR spectrometers. Helium has the lowest boiling point of any element, and it can be liquefied at very low temperatures. This makes it ideal for cooling superconducting magnets, which require temperatures of around -273 degrees Celsius. The LHC is the world's largest and most powerful particle accelerator. It is located at the European Organization for Nuclear Research (CERN) in Switzerland. The LHC uses superconducting magnets to accelerate protons to speeds close to the speed of light. These magnets need to be cooled to very low temperatures in order to operate. MRI scanners and NMR spectrometers are medical imaging devices that use superconducting magnets to create images of the body. These magnets also need to be cooled to very low temperatures in order to operate. Helium is a scarce resource, and its price has been rising in recent years. However, it is still the best cooling medium for superconducting magnets. The other gases mentioned are not used as cooling mediums for the LHC or superconducting magnets. Neon has a boiling point of –246 degrees Celsius, chlorine has a boiling point of –34 degrees Celsius, and argon has a boiling point of –185 degrees Celsius. These gases are not cold enough to cool superconducting magnets.

37. Option (1) is correct.

Google Doodle celebrated the 100th birthday of Mrinalini Sarabhai in 2018. She was an exponent of Bharatanatyam and Kathakali, two of the major classical dance forms of India. Bharatanatyam is a classical dance form from Tamil Nadu in southern India. It is a highly stylized dance form that is characterized by its intricate footwork, graceful movements, and expressive facial expressions. Kathakali is a classical dance-drama from Kerala in southern India. It is a more vigorous dance form that is characterized by its elaborate costumes, makeup, and facial expressions. Mrinalini Sarabhai studied both Bharatanatyam and Kathakali under the guidance of some of the leading masters of these dance forms. She went on to become a renowned dancer and choreographer. She also founded the Darpana Academy of Performing Arts in Ahmedabad, India, which is one of the leading dance schools in the world. Mrinalini Sarabhai's work has had a profound impact on the field of Indian classical dance.

38. Option (2) is correct.

Bharatanatyam is a classical dance form from Tamil Nadu in southern India. It is a highly stylized dance form that is characterized by its intricate footwork, graceful movements, and expressive facial expressions. Bharatanatyam expresses South Indian religious themes and spiritual ideas, particularly of Shaivism and in general of Hinduism. Shaivism is a major sect of Hinduism that worships the god Shiva. Shiva is one of the three main gods of Hinduism, along with Vishnu and Brahma. The dance form is based on the Natya Shastra, an ancient treatise on dance, music, and theatre. The Natya Shastra describes Bharatanatyam as a "divine dance" that can be used to express the highest spiritual truths. Bharatanatyam is a living tradition that has evolved over centuries. It is still performed today in temples, festivals, and other cultural events. The dance form is also taught in schools and dance academies around the world. The other religions mentioned are not as closely

associated with Bharatanatyam. Sufism is a mystical tradition within Islam, Buddhism is a religion that originated in India, and Jainism is a religion that originated in India.

39. Option (2) is correct.

Vilayat Khan was a highly acclaimed sitar player who was known for his mastery of the instrument. He was born in 1928 in Maihar, India, and began learning the sitar at a young age from his father, Ali Akbar Khan. Khan was a prolific composer and recorded over 100 albums. He was also a gifted improviser and was known for his ability to create new and exciting sounds on the sitar. Khan was a major influence on many other sitar players, including his son, Amjad Ali Khan. He was also a pioneer in the field of fusion music, and he collaborated with many Western musicians, including John Coltrane and George Harrison. Khan died in 2004, but his music continues to be enjoyed by people all over the world. He is considered to be one of the greatest sitar players of all time. The other musicians mentioned are also highly acclaimed sitar players, but Vilayat Khan is considered to be the most famous. Ali Akbar Khan is his father, and Amjad Ali Khan is his son. Bahadur Khan was a sitar player who was active in the early 20th century.

40. Option (3) is correct.

India hosted the 20th edition of the AFC Women's Asian Cup in 2022, from January 20 to February 06. The football tournament was won by China PR (People's Republic), who emerged victorious by defeating Korea Republic (South Korea) with a score of 3-2 in the final match held at the D.Y. Patil Stadium in Navi Mumbai. The AFC Women's Asian Cup, established in 1975, is a women's football competition for national teams under the Asian Football Confederation, and it takes place every four years.

41. Option (2) is correct.

The Arjuna Award is the second-highest sporting honour in India. Recipients of this prestigious award are selected by a committee formed by the Ministry of Sports. They are recognized for their exceptional performance in sports at the international level over a period of four years, as well as for demonstrating qualities of leadership, sportsmanship, and discipline. In the field of chess, Bhakti Kulkarni and GM R Praggnanandhaa were honoured with the Arjuna Award in 2022. Both of them received several accolades, including a cash prize worth ₹15 lacs, a bronze statue, ceremonial attire, and a certificate in recognition of their outstanding achievements in the sport.

42. Option (2) is correct.

Subhas Chandra Bose, a prominent leader in the Indian independence movement, played a pivotal role in establishing the formation of the "Free Indian Legion." His aim was to secure India's independence by waging war against British rule and to achieve this, he sought assistance from Germany during his visit to Berlin in 1941. The initial members of the legion, in 1941, consisted of volunteers from Indian students residing in Germany at that time, along with a few Indian prisoners of war who had been captured during the North Africa Campaign. As time passed, a larger number of Indian prisoners of war also joined as volunteers. In January 1942, the Propaganda Ministry in Berlin officially announced the creation of the "Indian National Army" (Jai Hind). Later, at the end of July 1942, three hundred volunteers were provided with German Army uniforms bearing a distinctive badge on their right arm. This badge depicted a leaping tiger superimposed on an Indian tricolour, with the words "Freies Indien" (Free India) surrounding it. These men were then officially recognized as the "Free Indian Legion."

43. Option (1) is correct.

Brood parasitism is a reproductive strategy in which parasites lay their eggs in the nests of other individuals, typically of a different species. The host birds then raise the parasitic eggs as their own. There are many different types of brood parasites, including cuckoos, cowbirds, and honey guides. These parasites have evolved a number of strategies to ensure that their eggs are accepted by the host birds. For example, some parasites lay eggs that are similar in appearance to the host eggs, while others lay eggs that are larger or smaller than the host eggs. Brood parasitism is a successful reproductive strategy for many parasites. It allows them to avoid the costs of building their own nests and raising their own young. However, it can also be harmful to the host birds, as it can reduce the number of eggs that they successfully raise. The other options are incorrect. Sexual parasitism is a type of parasitism in which the parasite mates with a host individual, but does not provide any care for the offspring. Klepto parasitism is a type of parasitism in which the parasite steals food from other individuals. Competitive parasitism is a type of parasitism in which the parasite competes with other individuals for resources.

44. Option (1) is correct.

According to the 1991 census, there were 6.7 Cr. Scheduled Tribes in the country (excluding Jammu and Kashmir), make up 8.08 percentage of the overall population. India's tribal population increased to 10.43 Cr. from 8.43 Cr. in 2001. As per the 2011 census, 10.42 crore Indians are notified as 'Scheduled Tribes' (ST), which constitute 8.6% of countries total population. As of the 2011 Census of India, here are the details of the tribal population in the mentioned states:

Madhya Pradesh: Total population of Madhya Pradesh in 2011: Approximately 72.6 million, Tribal population of Madhya Pradesh in 2011: Approximately 15.04 million, and Percentage of tribal population in Madhya Pradesh: Approximately 20.7%.

Maharashtra: Total population of Maharashtra in 2011: Approximately 112.4 million, Tribal population of Maharashtra in 2011: Approximately 10.2 million, and Percentage of tribal population in Maharashtra: Approximately 9.1%.

Odisha: Total population of Odisha in 2011: Approximately 41.9 million, the Tribal population of Odisha in 2011: Approximately 9.1 million, and the Percentage of the tribal population in Odisha is approximately 21.7%

Based on the tribal population figures from the 2011 Census, the ascending order of the states is Odisha, Maharashtra, and Madhya Pradesh.

45. Option (3) is correct.

In 1980, the Government of India introduced the New Industrial Policy (NIP) with the aim of promoting industrial growth and development in the country. One of the key provisions of this policy was the revision of the investment limits for tiny industries or units. As part of the NIP, the investment limit for tiny industries or units was increased to ₹22 lakh (2.2 million rupees). This move was intended to provide more opportunities for small entrepreneurs and encourage investment in the small-scale sector, contributing to the overall industrialization and economic growth of the nation. The NIP of 1980 was a significant step in shaping India's industrial landscape, and it laid the foundation for subsequent economic reforms and policies aimed at the liberalization and modernization of industries in the country.

46. Option (3) is correct.

Fred Hoyle was an English astronomer and cosmologist who proposed the steady-state theory of the universe in 1948. The steady-state theory states that the universe is in a state of continuous creation, with new matter being created to replace the matter that is lost through expansion. Hoyle's theory was a challenge to the Big Bang theory, which was proposed by George Gamow and others in the same year. The Big Bang theory states that the universe began with a very hot, dense state and has been expanding and cooling ever since. The steady-state theory was eventually disproved by observations of the cosmic microwave background radiation, which is a faint afterglow of the Big Bang. The cosmic microwave background radiation is evidence that the universe was once very hot

and dense, and that it has been expanding and cooling ever since. The other options are incorrect. Harold Jeffreys was a British mathematician and statistician who did not propose the steady-state theory. Edwin Hubble was an American astronomer who discovered that the universe is expanding, but he did not propose the steady-state theory. Pierre-Simon Laplace was a French mathematician and astronomer who proposed the nebular hypothesis, which is a different model of the formation of the solar system.

47. Option (2) is correct.

The Chlorophyceae represent a significant and extensive collection of freshwater green algae. This group encompasses both widely recognized species and numerous members with ecological and scientific significance. With an estimated count of about 350 genera and 2650 extant species, chlorophyceans exhibit a diverse range of shapes and forms, including unicellular organisms capable of free swimming, colonies, non-flagellate single cells, filaments, and more. Their reproduction methods are varied, yet all conform to a haploid life cycle where only the zygote cell maintains a diploid status. This zygote often functions as a resting spore, remaining dormant even when exposed to potentially harmful environmental shifts like desiccation.

Brown algae, classified under the category Phaeophyceae, constitute a grouping of algae that stands out due to their colouration, which spans from brown to olive green. Typically inhabiting marine environments, this group consists of approximately 1500 species, exhibiting considerable diversity in terms of size and morphology. Being multicellular, their colour is contingent upon the proportion of chlorophyll to the pigment fucoxanthin. Notable examples include Ectocarpus, Fucus, giant kelps, and Sargassum.

The marine algae family Rhodophyceae, commonly referred to as "red algae," predominantly displays a red hue and possesses either filamentous or membranous foundational structures. Representing one of the oldest eukaryotic algae families, red algae tend to be found at greater depths in comparison to green algae (Chlorophyta). These organisms store their food in the form of floridean starch, a structure closely resembling that of amylopectin and glycogen. Notably, they lack flagella. Prominent examples of Rhodophyceae include Gracilaria, Gelidium, Porphyra, and Polysiphonia.

Cyanophyceae, often referred to as Blue-green algae, constitute a group of primitive algae. Despite their name, they are green due to the presence of the pigment chlorophyll, enabling them to perform photosynthesis. As such, they represent the most basic autotrophic prokaryotic organisms. Operating as prokaryotes, they lack a genuine nuclear membrane around their genetic material.

48. Option (2) is correct.

The Ryotwari system of revenue collection in India, introduced by the British, was based on the Ricardian theory of rent. The Ricardian theory of rent states that rent is the price paid for the use of land. It is a surplus that arises from the fact that land is a scarce resource. The amount of rent that a piece of land can command depends on its productivity and its location. The Ryotwari system was based on the idea that the cultivator (Ryot) should be given secure rights to the land that he cultivated. In return, the ryot would pay a fixed rent to the government. The rent was calculated on the basis of the average yield of the land. The Ryotwari system was introduced in the early 19th century. It was a radical departure from the previous system of revenue collection, which was based on the Zamindari system. Under the Zamindari system, the Zamindars (landlords) were responsible for collecting revenue from the cultivators. The Zamindars often exploited the cultivators and extracted high rents. The Ryotwari system was designed to be more equitable than the Zamindari system. It gave the cultivators secure rights to the land and it reduced the amount of rent that they had to pay. The Ryotwari system also helped to promote agricultural development. The Ryotwari system was not without its problems. One problem was that it was difficult to assess the average yield of the land. This led to disputes between the cultivators and the government. Another problem was that the Ryotwari system did not provide enough incentive for the cultivators to invest in their land. Despite its problems, the Ryotwari system was a significant improvement over the Zamindari system. It helped to reduce the exploitation of the cultivators and it promoted agricultural development. The Ryotwari system is still in use in some parts of India today.

49. Option (2) is correct.

Jacobus Henricus van 't Hoff, a Dutch physical chemist, was awarded the Nobel Prize in Chemistry in 1901 for his ground breaking contributions to the field of chemical dynamics and osmotic pressure in solutions. His work had a profound impact on the understanding of chemical reactions and the behaviour of solutions. In the late 19th century, van 't Hoff developed the concept of chemical kinetics, which focuses on the rates at which chemical reactions occur and the factors that influence their rates. He formulated equations that described the relationship between reaction rates and factors such as concentration, temperature, and pressure. His work laid the foundation for the field of physical chemistry and provided a quantitative framework for understanding reaction mechanisms.

50. Option (2) is correct.

Part II of the Constitution of India deals with the Citizenship of India. It includes Articles 5 to 11, which are as follows:

Article 5: Citizenship at the Commencement of the Constitution.

Article 6: Rights of citizenship of persons who have migrated from Pakistan to India.

Article 7: Rights of citizenship of certain migrants to Pakistan.

Article 8: Rights of citizenship of certain persons of Indian origin resident outside India.

Article 9: Persons acquiring citizenship of a foreign State voluntarily.

Article 10: Continuance of the rights of citizenship.

Article 11: Regulation of citizenship by the Parliament through law.

Quantitative Aptitude

51. Option (4) is correct.

Given that A is 95% of B.

$$\Rightarrow \quad A = \frac{95}{100}B = \frac{19}{20}B$$

$$\Rightarrow \quad B = \frac{20}{19}A$$

$$= \frac{\frac{20}{19}}{100} \times 100A$$

$$= \frac{\frac{2000}{19}}{100}A = \frac{105\frac{5}{19}}{100}A$$

$\therefore$ B is $105\frac{5}{19}\%$ of A.

52. Option (2) is correct.

Let us assume the cost price of mustard oil = ₹100

$\therefore$ Marked price of mustard oil = ₹125

For no profit and no loss, selling price should be ₹100.

$$\text{Required percent} = \frac{125-100}{125} \times 100\%$$

$$= \frac{25 \times 100}{125}\% = 20\%$$

53. Option (1) is correct.
A can complete work in 25 days and B can complete work in 30 days.
$\therefore$ The part of work done in first five days

$$= \frac{1}{25}+\frac{1}{30}+\frac{1}{25}+\frac{1}{30}+\frac{1}{25}$$
$$= \frac{6+5+6+5+6}{150}$$
$$= \frac{28}{150}=\frac{14}{75} \text{ parts}$$

Remaining work $= 1-\frac{14}{75}=\frac{61}{75}$ parts
Time taken by B to complete remaining work

$$= \frac{61/75}{1/30} = 24\frac{2}{5} \text{ days.}$$

54. Option (1) is correct.
According to question,

Distance travelled (km)	120	100	220
Speed (km/h)	80	40	75

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}}$$
$$= \frac{120+100+220}{\frac{120}{80}+\frac{100}{40}+\frac{220}{75}}$$
$$= \frac{440}{\frac{3}{2}+\frac{5}{2}+\frac{44}{15}}=\frac{440}{\frac{104}{15}}$$
$$= 63.46 \text{ km/h}$$

55. Option (3) is correct.
8 men can complete a work in 45 days.
8 women can complete some work in 18 days.
1 man's 1 day work $= \frac{1}{8\times45}=\frac{1}{360}$
1 woman's 1 day work $= \frac{1}{8\times18}=\frac{1}{144}$
5 men and woman's 1 day work

$$= \frac{5}{360}+\frac{8}{144}=\frac{1}{72}+\frac{4}{72}=\frac{5}{72}$$

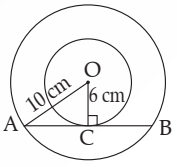
$\therefore$ Required time to complete work

$$= \frac{72}{5}=14\frac{2}{5} \text{ days}$$

56. Option (4) is correct.
$6^{25} + 6^{26} + 6^{27} + 6^{28} = 6^{25}(1 + 6^1 + 6^2 + 6^3)$
$= 6^{25}(1 + 6 + 36 + 216) = 6^{25} \times 259$
Clearly, given expression is divisible by 259.

57. Option (1) is correct.
The data is given in cumulative form.
Number of students scoring less than 20% marks in aggregate = 100 – 87 = 13

58. Option (2) is correct.
According to question, we can have:
AB is chord of bigger circle and touching smaller circle at C.



$\Rightarrow$ $OC \perp AB$
In ΔAOC

$$AC = \sqrt{AO^2 - OC^2} = \sqrt{10^2 - 6^2} = 8$$

Now, AB = 2 × AC = 2 × 8 = 16 cm
[$\because$ Perpendicular from centre bisect the chord]

59. Option (1) is correct.
$\because \sin 90° = 1$ and $\cos 60° = \frac{1}{2}$
$\Rightarrow$ $\sin(a + b) = \sin 90°$ and $\cos(a - b) = \cos 60°$
$\Rightarrow$ $a + b = 90°$ ...(i)
and $a - b = 60°$ ...(ii)
On solving both equations, we get $a = 75°$ and $b = 15°$

60. Option (1) is correct.
Speed of train = 108 km/h $= 108\times\frac{5}{18}\text{m/s} = 30\text{m/s}$
Total distance to be travelled by train = length of train + length of platform
= 900 + 900 = 1800 m
Time taken by the train to clear the platform $= \frac{1800}{30} = 60\text{s}$

61. Option (3) is correct.
$\because$ $7b-\frac{1}{4b}=7$
$\Rightarrow$ $\frac{4}{7}\times7b-\frac{4}{7}\times\frac{1}{4b}=\frac{4}{7}\times7$
$\Rightarrow$ $4b-\frac{1}{7b}=4$
Squaring both sides,
$\Rightarrow$ $\left(4b-\frac{1}{7b}\right)^2=4^2$
$\Rightarrow$ $16b^2+\frac{1}{4b^2}-2\times4b\times\frac{1}{7b}=16$
$\Rightarrow$ $16b^2+\frac{1}{4b^2}=\frac{120}{7}$

62. Option (2) is correct.
Given that, in ΔABC and ΔXYZ,
$\angle C = \angle Z$
$AC = XZ$
If $BC = YZ$
$\Rightarrow$ $\Delta ABC \cong \Delta XYZ$ (SAS)

63. Option (3) is correct.
Given that PT = 8 cm, PA = 6 cm and AB = x cm
By tangent-secant theorem,
$PT^2 = PA \times PB$
$\Rightarrow$ $8^2 = 6 \times (6 + x)$
$\Rightarrow$ $\frac{32}{3} = 6 + x$
$\Rightarrow$ $x = \frac{32}{3}-6=\frac{32-18}{3}=\frac{14}{3}$ cm

64. Option (1) is correct.
Let selling price of 1 article is ₹100.
Scheme-1 On ₹3 × 100 we are getting ₹4 × 100.
We are getting $= \frac{400}{300}\times100 = 133\frac{1}{3}\%$ more
Scheme-2 On ₹5 × 100 we are getting ₹6 × 100.
We are getting $= \frac{600}{500}\times100 = 120\%$ more
Clearly scheme-1 has more discount.

65. Option (4) is correct.
Total cost (in ₹ crores) in 2019 – 2020 = 6500
Profit percentage = 25%
$\therefore$ Required gross amount (in ₹ crores)

$$= \frac{125}{100}\times6500 = 8125$$

66. Option (3) is correct.
$\because$ Simple interest $= \frac{P\times R\times T}{100}$

$P \rightarrow$ Principal amount, $R \rightarrow$ Rate of interest, $T \rightarrow$ Time
According to question,

$$\frac{10000\times4\times T}{100} = \frac{8000\times4\times5}{100}$$

$$\Rightarrow \quad T = \frac{8000\times5}{10000} = 4$$

Required time is 4 years.

67. Option (2) is correct.
According to question,

1 day work of	Man	Woman	Boy
Part of work	$\frac{1}{10}$th	$\frac{1}{15}$th	$\frac{1}{30}$th

Time taken to complete work by 1 man, 1 woman and 1 boy (in days) $= \frac{1}{\frac{1}{10}+\frac{1}{15}+\frac{1}{30}} = \frac{30}{3+2+1} = \frac{30}{6} = 5$

68. Option (2) is correct.

$\because \quad \cos 30° = \frac{\sqrt{3}}{2}$

$\Rightarrow \quad \cos 30° = \cos\theta$

$\Rightarrow \quad \theta = 30°$

$\tan^2\theta \cdot \cos^2\theta = \tan^2 30° \cdot \cos^2 30°$

$$= \left(\frac{1}{\sqrt{3}}\right)^2 \times \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{1}{3}\times\frac{3}{4} = \frac{1}{4}$$

69. Option (4) is correct.
$3x^3 + 5x^2y + 12xy^2 + 7y^3$
$= 3 \times (-4)^3 + 5 \times (-4)^2 \times (-1) + 12 \times (-4) \times (-1)^2 + 7 \times (-1)^3$ [$\because x = -4$ and $y = -1$]
$= 3 \times (-64) - 80 - 48 - 7 = -327$

70. Option (2) is correct.
According to question,

$$\frac{39}{117} = \frac{17}{y}$$

$$\Rightarrow \quad \frac{3}{9} = \frac{17}{y}$$

$$\Rightarrow \quad y = 3 \times 17 = 51$$

71. Option (4) is correct.

Volume of sphere $= \frac{4}{3}\pi r^3$ [$r \rightarrow$ radius of sphere]

Radius of sphere, $r = 4.2$ cm

$\therefore$ Volume $= \frac{4}{3}\times\frac{22}{7}\times(4.2)^3 = 310.464 \text{ cm}^3$

72. Option (2) is correct.

$\because \quad (a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

Put all the given values in above formula.

$\Rightarrow \quad 16^2 = 90 + 2(ab + bc + ca)$

$$\Rightarrow \quad \frac{256-90}{2} = ab + bc + ca$$

$\Rightarrow \quad ab + bc + ca = 83$

73. Option (3) is correct.

$\because \quad \frac{3\sin\theta-\cos\theta}{\cos\theta+\sin\theta} = 1$

$$\Rightarrow \quad \frac{\frac{3\sin\theta-\cos\theta}{\sin\theta}}{\frac{\cos\theta+\sin\theta}{\sin\theta}} = 1$$

$$\Rightarrow \quad \frac{3-\cot\theta}{\cot\theta+1} = 1 \qquad \left[\because \frac{\cos\theta}{\sin\theta} = \cot\theta\right]$$

$\Rightarrow \quad 3 - \cot\theta = \cot\theta + 1$

$\Rightarrow \quad 3 - 1 = \cot\theta + \cot\theta$

$\Rightarrow \quad 2 = 2\cot\theta$

$\Rightarrow \quad \cot\theta = 1$

74. Option (1) is correct.

Speed of Sony $= 18\times\frac{5}{18}\text{m/s} = 5 \text{ m/s}$

Speed of Mony $= 24\times\frac{5}{18}\text{m/s} = \frac{20}{3}\text{m/s}$

Effective speed of both $= \frac{20}{3} - 5 = \frac{5}{2}\text{m/s}$

$\therefore$ Time to meet again $= \frac{200}{5/3} = \frac{3\times200}{5} = 120 \text{ s}$

75. Option (1) is correct.
$(265)^{4081} + 9 = (266 - 1)^{4081} + 9$
$= 266^{4081} - 266^{4080} + \ldots + (-1)^{4081} + 9$
$= 266^{4081} - 266^{4080} + \ldots + 266 - 1 + 9$
$= 266^{4081} - 266^{4080} + \ldots + 266 + 8$
Clearly on dividing given expression by 266, we will get remainder = 8

English Comprehension

76. Option (1) is correct.
The correct sentence is: Neetu has been waiting for me since ten o'clock in the morning. The correct usage is 'has been waiting' instead of 'have been waiting'. Since, the subject 'Neetu' is singular; therefore, the verb following the subject will also be in a singular degree 'has'.

77. Option (1) is correct.
The preposition 'under' implies 'at a lower level than.' Therefore, the opposite of the word is 'over', which means 'at a higher level or layer than.'

78. Option (4) is correct.
All options, except (4) are spelled correctly. The correct spelling of 'gliterring' is 'glittering' (shining).

79. Option (4) is correct.
The sentence 'The company's board of directors will announce the financial results of the meeting tomorrow' is in active voice, to change it in the passive voice we need to interchange the object and subject with each other, i.e. object of the active sentence becomes the subject of the passive sentence. The correct sentence is: The financial results will be announced by the company's board of directors at the annual meeting tomorrow. The verb in simple future tense, will change into the form: subject + will + be + V3 form + by + object.

80. Option (1) is correct.
The correct sentence is: The participants of the competition are waiting for their turn curiously. It is to be noted that the subject is 'the participants' (plural), therefore, the verb in the agreement should also be plural 'are waiting'. All options, except (1) have verbs in a singular degree.

81. Option (1) is correct.
If people take advantage of Henry, it implies that he has an undesirable quality. Servile means 'showing an excessive willingness to serve or please others.' An arrogant (showing an offensive attitude of superiority) person can never be subservient to others. Hence 'arrogant' is the correct antonym. 'Sheepish' implies 'resembling a sheep (as in being meek or shy)', while 'bickering' means 'argue about petty and trivial matters.'

82. Option (4) is correct.
A thing fit to eat is referred to as edible. Eligible means 'having the right to do or obtain something'; 'curable' means

'something that is cured'. While 'digestible' means 'easy to digest.'

83. Option (3) is correct.

The idiom 'lily-livered' means 'weak and cowardly.' (1) is the antonym.

84. Option (1) is correct.

The word 'zealous' means 'showing great energy or enthusiasm'. Therefore, 'enthusiastic' is the synonym. All other options are antonymous to the word.

85. Option (4) is correct.

It is apparent from the sentence that the person had a positive quality. All options , except (4) are negative. 'Impress' implies 'make (someone) feel admiration and respect'. So 'persuade' is the only closer in meaning.

86. Option (3) is correct.

'Inculcate' implies 'instil (an idea, attitude, or habit) by persistent instruction.' Therefore, 'instil' best substitutes 'inculcate'.

87. Option (1) is correct.

The sentence 'He won't receive any better choice than this from anywhere' is in the active voice, to change in a passive voice we need to interchange the object and subject with each other, i.e. object of the active sentence becomes the subject of the passive sentence. The correct sentence is: Any better choice won't be received by him than this from anywhere. The negative verb in simple future tense, will change into the form: subject + will not + be + V3 form + by + object.

88. Option (3) is correct.

'Feeble' means 'lacking physical strength'; therefore 'weak' is the correct synonym for feeble. 'Baneful' means 'harmful or destructive.'

89. Option (4) is correct.

The correct spelling is 'association' , meaning 'an organization of people with a common purpose and having a formal structure'.

90. Option (2) is correct.

The idiom 'tie yourself in knots' means 'get very confused and anxious.' Therefore, the correct meaning is 'become very confused when you are trying to explain something'. In this context, Pooja while trying to explain her problem, gets confused.

91. Option (2) is correct.

The correct sequence is DCAB. Statement (D) introduces the topic of the paragraph: specialised technique of refining iron. The conjunction 'but' emphasizes on the contradicting scenario in the case of India. This is explicated in (A) with the examples of Bihar and Central India, with reference to smelters that used local deposits of ore to produce iron. This process is explained in B: smelting was done by men while women worked on the bellows, pumping air that kept the charcoal burning. The correct paragraph is: Production of Wootz steel required a highly specialised technique of refining iron. But iron smelting in India was extremely common till the end of the nineteenth century. In Bihar and Central India, in particular, every district had smelters that used local deposits of ore to produce iron which was widely used for the manufacture of implements and tools of daily use. The smelting was done by men while women worked on the bellows, pumping air that kept the charcoal burning.

92. Option (1) is correct.

The correct sequence is BDAC. B starts the paragraph with the mention of a certain time and person: the spring of 1717, the iron foundries were visited by a thin, middle-aged man. The acts of the man starts in D: he would weigh out two pounds of iron, have them heated till they were red-hot and then weigh them again. This act is referred in A: 'he repeated the experiment'. The next step was to prepare three cauldrons. The correct paragraph is : During the spring of 1717, the iron foundries in a remote district were often visited by a thin, middle-aged man with a notebook. He would weigh out two pounds of iron, have them heated till they were red-hot and then weigh them again. He repeated the experiment, increasing the amount until he had weighed up to a thousand pounds. Three cauldrons were next prepared under his directions.

93. Option (3) is correct.

The correct sentence is: She is as beautiful as a peacock. The phrase 'as…as' is used with an adjective or adverb to show the similarity or equality of one thing with another. It can be used as a simile.

94. Option (3) is correct.

The correct sequence is BCDA. The subject of the paragraph is introduced in B: our national flag, Tiranga. This is referred to as the symbol of nationalism and freedom in (C). Next comes the description: it features three horizontal stripes that are all the same width, where the top band is made of saffron (A). The correct paragraph is : The constituent assembly adopted our national flag, Tiranga, which means tricolour, on 22 July 1947. As a symbol of nationalism and freedom, it is fashioned from khadi, which is domestically spun Indian cotton. It features three horizontal stripes that are all the same width. The top band is made of saffron, which symbolises power and courage.

95. Option (2) is correct.

The correct sentence is: The hunter dogs followed the hyena's scent. 'Scent' is a noun that implies a trail indicated by the characteristic smell of an animal and perceptible to hounds or other animals.

96. Option (3) is correct.

The correct sentence is: Human life is considered a unique blessing. It is to be noted that the auxiliary 'is' takes the participle form of verb; hence, 'considered' is correct.

97. Option (3) is correct.

The correct sentence is: Human life is considered a unique blessing which in turn depends on the awareness of the Self. 'Awareness' is a noun that suggests 'consciousness'. In fact, the next sentence insinuates the appropriateness of 'awareness' : 'He who is not aware of the Self can neither have peace nor can he foster peaceful coexistence.'

98. Option (1) is correct.

The correct sentence is: Since the formless God is invisible to the naked eye, our mind often wanders wherever it goes. 'Since' is a conjunction of reason; therefore, justified in the context.

99. Option (1) is correct.

The correct sentence is: As a result, we are unable to develop any love for the Divine. The preceding sentence states the reason, whereas the given sentence states the outcome. Thus, 'as a result' is the appropriate conjunction. Other options do not justify the blank.

100. Option (4) is correct.

The correct sentence is: And religion like the white light of heavens breaks into multi-coloured fragmentations by the prisms of men and loses its gravity. Since the subject is singular 'the white light of heavens', the verb will also be singular 'breaks'. 'Breaks into' means to break into parts.