

STAFF SELECTION COMMISSION
COMBINED GRADUATE LEVEL (TIER-I)

SOLVED PAPER

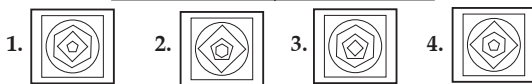
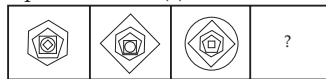
(12th April 2022: Shift-1)

Time Allotted: 1 hour

Max marks: 200

General Intelligence and Reasoning

1. Select the figure from among the given options that can replace the question mark(?) in the following series.



2. Select the option that is related to the third number in the same way as the second number is related to the first number.

52 : 91 :: 72 : ?

1. 98 2. 126 3. 109 4. 138

3. If the signs '+' and '÷' are interchanged, then which of the following equations can be correctly balanced?

1. $12 + 4 - 8 \div 3 = 11$ 2. $24 - 12 \div 6 + 3 = 20$
3. $16 + 4 \times 8 \div 3 = 45$ 4. $22 + 11 \times 8 \div 3 = 19$

4. In a certain code language, 'your attention please' is written as 'puw cuw zuw', 'kind attention' is written as 'muw zuw', and 'please pay attention' is written as 'puw zuw ruw'. How will 'pay' be written in that language?

1. puw 2. zuw 3. ruw 4. cuw

5. Select the option that is related to the third term in the same way as the second term is related to the first term.

FRONTIER : GSNOUHDS :: CLOSING : ?

1. DMNTHOH 2. BMPTHOH
3. DMNRHLH 4. DKNTJOH

6. Read the given statements 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 statements.

Statements:

All fruits are leaves.
Some mangoes are rotten.
All rotten are fruits.

Conclusions:

- I. Some leaves are rotten.
II. Some mangoes are fruits.
III. All leaves are either rotten or mangoes.

1. All the conclusions follow.
2. Only conclusions II and III follow.
3. Only conclusion II follows.
4. Only conclusions I and II follow.

7. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

C _ B N _ _ V _ _ H C _ B _ H

1. VCBHNVN 2. HVCNBVN
3. VHCBNVN 4. VHCNBCHV

8. Select the number from among the given options that can replace the question mark (?) in the following series.
16, 35, ?, 217, 653, 1,309

1. 72 2. 128 3. 77 4. 107
9. Select the Venn diagram that best illustrates the relationship between the following classes.
Planets, Mars, Venus



10. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the letter-cluster that is different.

1. TVYCH 2. NPSWB 3. UWZBI 4. ACFJO

11. Select the correct mirror image of the given combination when the mirror is placed at 'PQ' as shown.

1. 2. 3. 4.

12. 'A # B' means 'A is the father of B'.
'A % B' means 'A is the mother of B'.
'A @ B' means 'A is the sister of B'.
'A & B' means 'A is the son of B'.

If 'G # M # T % S @ H & R & W @ U', then which of the following statements is NOT correct?

1. G is the paternal grandfather of T.
2. W is the paternal grandmother of H.
3. R is the husband of T.
4. M is the maternal grandfather of S.

13. Select the correct option that indicates the arrangement of the given course of actions in a logical and meaningful order.

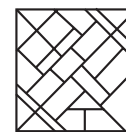
1. Open email account 2. Compose email
3. Start computer 4. Enter email address
5. Write the content 6. Send the mail
1. 3, 1, 2, 4, 5, 6 2. 2, 5, 1, 3, 4, 6
3. 3, 2, 6, 1, 5, 4 4. 3, 1, 2, 6, 5, 4

14. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

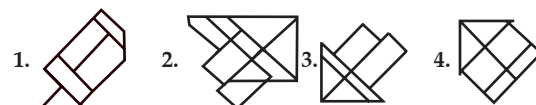
HDMS, OVVI, VNEY, CFNO, ?

1. JYWF 2. JXWE 3. KXWE 4. JXXF

15. Select the option that is NOT embedded in the given figure (X) (rotation is NOT allowed).



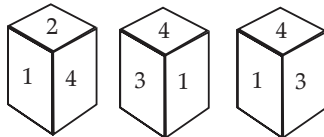
(X)



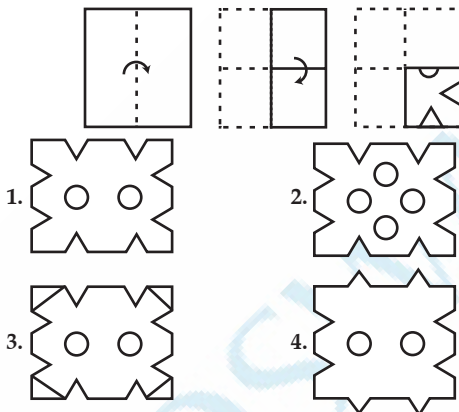
16. A is 25 years younger than B. The age of B would be double the age of C after 15 years. The current age of B is three times the current age of C. What is the current age of A?
 1. 25 years 2. 20 years 3. 15 years 4. 30 years
17. Eight north-facing restaurants named P, Q, R, S, T, U, V and W are located in a straight line. S is second to the left of T. W is third to the left of P. T is between P and V. S is third to the left of V. W is to the immediate right of U. R is third to the right of P. Who is sitting fourth to the right of S?
 1. U 2. W 3. R 4. V
18. Study the given pattern carefully and select the number from among the given options that can replace the question mark (?) in it.

11	15	9
14	16	?
75	31	88

1. 13 2. 22 3. 18 4. 25
19. Three different positions of the same dice are shown, the six faces of which are numbered from 1 to 6. Select the number that will be on the face opposite to the face having the number '5'.



1. 3 2. 1 3. 6 4. 2
20. Srinija walked 9 km towards the west from her home, then turned towards the south and walked 11 km. Then, she walked 13 km towards the east, and finally walked 4 km towards the west. How far is Srinija from her initial position?
 1. 11 km 2. 15 km 3. 13 km 4. 10 km
21. The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded?



22. Select the number from among the given options that can replace the question mark (?) in the following series.
 62, 74, 80, 86, 95, ?, 158
 1. 100 2. 108 3. 122 4. 113
23. In a code language, SOUP is written as TNVO. How will BOWL be written in that language?
 1. CPVM 2. ANVK 3. APVM 4. CNXX
24. If A denotes 'addition', B denotes 'multiplication', C denotes 'subtraction', and D denotes 'division', then what will be the value of the following expression?
 46 C (6 A 7) B 5 A 24 D 6 B (27 D (9 D 3))
 1. 21 2. 17 3. 39 4. 65

25. In a code language, if PEN is written as 17717, then how will CAP be written in the same language?
 1. 4319 2. 2320 3. 4219 4. 2319

General Awareness

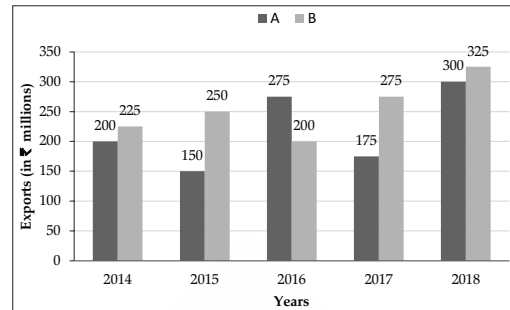
26. The Nobel Prize in Literature 2020 was awarded to _____.
 1. Olga Tokarczuk 2. Kazuo Ishiguro
 3. Louise Gluck 4. Peter Handke
27. Who among the following was elected as the President of the Asian Cricket Council (ACC) in January 2021?
 1. Sachin Tendulkar 2. Sourav Ganguly
 3. Anurag Thakur 4. Jay Shah
28. Which of the following is NOT a part of a flower?
 1. Stamen 2. Petiole 3. Sepal 4. Pistil
29. As a part of Mission Sagar-IV, Indian Naval Ship Jalashwa arrived at Port Anjouan, Comoros on 14 March 2021 to deliver 1,000 metric tonnes of:
 1. rice 2. tea 3. sugar 4. wheat
30. Which of the following diseases CANNOT be prevented by vaccination?
 1. Rabies 2. Beri beri 3. Typhoid 4. Measles
31. Which law of Newton provides a quantitative definition of force?
 1. Universal law of gravitation
 2. Second law of motion
 3. First law of motion 4. Third law of motion
32. The foul smell from a body specially during a sultry summer is due to the action of _____ on sweat.
 1. melanin 2. moisture 3. bacteria 4. virus
33. Who among the following first argued that in the face of high deficits, people save more?
 1. Amartya Sen 2. Esther Duflo
 3. Adam Smith 4. David Ricardo
34. Which of the following Harappan sites is in Haryana?
 1. Kalibangan 2. Lothal 3. Rakhigarhi 4. Dholavira
35. The value of the Gross Domestic Product (GDP) of India is published by PIB in _____.
 1. US Dollar 2. Yen
 3. Yuan 4. Indian Rupee
36. Approximately how much percentage (nearest to integer) of total water on the surface of earth is accounted for by the oceans?
 1. 96 2. 97 3. 94 4. 92
37. As per the Union Budget of 2021-22, how many textile parks are to be set up in 3 years?
 1. Eight 2. Six 3. Five 4. Seven
38. Ozone is an allotrope of _____.
 1. carbon dioxide 2. oxygen
 3. hydrogen 4. nitrogen
39. Who among the following athletes was appointed as the Deputy Superintendent of Police by the Assam Government in February 2021?
 1. Deepika Kumari 2. Ekta Bhyan
 3. Dutee Chand 4. Hima Das
40. Which of the following cities won the hosting rights of the 2030 Asian Games in December 2020?
 1. Jakarta 2. Doha 3. Seoul 4. Shanghai

41. The Deomali is the highest mountain peak of _____.
 1. Assam 2. West Bengal
 3. Bihar 4. Odisha
42. Who among the following was a ruler of the Rashtrakuta dynasty?
 1. Kanishka 2. Samudragupta
 3. Dhruva 4. Ashoka
43. Which of the following is a UNESCO recognised dance form?
 1. Bhangra 2. Dalkhai 3. Kalbelia 4. Giddha
44. Which of the following environment events is observed by switching off all lights at homes, business establishments, landmarks, and so on for an hour?
 1. World Environment Day 2. Earth Hour
 3. Earth Charter 4. Earth Day
45. Which of the following Amendments of the Constitution of India declared that the Parliament has the power to abridge or take away any of the Fundamental Rights under Article 368 and such an Act, will NOT be a law under the meaning of Article 13?
 1. Twenty-third Amendment
 2. Twentieth Amendment
 3. Twenty-fourth Amendment
 4. Twenty-eighth Amendment
46. Me-Dum-Me-Phi is an ancestor-worship festival celebrated in the state of _____.
 1. Madhya Pradesh 2. Himachal Pradesh
 3. Assam 4. Goa
47. Which of the following crops is described as – 'It is a crop which is used both as food and fodder. It is a Kharif crop that requires temperature between 21°C and 27°C and grows well in old alluvial soil'?
 1. Sesame 2. Maize 3. Bajra 4. Ragi
48. Who among the following presidents of India gave assent to the 100th Amendment of the Constitution of India?
 1. Pranab Mukherjee 2. Ram Nath Kovind
 3. APJ Abdul Kalam 4. Pratibha Devisingh Patil
49. During the rule of which of the following dynasties did Timur or Tamerlane invade India in 1398 AD?
 1. The Slave dynasty 2. The Sayyad dynasty
 3. The Tughlaq dynasty 4. The Khilji dynasty
50. The Government of National Capital Territory of Delhi (Amendment) Bill, 2021, which was passed in March 2021 amended the Government of National Capital Territory of Delhi Act, _____.
 1. 1998 2. 1994 3. 1996 4. 1991

Quantitative Aptitude

51. Find the value of $70^3 + 20^3 - 90^3$.
 1. 0 2. 378000 3. - 378000 4. - 300000
52. On simple interest, a certain sum becomes ₹59,200 in 6 years and ₹72,000 in 10 years. If the rate of interest had been 2% more, then in how many years would the sum have become ₹76,000?
 1. 10 2. 9 3. 8 4. 7

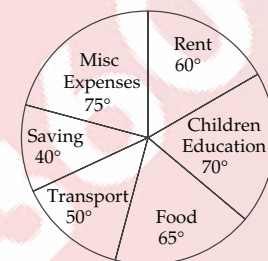
53. The given bar graph shows exports of cars of type A and B (in ₹ millions) from 2014 to 2018. Study the graph and answer the question that follows.



What is the ratio of the total exports of cars of type A in 2014 and 2018 to the total exports of cars of type B in 2015 and 2017?

1. 20 : 21 2. 10 : 9 3. 5 : 4 4. 13 : 12
54. The monthly expenditure of a family on different heads is shown in the following pie chart.
 What is the percentage of family earnings spent on rent?

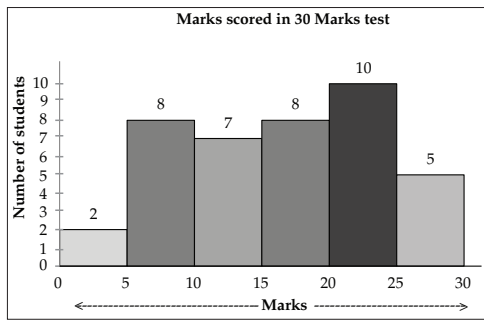
Expenditure on different Heads



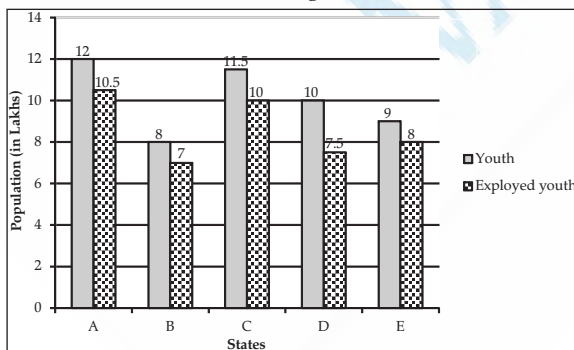
1. $15\frac{3}{4}$ 2. $16\frac{2}{3}$ 3. $16\frac{1}{3}$ 4. 15
55. The difference between the two perpendicular sides of a right-angled triangle is 17 cm and its area is 84 cm². What is the perimeter (in cm) of the triangle?
 1. 40 2. 49 3. 36 4. 56
56. Find the value of the following expression:

$$\frac{5 - 35 \div 5 \times 15 + 5}{12 - 2}$$
 1. - 9.5 2. - 13.5 3. - 2.5 4. 11.5
57. The average of 9 consecutive numbers is 20. The smallest of these numbers is:
 1. 10 2. 20 3. 16 4. 12
58. The price of petrol shot up by 5%. Before the hike, the price was ₹82 per litre. A man travels 3,045 km every month and his car gives a mileage of 15 km per litre. What is the increase in the monthly expenditure (to the nearest ₹) on the man's travel due to the hike in the petrol prices?
 1. 832 2. 859 3. 758 4. 944
59. A trader sells an article for ₹425 and loses 15%. At what price (in ₹) should he sell the article to earn 5% profit?
 1. 505 2. 510 3. 445 4. 525
60. The following histogram shows the marks scored by 40 students in a test of 30 marks. A student has to score a minimum of 10 marks to pass the test.

How many students have scored less than two-third of the total marks?

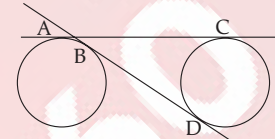


1. 35 2. 17 3. 25 4. 32
61. A, B and C can do a work in 8, 10 and 12 days, respectively. After completing the work together, they received ₹5,550. What is the share of B (in ₹) in the amount received?
1. 1,500 2. 1,850 3. 1,800 4. 1,696
62. What is the difference in the volume (in) of a sphere of radius 7 cm and that of a cone of radius 7 cm and height 10 cm? (Use $\pi = \frac{22}{7}$)
1. 205 2. 704 3. 924 4. 1078
63. If $3 \sec^2 \theta + \tan \theta - 7 = 0$, $0^\circ < \theta < 90^\circ$, then what is the value of $\left(\frac{2 \sin \theta + 3 \cos \theta}{\operatorname{cosec} \theta + \sec \theta} \right)$?
1. 10 2. $\frac{5}{2}$ 3. $\frac{5}{4}$ 4. $4\sqrt{2}$
64. The bisector of $\angle B$ in $\triangle ABC$ meets AC at D. If AB = 12 cm, BC = 18 cm and AC = 15 cm, then the length of AD (in cm) is:
1. 6 2. 5 3. 12 4. 9
65. The following bar graph shows the total number of youth (in lakhs) and the number of employed youth (in lakhs) in 5 states A, B, C, D and E. What is the ratio of the number of youth in states A, C and E taken together to the number of employed youth in states B, C and D taken together?



1. 65 : 59 2. 65 : 49 3. 8 : 7 4. 57 : 49
66. A tangent is drawn from a point P to a circle, which meets the circle at T such that PT= 10.5 cm. A secant PAB intersects the circle in points A and B. If PA = 7 cm. What is the length (in cm) of the chord AB?
1. 8.5 2. 8.75 3. 7.75 4. 8.45

67. What is the remainder when the product of 335, 608 and 853 is divided by 13?
1. 11 2. 12 3. 6 4. 7
68. The marked price of an article is ₹625. After allowing a discount of 32% on the marked price, there was a profit of ₹25. The profit percentage (correct to the nearest integer) is:
1. 5% 2. 4% 3. 6% 4. 7%
69. At present, A is younger than B by 8 years. If 4 years ago, their ages were in the ratio 1 : 2, then what is the present age of B (in years)?
1. 11 2. 20 3. 12 4. 18
70. Which is the smallest multiple of 7, which leaves 5 as the remainder in each case. When divided by 8, 9, 12 and 15?
1. 365 2. 1,085 3. 2,525 4. 725
71. The ratio of the speeds of two trains is 2 : 7. If the first train runs 250 km in 5 hours, then the sum of the speeds (in km/h) of both the trains is:
1. 250 2. 175 3. 150 4. 225
72. Two common tangents AC and BD touch two equal circles equal of radius 7 cm, at points A, C, B and D, respectively, as shown in the figure. If the length of BD is 48 cm, what is the length of AC?



1. 40 cm 2. 30 cm 3. 50 cm 4. 48 cm
73. If $x + y + z = 11$, $xy + yz + zx = -6$, and $x^3 + y^3 + z^3 = 1,604$, then the value of xyz is:
1. 25 2. 4 3. 1 4. 5
74. If $\cot B = \frac{12}{5}$, what is the value of B?
1. $\frac{5}{12}$ 2. $\frac{13}{12}$ 3. $\frac{13}{5}$ 4. $\frac{12}{13}$
75. A vertical pole and a vertical tower are on the same level ground in such a way that, from the top of the pole, the angle of elevation of the top of the tower is 60° and the angle of depression of the bottom of the tower is 30° . If the height of the pole is 24 m, then find the height of the tower (in m).
1. $24\sqrt{3}(\sqrt{3} + 1)$ 2. 72
3. 96 4. $24(\sqrt{3} + 1)$

English Comprehension

76. Select the INCORRECTLY spelt word.
1. Progress 2. Mystery 3. Pilgrim 4. Symtoms
77. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
My older brother, / which you'll / meet later, / is a dentist.
1. my older brother 2. which you'll
3. meet later 4. is a dentist
78. Select the most appropriate ANTONYM of the given word. Rely
1. Move 2. Distrust 3. Await 4. Depend
79. Select the most appropriate meaning of the given idiom. To take after
1. To chase someone 2. To be similar in appearance
3. To mock someone 4. To change sides often

80. Select the option that expresses the given sentence in active voice.
Hatred can be overcome by love.
1. Love can overcome hatred.
 2. Love has overcome hatred.
 3. Love is overcoming hatred.
 4. Love can overcome hatred.
81. 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. However, when areas in Leh began to experience water shortages, life didn't grind to a halt.
 - B. Ladakh is a cold desert with a low average annual rainfall.
 - C. Thus, glaciers have been the main source of water for the people.
 - D. This was because Chewang Norphel, a retired civil engineer, came up with the idea of artificial glaciers.
1. CBDA 2. BCAD 3. DABC 4. BCDA
82. Select the most appropriate meaning of the given idiom.
Foul play
1. Unfair or dishonest behaviour
 2. A bad smelling theatre or playground
 3. Unpleasant weather for playing
 4. A drama which is badly produced
83. Select the option that can be used as a one-word substitute for the given group of words.
Formally put an end to a system, practice, or institution
1. Stop 2. Destroy 3. Kill 4. Abolish
84. The following sentence has been divided into parts. One of them contains an error.
Select the part that contains the error from the given options.
He was / late / for school / and punished.
1. for school 2. late
 3. He was 4. and punished
85. Select the most appropriate option to fill in the blank.
She hardly works on weekends, _____?
1. doesn't she 2. is she 3. does she 4. isn't she
86. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'.
I wish I were listening to my parents.
1. am listening 2. have listened
 3. No substitution required 4. had listened
87. Select the option that expresses the given sentence in reported speech.
Mother said, "Abhinav slipped while trying to board a bus."
1. Mother told that Abhinav slipped while trying to board a bus.
 2. Mother said that Abhinav slipped while trying to board a bus.
 3. Mother says that Abhinav slipped while trying to board a bus.
 4. Mother said that Abhinav had slipped while trying to board a bus.
88. Select the most appropriate synonym of the given word.
Duo
1. Bond 2. Pair 3. Loan 4. Debt
89. The following sentence has been divided into parts. One of them may contain an error.
Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.
It was a surprising / to receive the gift / from my brother.
1. no error 2. It was a surprising
 3. from my brother 4. to receive the gift
90. The following sentence has been divided into parts. One of them may contain an error.
Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.
The fisheries sector / have grown significantly / in the last one year.
1. have grown significantly 2. in the last one year
 3. no error 4. The fisheries sector
91. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
My house / is more / spacious than / my sister.
1. is more 2. my house
 3. my sister 4. spacious than
92. Select the option that expresses the given sentence in passive voice. Do you trust me?
1. Am I trusted by you? 2. Do I am trusted by you?
 3. Do I was trusted by you? 4. I am trusted by you.
93. Select the most appropriate synonym of the given word.
Paranoid
1. Convinced 2. Trustful 3. Committed 4. Distrustful
94. Select the option that can be used as a one-word substitute for the given group of words.
Indifferent to pleasure and pain
1. Cynic 2. Stoic 3. Prudent 4. Lusty
95. Select the most appropriate ANTONYM of the given word. Appal
1. Alarm 2. Assure 3. Amaze 4. Astound

Instructions [96-100]

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.

An old man lived in the village. He was one of the (1) _____ unfortunate people in the world. The whole village was tired (2) _____ him; he was always gloomy, he (3) _____ complained and was always in a bad mood. The (4) _____ he lived, the more vile he was becoming and the more (5) _____ were his words.

96. Select the most appropriate option to fill in blank number 1.
1. maximum 2. utmost 3. most 4. main
97. Select the most appropriate option to fill in blank number 2.
1. from 2. of 3. by 4. at
98. Select the most appropriate option to fill in blank number 3.
1. mostly 2. commonly 3. cyclically 4. constantly
99. Select the most appropriate option to fill in blank number 4.
1. long 2. lengthy 3. longer 4. longest
100. Select the most appropriate option to fill in blank number 5.
1. fatal 2. mortal 3. poisonous 4. toxic

Answer Key

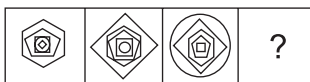
1. (4)	2. (2)	3. (4)	4. (3)	5. (1)	6. (4)	7. (3)	8. (4)	9. (2)	10. (3)	11. (2)	12. (2)	13. (1)
14. (2)	15. (2)	16. (2)	17. (3)	18. (1)	19. (2)	20. (1)	21. (1)	22. (4)	23. (4)	24. (2)	25. (1)	26. (3)
27. (4)	28. (2)	29. (1)	30. (2)	31. (2)	32. (3)	33. (4)	34. (3)	35. (4)	36. (2)	37. (4)	38. (2)	39. (4)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

Answers with Explanations

General Intelligence and Reasoning

1. **Option (4) is correct.**

Explanation:



Logic: The innermost figure becomes the outermost figure.



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

Explanation: Given that

$$52 : 91 :: 72 : ?$$

$$(13 \times 4) : (13 \times 7)$$

$$\text{Similarly, } (18 \times 4) : (18 \times 7) = 72 : 126$$

3. **Option (4) is correct.**

Explanation: According to the BODMAS rule,

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

1. $12 + 4 - 8 \div 3 = 11$

+ and ÷ are interchanged

$$\text{LHS} = 12 \div 4 - 8 + 3$$

$$3 - 8 + 3 = 6 - 8 = -2 \neq 11$$

2. $12 + 4 - 8 \div 3 = 11$

+ and ÷ are interchanged

$$\text{LHS} = 12 \div 4 - 8 + 3$$

$$3 - 8 + 3 = 6 - 8 = -2 \neq 20$$

3. $16 + 4 \times 8 \div 3 = 45$

+ and ÷ are interchanged

$$\text{LHS} = 16 \div 4 \times 8 + 3$$

$$4 \times 8 + 3 = 32 + 3 = 35 \neq 45$$

4. $22 + 11 \times 8 \div 3 = 19$

+ and ÷ are interchanged

$$\text{LHS} = 22 \div 11 \times 8 + 3$$

$$2 \times 8 + 3 = 16 + 3 = 19 = \text{RHS}$$

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

Explanation: your attention please = puw cuw zuw

kind attention please = muw zuw puw

please pay attention = puw zuw ruw

Find similar word and similar codes:

Hence, attention = puw

please = puw

your = cuw

kind = muw

pay = ruw

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

Explanation: 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

Logic: Consonant +1

Vowels -1

Now,

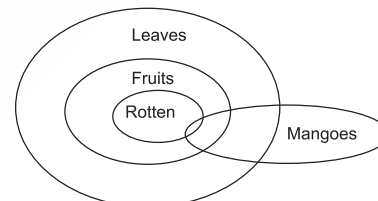
6	18	15	14	20	9	5	18
F	R	O	N	T	I	E	R
↓+1	↓+1	↓-1	↓+1	↓+1	↓-1	↓-1	↓+1
G	S	N	O	U	H	D	S
7	19	14	15	21	8	4	19

Similarly,

3	12	15	19	9	14	7
C	L	O	S	I	N	G
↓+1	↓+1	↓-1	↓+1	↓-1	↓+1	↓+1
D	M	N	T	H	O	H
4	13	14	20	8	15	8

6. **Option (4) is correct.**

Explanation:



1. All rotten are inside the leaves. Hence, some leaves are rotten.

2. All rotten are fruits and some mangoes are rotten. Hence, all those mangoes which are rotten are fruits.

3. Some leaves are rotten and mangoes but can't say definitely about all. Hence, only conclusion 1 and 2 follows.

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

Explanation: Given that:

C _ B N _ _ V _ _ H C _ B _ H

Logic: Count the number of elements in the series i.e., 15.

Now, make factors of 16, i.e., 3 and 5.

Now, divide it into 5 equal parts
C V B N H / C V B N H / C V B N H

8. **Option (4) is correct.**

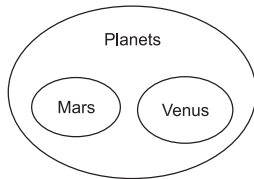
Explanation:

$$16 \xrightarrow{\times 2+3} 35 \xrightarrow{\times 3+2} ? = 107 \xrightarrow{\times 2+3} 217 \xrightarrow{\times 3+2} 653 \xrightarrow{\times 2+3} 1,309$$

Hence, 107 is answer.

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

Explanation:



Both Mars and Venus are planets but there is no relation between Mars and Venus.

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

Explanation: 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

$$T \xrightarrow{+2 \text{ gives}} V \xrightarrow{+3} Y \xrightarrow{+4} C \xrightarrow{+5} H$$

20 22 25 3 8

$$N \xrightarrow{+2 \text{ gives}} P \xrightarrow{+3} S \xrightarrow{+4} W \xrightarrow{+5} B$$

14 16 19 23 2

$$U \xrightarrow{+2 \text{ gives}} W \xrightarrow{+3} Z \xrightarrow{+4} B \xrightarrow{+5} I$$

21 23 26 2 9

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

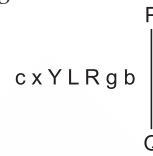
Explanation: Table to remember

Letters	Mirror-images	Letters	Mirror-images	Letters	Mirror-images
A	A	J	l	S	z
B	q	K	X	T	T
C	o	L	J	U	U
D	d	M	M	V	V
E	3	N	И	W	W
F	F	O	O	X	X
G	o	P	q	Y	Y
H	H	Q	Q	Z	z
I	I	R	Я	-	-

Letters	Mirror-images	Letters	Mirror-images	Letters	Mirror-images
a	α	j	l	s	z
b	d	k	X	t	T

c	o	l	l	u	u
d	b	m	m	v	v
e	9	n	n	w	w
f	h	o	o	x	x
g	g	p	q	y	Y
h	h	q	p	z	z
i	i	r	r	-	-

Now, mirror image of



Can be obtained from the above tables. Hence,

d 9 Я l Y x o

is the correct answer.

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

Explanation:

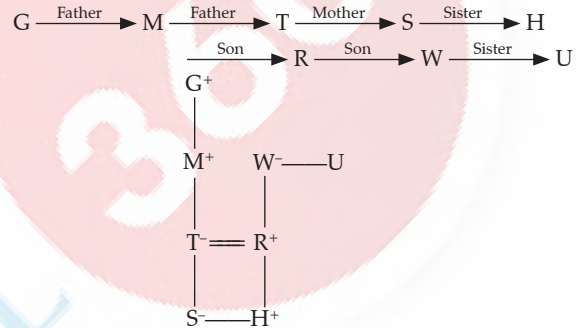
A ≠ B = Father

A % B = Mother

A @ B = Sister

A and B = Son

G ≠ M ≠ T % S @ H and R and W @ U



W is the paternal grandmother of H.

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

Explanation: Correct sequence is as follows:

Start computer	Open email account	Compose email	Enter email address	Write the content	Send the mail
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14. **Option (2) is correct.**

Explanation: Table of alphabetical series (point to remember)

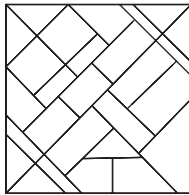
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

8	4	13	19
H	D	M	S
↓ +7	↓ -8	↓ +9	↓ -10
O	V	V	I
15	22	22	9

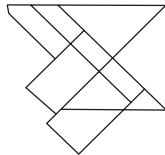
↓+7	↓-8	↓+9	↓-10
V	N	E	Y
22	14	5	25
↓+7	↓-8	↓+9	↓-10
C	F	N	O
3	6	14	15
↓+7	↓-8	↓+9	↓-10
J	X	W	E
10	24	23	5

15. Option (2) is correct.

Explanation:



Logic: Find the figure embedded from the options figure without rotation.



16. Option (2) is correct.

Explanation:

Let the present age of B be "x" years
Let the present age of C be "y" years
According to the question,

$$x = 3y \quad \dots(1)$$

$$\text{Age of A} = x - 25 \quad \dots(2)$$

Age of B after 15 years,

$$x + 15 = 2(y + 15)$$

$$x + 15 = 2y + 30$$

$$x = 2y + 30 - 15 \text{ or } x = 2y + 15 \quad \dots(3)$$

Putting the value of x from Eq. (1) to Eq. (3)

$$3y = 2y + 15$$

$$3y - 2y = 15$$

$$x = 2y + 30 - 15$$

Hence,

Current age of B = $3y = 3 \times 15 = 45$ years

Current age of A = $45 - 25 = 20$ years

17. Option (3) is correct.

Explanation:

1. S is second left of T and S is third to the left of V

Facing north

S _ T V

2. T is between P and V

Facing north

S P T V

3. W is third to the left of P and W is to the immediate right of U

Facing north

U W _ S P T V

4. R is third to the right of P

Facing north

U W Q S P T V R

Hence, R is located fourth to the right of S.

18. Option (1) is correct.

Explanation:

11	15	9
14	16	?
75	31	88

The logic follows here:

$$(\text{2nd number} + \text{1st number}) \times (\text{2nd number} - \text{1st number}) = \text{3rd number}$$

Column wise,

$$\text{Column 1} \rightarrow (14 + 11) \times (14 - 11) = 75$$

$$\text{Column 2} \rightarrow (16 + 15) \times (16 - 15) = 31$$

Similarly,

$$\text{Column 3} \rightarrow (? + 9) \times (? - 9) = 88$$

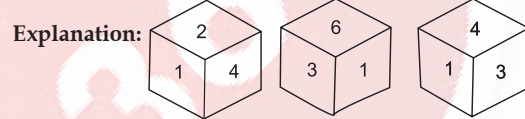
$$(? + 9) \times (? - 9) = 88$$

$$?^2 - 9^2 = 88$$

$$?^2 = \frac{169}{1}$$

$$? = \sqrt{169} = 13$$

19. Option (2) is correct.



Find the common face in both the dice and move either in a clockwise or anticlockwise direction. From that face

Dice 1 -----1-----2-----4----- (Clockwise)

Dice 2 -----1-----3-----6----- (Clockwise)

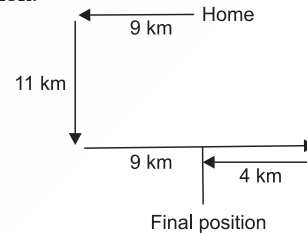
2 opposite to 3

4 opposite to 6

Hence, the hidden number 5 is opposite to 1.

20. Option (1) is correct.

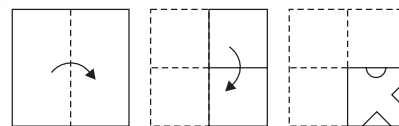
Explanation:



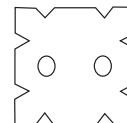
Srinija is 11 km away from her initial position.

21. Option (1) is correct.

Explanation:



Logic of symmetry will be followed here



Above figure is the correct figure

22. Option (4) is correct.

Explanation:

62	74	80	86	95	113	158
$\frac{62+12}{74}$	$+6=80$	$+6=86$	$+9=95$	$+18$	$+45$	
$\times 0.5$	$\times 1$	$\times 1.5$	$\times 2$	$\times 2.5$		

23. Option (4) is correct.

Explanation: 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

19	15	21	16
S	O	U	16
$\downarrow +1$	$\downarrow -1$	$\downarrow +1$	$\downarrow -1$
T	N	V	O
20	14	22	15
$\downarrow +1$	$\downarrow -1$	$\downarrow +1$	$\downarrow -1$
B	O	W	L
2	15	23	12
$\downarrow +1$	$\downarrow -1$	$\downarrow +1$	$\downarrow -1$
C	N	X	K
3	14	24	11

24. Option (2) is correct.

Explanation: According to the BODMAS rule,

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

Now,

A = +

B = ×

C = -

D = ÷

46 C (6 A 7) B 5 A 24 D 6 B (27 D (9 D 3))

$46 - (6 + 7) \times 5 + 24 \div 6 \times (27 \div (9 \div 3))$

$46 - 13 \times 5 + 24 \div 6 \times (27 \div 3)$

$46 - 13 \times 5 + 24 \div 6 \times (9)$

$46 - 13 \times 5 + 4 \times 9$

$46 - 65 + 36$

$82 - 65 = 17$

25. Option (1) is correct.

Explanation: 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

P	E	N
16	5	14
$\downarrow +1$	$\downarrow +2$	$\downarrow +3$
17	7	17
Q	G	Q

Similarly,

C	A	P
3	1	16
$\downarrow +1$	$\downarrow -1$	$\downarrow +1$
4	3	19
D	C	S

Hence, the code is 4319.

General Awareness

26. Option (3) is correct.

The Nobel Prize in Literature 2020 was awarded to Louise Gluck. She is an American poet and is the 13th poet from the United States to win the Nobel Prize. She is a professor at the Yale University and some of her famous works include Firstborn, Descending Figure, The Triumph of Achilles and Ararat.

The Nobel Prize is awarded in five categories—Physics, Chemistry, Physiology or Medicine, Literature, and Peace in the memory of Alfred Nobel. The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel was established in 1968 by the Bank of Sweden and was first awarded in 1969.

27. Option (4) is correct.

Jay Shah was elected as the President of the Asian Cricket Council (ACC) in January 2021. The ACC is a cricket organisation, headquartered in Colombo, Sri Lanka. This was established in 1983 to promote cricket in Asia.

28. Option (2) is correct.

Petiole is not a part of a flower. Petiole is the stalk that connects leaf to the stem of the plant. It enables the leaf to twist and face the sun. Flowers are the reproductive parts of a plant and it consists of two parts—vegetative and reproductive. The vegetative parts include Petals and Sepals.

Petals are the colourful parts that attract birds, bees and insects. Sepals are green coloured parts present below the petals to protect the rising buds.

Stamen is the male reproductive organ of a flower. It has a pollen sac known as anther and filament.

Pistil is the female reproductive organ of the flower and consists of three parts—stigma, style, and ovary.

29. Option (1) is correct.

As a part of Mission Sagar-IV, Indian Naval Ship Jalashwa arrived at Port Anjouan, Comoros on 14th March 2021 to deliver 1,000 metric tonnes of rice. INS Jalashwa is the largest amphibious ship of Indian Navy. Earlier also, the essentials were delivered along with a specialist medical team to render assistance for dengue fever related emergencies. The current chief of Indian Naval Staff is Admiral R. Hari Kumar.

SAGAR, stands for Security and Growth for All in the Region and Mission Sagar, is India's initiative to assist countries in the Indian Ocean Littoral states during COVID-19 pandemic.

30. Option (2) is correct.

Beri Beri cannot be prevented by vaccination. Beri Beri is a deficiency disease caused due to deficiency of Vitamin B1 or Thiamine. It can be either dry or wet Beri Beri. The dry disease affects the nervous system and the wet has an impact on the cardiovascular system. These may ultimately lead to muscle paralysis or heart failure.

31. Option (2) is correct.

The second law of motion provides a quantitative definition of force. According to Newton's second law, the rate of change of linear momentum of an object is proportional to the force applied on it. The change takes place in the direction of force applied. Numerically, it can be defined as $F=ma$ where 'F' is Force, 'm' is mass, and 'a' is acceleration.

The first law of Newton defines inertia. It states that a body

continues to be in rest or in uniform motion until an external force is applied on it to change its state. If net force applied on the body is zero, there is no change in the velocity of body. The third law of Newton states that every action has an equal and opposite reaction. Force always occurs in pairs. The Universal Law of Gravitation states that the force between two bodies is directly proportional to their masses and inversely proportional to a square of distances between them. This law defines the gravitational constant (G) which is approximately equal to $6.67 \times 10^{-11} \text{ Nm}^2\text{kg}^{-2}$.

32. Option (3) is correct.

The foul smell from a body specially during a sultry summer is due to the action of bacteria on sweat. Sweat glands are tube like structure in the skin. These help to regulate the temperature of skin by allowing the evaporation of water from the surface of skin when the internal temperature of the body rises. The sweat is composed of water, minerals, lactate and urea.

Melanin is the colour providing pigment in the human body. It provides colour to the hair, skin and eyes in humans and animals. The level of melanin is directly proportional to the race and amount of sunlight exposure. If the sunlight exposure is high, the melanin production is also high.

33. Option (4) is correct.

David Ricardo first argued that in the face of high deficits, people save more. This is explained under the concept of Ricardian Equivalence. He states that if government chooses to finance the expenditures through immediate taxation or through borrowing and deficit spending, the results will be the same. If the government decides to boost the economy by going deficit in its spending, people will also spend less and they will thus save more. Thus, the net effect will be zero. Ricardo is a classical economist known for the labour theory of value, theory of comparative advantage, theory of rents, and theory on wages and profit. He is well known for his work—Principles of Political Economy and Taxation.

34. Option (3) is correct.

Rakhigarhi is a Harappan site in Haryana. It is situated in Hansi, Hisar, Haryana. This site was excavated by Amarendra Nath of Archaeological Survey of India. It is one of the five known biggest townships of Harappan civilisation in India. Kalibangan is a town on the banks of Ghaggar in Tehsil Pilibangan in Hanumangarh district, Rajasthan. The site was identified by Luigi Tessitori and is believed to be a part of prehistoric and pre-Mauryan character of Indus Valley civilisation. It was a major provincial capital of the Indus Valley Civilisation.

Lothal is located in the Bhai region of Gujarat and it was discovered by the Archaeological Survey of India (ASI) in 1954. It was one of the Southernmost sites of Ancient Indus Valley Civilisation.

Dholavira is a UNSECO world Heritage site and is situated at Khadirbet in Bhachau Taluka of Kutch District, Gujarat. The site is one of the five largest Harappan sites and it is on Tropic of Cancer.

35. Option (4) is correct.

The value of the Gross Domestic Product (GDP) of India is published by PIB in Indian Rupee. GDP is defined as the value of all the final goods and services produced within the geographical boundaries of the country during a financial year. PIB stands for Press Information Bureau. It functions under the Ministry of Information and Broadcasting.

36. Option (2) is correct.

Approximately 97% of total water on the surface of earth is accounted for by the oceans. Almost 3/4th or 71 % of the Earth's surface is covered with water. However, the water present in oceans is salty and is unfit for drinking, irrigation,

and for use in agriculture. Freshwater is present in rivers, lakes, glaciers, icecaps, soil moistures and aquifers, etc. This water is fit for human consumption.

37. Option (4) is correct.

As per the Union Budget of 2021–22, seven textile parks are to be set up in three years. This is being done to make India a manufacturing and export hub. These parks are being set up by the name PM-MITRA (Mega Integrated Textile Region and Apparel Parks). These parks are inspired by the 5F vision of PM Narendra Modi. The 5F formula comprises Farm to fibre; fibre to factory; factory to fashion; fashion to foreign.

The Union Budget is presented by the Union Finance Minister on 1 February every year. It is referred to as the Annual Financial Statement in Article 112 of the Indian constitution.

38. Option (2) is correct.

Ozone is an allotrope of oxygen. It is the property of an element to exist in two or more different physical forms. Different forms of the same element that are chemically identical but have different physical properties. This happens because the atoms of elements are bonded differently leading to different physical properties. For example, Diamond and Graphite are allotropes of Carbon. The layered atomic structure of Graphite makes it slippery and soft while same carbon when linked tetrahedrally form diamond, one of the hardest substances on earth.

39. Option (4) is correct.

Hima Das was appointed as the Deputy Super-intendent of Police by the Assam Government in February 2021. Hima Das is also known as Dhing Express. She is an Indian sprinter and is the first Indian athlete to win a gold medal in a track event at the IAAF World U20 Championships.

Deepika Kumari is an Indian professional archer and has won gold medal at the Common Wealth Games in 2010. She was conferred with Arjuna award and Padma Shri for her achievements.

Ekta Bhyani is a para athlete and is supported by the GoSports Foundation. She belongs to Haryana. She had represented the country in the 2018 Asian Para Games and won gold medal in the club throw event.

Dutee Chand is an Indian professional sprinter from Odisha. She became the first Indian sprinter to win gold at the Universiade. She is the first athlete to openly come out as a member of the LGBTQ+ community.

40. Option (2) is correct.

Doha won the hosting rights of the 2030 Asian Games in December 2022. The 2030 games will be the 21st edition of Asian games and these will be the second Asian games to be held in Qatar.

41. Option (4) is correct.

The Deomali is the highest mountain peak of Odisha. The peak has an elevation of 1672 m and is situated in Doodhari village, Pottangi Panchayat division, near Koraput town in the Koraput district. It forms a part of Chandragiri-Pottangi subrange of the Eastern Ghats. The place is famous for eco-tourism and trekking.

Sandakfu is the highest peak of West Bengal. It is situated in the Singalila Ridge of Himalayas. This lies on the border between India and Nepal. This peak is located at the edge of the Singalila National Park. It is at a height of 3636 metres above sea level. This peak provides the best view of mountain Kanchenjunga, also known as Sleeping Buddha or the Sleeping Shiva.

Doddabetta is the highest peak of Tamil Nadu. The word 'Doddabetta' means 'big mountains' and it is situated at the junction of Eastern and Western Ghats. The peak is at a height of 2623 metres.

The highest peak of Assam is Mt Tumjang. It is situated at

a height of 1860 metres above the sea level and is in Borail range.

42. Option (3) is correct.

Dhruva was a ruler of the Rashtrakuta dynasty. He ascended his brother Govind III and is credited for the expansion of kingdom to empire which included the region between Kaveri river and Central India. The Rashtrakuta dynasty ruled India between sixth to tenth century.

43. Option (3) is correct.

Kalbelia is a UNESCO recognised dance form. This is a folk dance of Rajasthan that is done by Kalbelia, a snake charming tribe. The tribe belongs to Thar desert, Rajasthan and they are followers of Sage Kanifnath. The dancers replicate the movements of a serpent or snake. The dance is a part of the UNESCO intangible heritage list since 2010. This list focused on protection of important intangible cultural heritages and to create awareness about them.

44. Option (2) is correct.

The Earth Hour is observed by switching off all lights at homes, business establishments, landmarks and so for an hour. This is organised by World Wildlife Fund and happens every year from 8:30 to 9:30 p.m. on the last Saturday of March. It was started in Sydney, Australia in 2007. The last Saturday of March is the time of the Spring and Autumn equinoxes in the northern and Southern Hemispheres. This allows for near coincidental sunset times in both hemispheres, thereby creating the greatest visual impact for a global 'lights out' event. The symbol of Earth Hour is '60+.'

45. Option (3) is correct.

Twenty-fourth Amendment declared that the Parliament has the power to abridge or take away any of the Fundamental Rights under Article 368 and such an Act, will NOT be a law under the meaning of Article 13. It is officially known as the The Constitution (Twenty-fourth Amendment) Act, 1971. Basically, this amendment allows the Parliament of India to dilute or change the Fundamental rights by making amendments to the constitution. This was enacted in context of Gokul Nath case of 1967. The purpose of this amendment was to reverse the Supreme Court's decision in the I.C. Golak Nath vs The state of Punjab.

46. Option (3) is correct.

Me-Dum-Me-Phi is an ancestor-worship festival celebrated in the state of Assam. It is celebrated in the Ahom or Tai-Ahom religion on 31 January every year in memory of the departed souls. It is a festival that shows respect, and gratitude towards departed souls and their contribution to the society. In the word 'Mae Dam Mae Phi', 'Me' means 'offerings', dam means ancestors, and Phi means God.

47. Option (2) is correct.

Maize is a crop which is used both as food and fodder. It is a Kharif crop that requires temperature between 21°C and 27°C and grows well in old alluvial soil. Kharif crops are grown in the monsoon season as they require good rainfall for their growth. Some of the other examples of Kharif crops are rice, millet, ragi, pulses, soybean, and groundnut, etc. These are sown in the rainy season from June to September and harvested at the end of monsoon season by October or November.

Rabi crops are winter crops that are sown in the beginning of the winter season around October or November and these crops are harvested in the spring season. Some of the examples of Rabi crops are wheat, barley, oats, gram, mustard, linseed.

48. Option (1) is correct.

Pranab Mukherjee gave assent to the 100th Amendment of the Constitution of India. This act was passed in 2015 and it ratified the land boundary agreement between India and

Bangladesh. As a part of this act, both India and Bangladesh exchanged the disputed territories occupied by both the nations and these territories are in the states of Assam, West Bengal, Meghalaya and Tripura. This exchange was done in accordance with the 1974 bilateral LBA. In this process, Bangladesh received 111 Indian enclaves in the Bangladeshi mainland whereas India received 51 Bangladeshi enclaves in India's mainland.

49. Option (3) is correct.

During the rule of Tughlaq dynasty, Timur or Tamerlane invaded India in 1398 AD. Timur is the founder of the Timurid dynasty and was a Turco-Mongol conqueror. He founded the Timurid Empire in Persia and Central Asia. He attacked Delhi Sultanate in 1398 which was at that time ruled by Sultan Nasir-ud-Din Mahmud Shah Tughluq of the Tughlaq dynasty. The Slave or Mamluk dynasty was established in Delhi by Qutb ud-Din Aibak and lasted from 1206-1290. It was the first dynasty to rule Delhi.

The Khiji or Khalji dynasty was the second dynasty to rule Delhi Sultanate and was founded by Jalal ud din Firuz Khalji. This dynasty ruled between 1290 and 1320.

The Sayyad dynasty was the fourth dynasty to rule Delhi Sultanate and it ruled between 1414 and 1451. It was founded by Khizr Khan.

50. Option (4) is correct.

The Government of National Capital Territory of Delhi (Amendment) Bill, 2021, which was passed in March 2021 amended the Government of National Capital Territory of Delhi Act 1991. This amendment gave supremacy to the Lieutenant Governor over the elected government. This act amended the Sections 21, 24, 33 and 44 of the 1991 Act. It was under the 69th Constitutional amendment act of 1991 that Union Territory of Delhi was conferred with a special status and it redesignated it as the 'National Capital Territory of Delhi' and designated its administrator as the Lieutenant Governor (LG).

Quantitative Aptitude

51. Option (3) is correct.

Since, $a^3 + b^3 + c^3 = 3abc$ (if $a + b + c = 0$)

$$\begin{aligned} 70^3 + 20^3 - 90^3 &= 70^3 + 20^3 + (-90)^3 \\ &= 3 \times 70 \times 20 \times (-90) = -3,78,000 \\ &\quad (\text{since, } 70 + 20 + (-90) = 0) \end{aligned}$$

52. Option (2) is correct.

On simple interest, a certain amount of money becomes ₹ 59,200 in 6 years and ₹ 72,000 in 10 years.

Therefore, total interest in 4 years = 72,000 - 59,200 = ₹ 12,800

$$\text{The total interest in 6 years} = \left(\frac{12,800}{4} \right) \times 6 = ₹ 19,200$$

Then total amount = 59,200 - 19,200 = ₹ 40,000

The rate of interest had been 2% more

$$40000 \times \left(\frac{2}{100} \right) = ₹ 800$$

$$\text{New interest in 1 year} = \left(\frac{12,800}{4} \right) + 800 = ₹ 4,000$$

The required interest = 76,000 - 40,000 = ₹ 36,000

$$\text{Then time required} = \frac{36,000}{4,000} = 9 \text{ years.}$$

The sum will be ₹ 76,000 in 9 years

53. Option (1) is correct.

Total exports of cars of type B in 2015 and 2017 (in ₹ millions) = 250 + 275 = 525

And total exports of cars of type A in 2014 and 2018 (in ₹ millions) = 200 + 300 = 500

Required ratio = 500 : 525 = 20 : 21

54. Option (2) is correct.

The angle corresponding to the rent = 60°

The total angle of a pie chart = 360°

Required percentage of spending on rent

$$= \left(\frac{60^\circ}{360^\circ} \right) \times 100 = \frac{100}{6} \% = 16\frac{2}{3}\%$$

55. Option (4) is correct.

The difference of two perpendicular sides = 17 cm

Area of the triangle = 84 cm²

Let, the base of the right triangle = x cm

Therefore perpendicular = $(x + 17)$ cm

$$\text{Area of triangle} = \frac{1}{2} \times x \times (x + 17) = 84$$

$$\Rightarrow x^2 + 17x = 168$$

$$\Rightarrow x^2 + 24x - 7x - 168 = 0$$

$$\Rightarrow x(x + 24) - 7(x + 24) = 0$$

$$\Rightarrow (x - 7)(x + 24) = 0$$

$$\Rightarrow x + 24 = 0 \Rightarrow x = -24$$

[neglect - sign as side cannot be negative]

$$\Rightarrow x - 7 = 0 \Rightarrow x = 7$$

base = 7 cm

$$\text{perpendicular} = (7 + 17) \text{ cm} = 24 \text{ cm}$$

$$\text{Hypotenuse} = \sqrt{24^2 + 7^2} = \sqrt{576 + 49} = \sqrt{625} = 25 \text{ cm}$$

$$\text{Perimeter of the triangle} = 25 + 24 + 7 = 56 \text{ cm}$$

56. Option (1) is correct.

$$5 - \frac{35}{5} \times 15 + 5 = \frac{5 - 7 \times 15 + 5}{12 - 2} = \frac{5 - 105 + 5}{10}$$

(using Bodmas in numerator)

$$\frac{5 - 105 + 5}{10} = \frac{-95}{10} = -9.5$$

57. Option (3) is correct.

Let the nine consecutive numbers are $(x - 4)$, $(x - 3)$, $(x - 2)$, $(x - 1)$, x , $(x + 1)$, $(x + 2)$, $(x + 3)$, $(x + 4)$

Average of these 9 numbers

$$= \frac{[(x - 4) + (x - 3) + (x - 2) + (x - 1) + x + (x + 1) + (x + 2) + (x + 3) + (x + 4)]}{9} = \frac{9x}{9} = x$$

According to question,

Average = 20 = x

Therefore, smallest number = $x - 4 = 20 - 4 = 16$

58. Option (1) is correct.

Price of petrol before hike = ₹ 82/litre

Hike in petrol price = 5%

Mileage of car = 15 km/litre

Total distance covered every month = 3,045 km

$$\text{Total petrol required every month} = \frac{3,045}{15} = 203 \text{ litres}$$

$$\text{Petrol price hike} = 82 \times \left(\frac{5}{100} \right) = ₹ 4.1$$

$$\text{Increase in monthly expenditure} = 203 \times 4.1 = ₹ 832.30 = ₹ 832 \text{ (approx.)}$$

The increase in the monthly expenditure (to the nearest ₹) is ₹ 832

59. Option (4) is correct.

Initial selling price = ₹ 425

Loss % = 15%

Required profit % = 5%

$$\text{Since, C.P.} = \frac{100}{100 - \text{Loss}\%} \times \text{S.P.}$$

$$\text{S.P.} = \frac{100 + \text{Profit}\%}{100} \times \text{C.P.}$$

Now the cost price of the article

$$= \frac{100}{100 - 15} \times 425 = \left(\frac{100}{85} \right) \times 425 = ₹ 500$$

$$\text{The required selling price} = \frac{100 + 5}{100} \times 500 = \left(\frac{105}{100} \right) \times 500 = ₹ 525$$

Trader should sell the article at ₹ 525

60. Option (3) is correct.

Total marks of test = 30

$$\frac{2}{3} \text{rd of the total marks} = \frac{2}{3} \times 30 = 20$$

As per the given bar graph, number of students scoring less than 20 = 2 + 8 + 7 + 8 = 25

61. Option (3) is correct.

A, B, and C can do a work in 8, 10, and 12 days, respectively.

$$\text{Efficiency ratio of A, B, and C} = \frac{1}{8} : \frac{1}{10} : \frac{1}{12} = 15:12:10$$

Wages will be divided as per the ratio of their efficiency.

So, their wages ratio = 15: 12:10

$$\text{Now, share of B} = \left(\frac{12}{37} \right) \times 5,550 = ₹ 1,800$$

62. Option (3) is correct.

Radius of the cone, $r = 7$ cm and height of the cone,

$h = 10$ cm

Radius of the sphere, $R = 7$ cm

$$\text{Volume of sphere} = \left(\frac{4}{3} \right) \times \pi \times (\text{Radius})^3$$

$$\text{Volume of cone} = \frac{1}{3} \times \pi \times (\text{Radius})^2 \times \text{Height}$$

Difference in volume = volume of a sphere - volume of a cone

$$= \frac{4}{3} \pi R^3 - \frac{1}{3} \pi r^2 h$$

$$= \left[\left(\frac{4}{3} \right) \times \pi \times 7^3 \right] - \left[\left(\frac{1}{3} \right) \times \pi \times 7^2 \times 10 \right]$$

$$= \left[\left(\frac{4}{3} \right) \times \left(\frac{22}{7} \right) \times 343 \right] - \left[\left(\frac{1}{3} \right) \times \left(\frac{22}{7} \right) \times 49 \times 10 \right]$$

$$= \left[\frac{(7 \times 22)}{3} \right] (28 - 10) = \left(\frac{154}{3} \right) \times 18 = 924 \text{ cm}^3$$

63. Option (3) is correct.

$$3 \sec^2 \theta + \tan \theta - 7 = 0$$

$$\Rightarrow 3(1 + \tan^2 \theta) + \tan \theta - 7 = 0$$

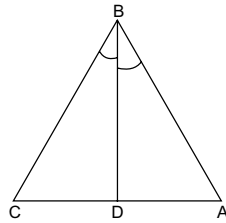
$$\begin{aligned} \Rightarrow 3 \tan^2 \theta + \tan \theta - 4 &= 0 \\ \Rightarrow 3 \tan^2 \theta + 4 \tan \theta - 3 \tan \theta - 4 &= 0 \\ \Rightarrow (\tan \theta - 1)(3 \tan \theta + 4) &= 0 \\ \Rightarrow \tan \theta = 1 \text{ or } \tan \theta &= -\frac{4}{3} \end{aligned}$$

Since, $0^\circ < \theta < 90^\circ$

Therefore, $\tan \theta = 1 \Rightarrow \theta = 45^\circ$

$$\begin{aligned} \frac{2 \sin \theta + 3 \cos \theta}{\operatorname{cosec} \theta + \sec \theta} &= \frac{2 \sin 45^\circ + 3 \cos 45^\circ}{\operatorname{cosec} 45^\circ + \sec 45^\circ} \\ &= \frac{2 \frac{1}{\sqrt{2}} + 3 \frac{1}{\sqrt{2}}}{\sqrt{2} + \sqrt{2}} = \frac{5}{2\sqrt{2}} = \frac{5}{4} \end{aligned}$$

64. Option (1) is correct.



Bisector of $\angle B$ in $\triangle ABC$ meets AC at D

Therefore, $\frac{BC}{AB} = \frac{CD}{AD}$ (by angle bisector theo.)

$$\Rightarrow \frac{18}{12} = \frac{CD}{AD}$$

$$\Rightarrow \frac{CD}{AD} = \frac{3}{2}$$

Let CD and AD be $3y$ and $2y$, respectively.

Given, $AC = 15$ cm

$$AD + CD = 15$$

$$2y + 3y = 15$$

$$\Rightarrow y = 3$$

So, $AD = 2y = 6$ cm

65. Option (2) is correct.

Number of youths in A, C and E

$$\begin{aligned} &= (12 + 11.5 + 9) \times 1,00,000 \\ &= 32,50,000 \end{aligned}$$

Number of employed youths in B, C and D

$$= (7 + 10 + 7.5) \times 1,00,000 = 24,50,000$$

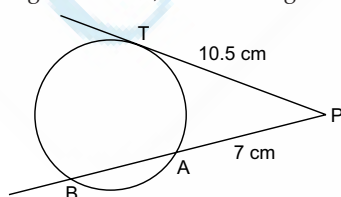
Required ratio

$$= \frac{\text{Number of youths in A, C and E}}{\text{Number of employed youths in B, C and D}}$$

$$= \frac{32,50,000}{24,50,000} = \frac{65}{49} = 65:49$$

66. Option (2) is correct.

As per the given details, let's make figure.



Given that: $PT = 10.5$ cm and should be and $PA = 7$ cm

$$PT^2 = PA \times PB$$

(By tangent-secant theorem)

$$10.5^2 = 7 \times PB$$

$$\Rightarrow PB = \frac{10.5 \times 10.5}{7} = 15.75 \text{ cm}$$

$$AB = PB - PA = 15.75 - 7 = 8.75 \text{ cm}$$

67. Option (4) is correct.

First find the remainders by dividing each number by 13. Multiply all the remainder and divide it by divisor (if product is more than divisor). The obtained remainder is our required remainder

$$335 \div 13 \text{ Remainder} = 10$$

$$608 \div 13 \text{ Remainder} = 10$$

$$853 \div 13 \text{ Remainder} = 8$$

$$\text{Product of remainders} = 10 \times 10 \times 8 = 800$$

$$\text{Then, } 800 \div 13 \Rightarrow \text{Remainder} = 7$$

68. Option (3) is correct.

$$MP = ₹ 626$$

$$\text{Discount \%} = 32\%$$

$$\text{Profit} = ₹ 25$$

$$SP = \frac{100 - 32}{100} \times 626 = ₹ 425$$

$$CP = SP - \text{Profit} = 425 - 25 = ₹ 400$$

$$\text{Profit \%} = \frac{25}{400} \times 100$$

$$= 6.25\% \approx 6\% \text{ (nearest integers)}$$

69. Option (2) is correct.

Let the present age of A = x years

So, present age of B = $x + 8$ years

According to question,

$$\frac{x - 4}{x + 8 - 4} = \frac{1}{2}$$

$$\Rightarrow 2x - 8 = x + 4$$

$$\Rightarrow x = 12$$

Present age of B = $12 + 8 = 20$ years

70. Option (2) is correct.

Since, LCM of 8, 9, 12 and 15 = 360

Let the required number, is $(360k + 5)$, a multiple of 7

$$\text{Put } k = 1$$

$$\Rightarrow (360 \times 1 + 5) = 365$$

$$\Rightarrow \frac{365}{7} \rightarrow \text{Remainder} = 1$$

$$\text{Put } k = 2$$

$$\Rightarrow (360 \times 2 + 5) = 725$$

$$\Rightarrow \frac{725}{7} \text{ Remainder} = 4$$

$$\text{Put } k = 3$$

$$\Rightarrow (360 \times 3 + 5) = 1,085$$

$$\Rightarrow \frac{1,085}{7} \rightarrow \text{Remainder} = 0$$

So, required number is 1,085

71. Option (4) is correct.

Let the speeds of trains are $2x$ and $7x$, respectively.

$$\text{According to question, } 2x = \frac{250}{50} = 50 \Rightarrow x = 25 \text{ km/h}$$

$$\text{Sum of speeds of trains} = 2x + 7x = 9 \times 25 = 225 \text{ km/h}$$

72. Option (3) is correct.

Radii of both circles are 7 cm.
 Length of transverse common tangent, BD is 48 cm.
 Length of direct common tangent is AC = ?
 Since, length of direct transverse tangent

$$= \sqrt{\text{Square of distance between circle} - (\text{sum of radii})^2}$$

Let distance between the circle is y cm.

$$\text{So, } BD = \sqrt{y^2 - (7+7)^2}$$

$$48 = \sqrt{y^2 - 14^2} \Rightarrow y = 50 \text{ cm}$$

Since, length of direct transverse tangent

$$= \sqrt{\text{Square of distance between circles} - (\text{sum of radii})^2}$$

$$\text{So, } AC = \sqrt{y^2 - (7-7)^2} = \sqrt{y^2} = y = 50 \text{ cm}$$

73. Option (1) is correct.

Given that, $x + y + z = 11 \text{ cm}$
 $xy + yz + zx = -6$ and $x^3 + y^3 + z^3 = 1,604$
 $(x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + zx)$
 $\Rightarrow 121 = x^2 + y^2 + z^2 + 2(-6)$
 $\Rightarrow x^2 + y^2 + z^2 = 133$
 Now, $x^3 + y^3 + z^3 - 3xyz$
 $= (x+y+z)(x^2 + y^2 + z^2 - xy - yz - zx)$
 $\Rightarrow 1,604 - 3xyz = 11 \times \{133 - (-6)\}$
 $\Rightarrow 3xyz = 1,604 - 1,529 = 75$
 $\Rightarrow xyz = 25$

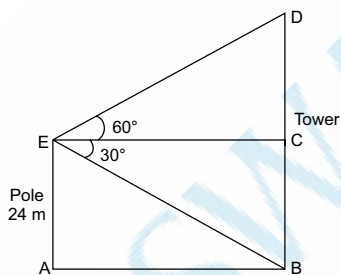
74. Option (2) is correct.

$$\cot B = \frac{12}{5} \Rightarrow \tan B = \frac{1}{\cot B} = \frac{5}{12}$$

$$\sec B = \sqrt{1 + \tan^2 B} = \sqrt{1 + \left(\frac{5}{12}\right)^2} = \frac{13}{12}$$

75. Option (3) is correct.

As per the given information, the figure is as follows



EA = height of pole = 24 m
 DB = height of tower
 From figure, EA = CB = 24 m
 In triangle ECB,
 $\tan 30^\circ = \frac{CB}{EC} \Rightarrow \frac{1}{\sqrt{3}} = \frac{24}{EC}$
 $\Rightarrow EC = 24\sqrt{3} \text{ m}$
 In triangle CED,
 $\tan 60^\circ = \frac{CD}{EC} \Rightarrow \sqrt{3} = \frac{CD}{24\sqrt{3}} = 72 \text{ m}$
 Height of tower, DB = CB + CD = 24 + 72 = 96 m

English Comprehension

76. Option (4) is correct.

The incorrectly spelt word is "symtoms." It should be "symptoms."

77. Option (2) is correct.

The sentence has an error of incorrect usage of the relative pronoun. The word "which" is used to refer to other living beings such as animals, insects, plants and objects in general. In other words, "which" refers to things. "Who" is normally used to refer to human beings, either male or female. In other words, "who" refers to people. The given sentence talks about a person, so, the use of "which" is incorrect.

78. Option (2) is correct.

This question tests a student's vocabulary. "Rely" means "depend on with full trust or confidence." Example: "I know I can rely on your discretion." The antonym of "rely" is "distrust."

79. Option (2) is correct.

This question tests a student's understanding of idiomatic expression. "To take after someone" means "to resemble (someone) in appearance or habit." Example: He takes after his mother/his mother's side of the family.

80. Option (1) is correct.

... (i) In the active voice, the sentence's subject performs the action. It is used to direct the reader's attention to the subject of a sentence. In the passive voice, the action's target is the focus, and the verb acts upon the subject. To convert passive voice into active voice, students need to identify the (S+V+O) subject, verb, and object in the passive sentence. Passive: Object + had been + verb (3rd form) + by + subject Active: Subject + had + 3rd form of verb + object...

81. Option (2) is correct.

The paragraph is about Ladakh. The subject is introduced in the sentence (B) so it is the obvious opener. B is followed by C, which continues the idea by stating that less water falls in Ladakh. Statement A draws contrast with B by using the transition word "however". Hence, the sequence will be BCAD.

82. Option (1) is correct.

This sentence tests a student's understanding of idiomatic expression. "Foul play" means "unfair play in a game or sport." Example: "The referee sent off two players for foul play."

83. Option (4) is correct.

This sentence tests a student's understanding of idiomatic expression and vocabulary. To formally put an end to a system, practice, or institution is called "abolish."

84. Option (4) is correct.

The sentence has an error of parallel construction. There are two main verbs in the given sentence. The first main verb is preceded by an auxiliary verb, but there is no auxiliary verb before the second action verb. This is incorrect. The correction will be "and was punished."

85. Option (3) is correct.

Tag questions (or question tags) turn a statement into a question. They are often used for checking information that we think is true. Usually, if the main clause is positive, the question tag is negative, and if the main clause is negative, the question tag is positive. If the main clause has an auxiliary verb in it, we use the same verb in the tag question. If there is no auxiliary verb (in the present simple and past simple), use do / does, / did. In the given question, the correct question tag will be "does she."

86. Option (4) is correct.

The given sentence is a conditional statement. The conditional statements deal with hypothetical situations. This statement is a wish that can't be fulfilled now. The structure of this type of conditional statement is: wish clause + clause II (past tense). Hence, the given sentence should read as follows: "I wish I had listened to my parents."

87. Option (4) is correct.

Reporting the message of the speaker in the exact words as spoken by him is known as "direct speech." Reporting the message of the speaker in our own words is known as "indirect speech." When the reporting verb in direct speech is in the past tense, then all the present tenses are changed to the corresponding past tense, and simple past is changed to past perfect in indirect speech.

88. Option (2) is correct.

This question tests a student's vocabulary. "Duo" means "a pair of people or things." Example: "The comedy duo Laurel and Hardy."

89. Option (2) is correct.

The sentence is grammatically incorrect. We use an article before a noun. In the sentence, "surprising" is an adjective, and it should not be preceded by an article. Hence, the correct usage will be "it was surprising."

90. Option (1) is correct.

The sentence has an error of subject-verb agreement. A singular subject must be followed by a singular verb, and a plural subject must be followed by a plural verb. The subject in the sentence is "sector," which should be followed by the singular verb "has" instead of "have."

91. Option (3) is correct.

The sentence makes an incorrect comparison. The given sentence incorrectly compares "house" with "sister." The sentence should be: My house is bigger than my sister's.

92. Option (1) is correct.

In the active voice, the sentence's subject performs the action. It is used to direct the reader's attention to the subject of a sentence. In the passive voice, the action's target is the focus, and the verb acts upon the subject. To convert active voice into passive voice, students need to identify the (S+V+O) subject, verb, and object in the active sentence. The given

sentence is in the active voice. Hence, the passive form of the given sentence should be "Am I trusted by you?"

93. Option (4) is correct.

This question tests a student's vocabulary. Paranoid means being unreasonably or obsessively anxious, suspicious, or mistrustful. Example: "You think I'm paranoid, but I tell you there is something going on." Convinced and trustful are antonyms of the word "paranoid."

94. Option (2) is correct.

This question tests a student's vocabulary. Somebody who is indifferent to pleasure and pain is known as a stoic. Example: We knew she must be in pain, despite her stoic attitude. A cynic is a person who believes that people are only interested in themselves and are not sincere. Example: I'm too much of a cynic to believe that he'll keep his promise. "Prudent" is a person who is careful and wise in judgement. Example: It's always prudent to read a contract carefully before signing it. Lusty means healthy, energetic, and full of strength and power. Example: We could hear the lusty singing of the church choir.

95. Option (2) is correct.

This question tests a student's vocabulary. "Appal" means to make someone have strong feelings of shock or disapproval. Example: I was appalled at the lack of staff in the hospital. The antonym of "appal" is "assure."

96. Option (3) is correct.

The given sentence compares the old man with the rest of the people in the village. Thus, a superlative adjective is required. Hence, the best word to fill in the blank is "most."

97. Option (2) is correct.

The word "tired" is followed by the preposition "of."

98. Option (4) is correct.

The blank requires an adverb that qualifies "complain." Since the preceding part of the sentence and the succeeding part of the sentence talk about the person's habit, the blank will also need a word that refers to habit (always). Hence, the best word to fill in the blank is "constantly."

99. Option (3) is correct.

The correct expression is "the longer he lived, the more vile he was becoming."

100. Option (3) is correct.

The blank requires a negative word, which is close to "harmful, deleterious." The best word to fill in is "poisonous."