STAFF SELECTION COMMISSION

COMBINED GRADUATE LEVEL (TIER-I)

SOLVED PAPER

(19th April 2022: Shift-1)

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

General Intelligence and Reasoning

1. Select the option that is related to the third term in the same way as the second term is related to the first term.
FASTER : AEFRST :: KINGDOM : ?
1. DGIKNOM **2.** DGIKMNO
3. DIGKNMO **4.** DGKIMON

2. Select the letter-cluster from the given options that can replace the question mark (?) in the following series.
SKHM, OODQ, KSZU, GWVY, ?
1. CBRD **2.** CARC **3.** BAQC **4.** CASC

3. An amount of ₹ 1,003 is to be distributed among A, B and C in the ratio of 11 : 23 : 25.
How many rupees would B get more than A?
1. ₹ 204 **2.** ₹ 238 **3.** ₹ 29 **4.** ₹ 187

4. Select the option that is related to the third number in the same way as the second number is related to the first number and the sixth number is related to the fifth number.
5 : 27 :: 7 : ? :: 8 : 39
1. 36 **2.** 38 **3.** 37 **4.** 35

5. 'Z + Y' means 'Y is the son of Z'.
'Z $ Y' means 'Y is the father of Z'.
'Y % Z' means 'Y is the son-in-law of Z'.
'Z – Y' means 'Y is the wife of Z'.
'Y * Z' means 'Z is the brother of Y'.
'Y # Z' means 'Z is the only sister of Y'.
Which two symbols can sequentially replace the question marks (?) in the following expression to show that 'D is the wife of W'?
W% O – B ? C ? D
1. + and – **2.** % and – **3.** $ and + **4.** + and #

6. Four letter-clusters have been given, out of which three are alike in the some manner and one is different. Select the letter-cluster that is different.
1. PSH **2.** SWD **3.** FJQ **4.** LPK

7. 'P$Q' means 'P is to the north of Q'.
'P&Q' means 'P is to the east of Q'.
'P*Q' means 'Q is to the west of P'.
'P%Q' means 'Q is to the south of P'.
'P@QR' means 'P stands exactly in the middle of the horizontal line QR'.
'P!QR' means 'P stands exactly in the middle of the vertical line QR'.
Note: 'P6m$Q' means 'P is 6 m to the north of Q' and so on.
Find the shortest distance between G and C in the following expression.
C12m$$5m*G3m&J6m%K! JT
1. 12 m **2.** 10 m **3.** 15 m **4.** 13 m

8. In a certain code language, 'BUILDER' is written as 'VZNFXJL'. How will 'PARKING' be written in that language?
1. JLFNEHA **2.** EIFLBIM **3.** JFLENHA **4.** IELFMIB

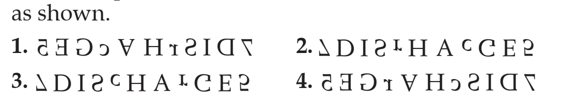
9. Select the correct option that indicates the order of the given words as they would appear in an English dictionary.
1. hatchability **2.** hatchel **3.** hatchers
4. hatchback **5.** hatchings
1. 1, 4, 2, 5, 3 **2.** 4, 1, 2, 5, 3 **3.** 4, 1, 2, 3, 5 **4.** 1, 4, 2, 3, 5

10. Which two digits should be interchanged to make the given equation correct?
37 + 1152 × 8 ÷ 768 – 47 = 22
1. 3 and 4 **2.** 2 and 3 **3.** 4 and 5 **4.** 5 and 6

11. Bindu, Krunal, Manoj, Nilima, Omkar, Piyush, Renu and Sundar are sitting around a circular table facing the centre, but not necessarily in the same order. Sundar sits second to the right of Piyush. Only two persons sit between Sundar and Krunal. Omkar sits opposite to Bindu, who is not an immediate neighbour of Krunal and Piyush. Nilima is the immediate neighbour of Krunal and Bindu. Manoj sits third to the right of Bindu.
Which of the following statements is/are true?
1. Manoj is the immediate neighbour of Nilima.
2. Sundar sits third to the right of Krunal.
3. Nilima sits opposite to the one who sits to the immediate left of Renu.
4. Omkar is the immediate neighbour of Renu and Piyush.

12. 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 calculators are markers.
Some markers are pencils.
Some pencils are erasers.
Conclusions:
I. Some erasers are markers.
II. Some pencils are calculators.
1. Neither conclusion I nor II follows.
2. Both the conclusions follow.
3. Only conclusion I follows.
4. Only conclusion II follows.

13. Select the correct mirror image of the given combination when the mirror is placed at 'PQ' as shown.
7 D I S c H ∀ r G E 5

14. Select the number from the given options that can replace the question mark (?) in the following series.
30, ?, 83, 118, 160, 210
1. 60 **2.** 62 **3.** 42 **4.** 54

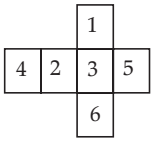
15. Study the given pattern carefully and select the number from the given options that can replace the question mark (?) in it.

28	54	32
56 8 7	65 8 18	84 ? 8
14	13	12
I	II	III

1. 9 **2.** 11 **3.** 10 **4.** 8

16. Which two numbers need to be interchanged to make the following equation correct?
$119 + 11 \times 5 - 153 \div 17 = 201$
1. 119 and 153 **2.** 17 and 5
3. 11 and 17 **4.** 119 and 17

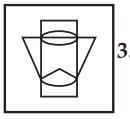
17. A cube is made by folding the given sheet along the lines. In the cube so formed, what would be the number on the face opposite to the one having 5?



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

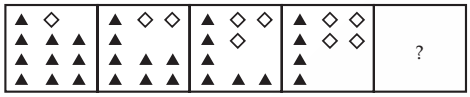
18. Which order of letters will complete the following sequence? ___A___GGA___GGAN___
1. TGTG **2.** SGSA **3.** GNNG **4.** NGNG

19. Select the option in which the given figure is embedded (rotation is NOT allowed).

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

20. In a certain code language, 'GLOVE' is coded as 148. How will 'OBDURATE' be coded in that language?
1. 602 **2.** 402 **3.** 520 **4.** 502

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

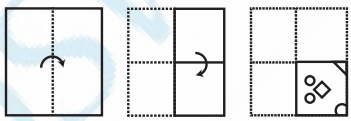


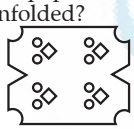
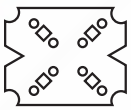
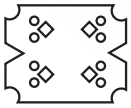
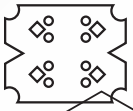
1.  **2.**  **3.**  **4.** 

22. In a certain code language, 'Min Fin Dig' means 'Sohan is Engineer' and 'Sic Ric Min Dic Fin' means 'Profession of Engineer is tough'. Which of the following is the code for 'Sohan'?
1. Dic **2.** Min **3.** Fin **4.** Dig

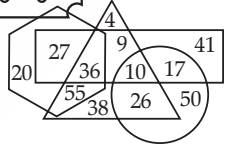
23. Select the number from the given options that can replace the question mark (?) in the following series.
115, 178, 241, 304, ?
1. 370 **2.** 348 **3.** 337 **4.** 367

24. The sequence of folding a 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?



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

25. In the following Venn diagram, the triangle stands for 'fathers', the circle stands for 'engineers', the hexagon stands for 'tax-payers', and the rectangle stands for 'blood donors'.



The given numbers repesents the number of persons in the particular category.
How many tax-payers are also blood donors?
1. 63 **2.** 38 **3.** 61 **4.** 55

General Awareness

26. How many sodium atoms are there in one molecule of sodium peroxide?
1. One **2.** Two **3.** Four **4.** Three

27. Which of the following is NOT a chemical coagulant used in water treatment?
1. Polyaluminium chloride (PAC)
2. Aluminium sulfate (Alum)
3. Aluminium chloride
4. Nitrogen dioxide

28. As per the theory of demographic transition, the post-transitional stage of demographic transition is characterised by_____.
1. low and nearly equal birth and death rates
2. falling birth rates and high death rates
3. high and nearly equal birth and death rates
4. falling death rates and high birth rates

29. 'Sangken' is a festival of the _____.
1. Jains **2.** Buddhists **3.** Sikhs **4.** Christians

30. In which of the following cities were the first and second test cricket matches (2021) between India and England held?
1. Mumbai **2.** Pune **3.** Chennai **4.** Ahmedabad

31. According to World Health Organization (WHO), "Hygiene refers to_____and practices that help to maintain_____and_____the spread of diseases."
1. situations, fitness, prevent
2. values, health, stop
3. conditions, physique, retard
4. conditions, health, prevent

32. Who among the following was honoured by the Abel Prize of 2021 in Mathematics ?
1. Karen Uhlenbeck **2.** Qaboos
3. Laszlo Lovasz **4.** Andrew Wiles

33. Which of the following words does NOT precede the word 'Republic' in the Preamble of the Constitution of India?
1. Sovereign **2.** Democratic **3.** Federal **4.** Socialist

34. Which of the following is a type of plant disease?
1. Botulism **2.** Blight **3.** Coccidiosis **4.** Mastitis

35. Which of the following is a group of islands found in the tropical oceans consisting of coral reefs and a central depression?
1. Guyots **2.** Atoll **3.** Seamount **4.** Lagoon

36. Right to Information Act _____ mandates timely response to citizen requests for government information.
1. 2003 **2.** 2005 **3.** 2002 **4.** 2004

37. As per the Economic Survey of India 2021, SENSEX and NIFTY resulted in India's market-cap to GDP ratio crossing _____ for the first time since October 2010.
1. 100% **2.** 80% **3.** 50% **4.** 75%

38. Honoured with Padma Vibushan and Padma Bhushan, Kishori Amonkar was a renowned personality related to which of the following fields?
1. Science **2.** Economics **3.** Dance **4.** Music

39. Which of the following is NOT abiotic?
1. Rainfall **2.** Soil **3.** Wind **4.** Plant

40. Which of the following is an example of 'Arthropod'?
1. Blood sucking leech **2.** Hookworm
3. Earthworm **4.** Scorpion

41. The Economic Survey of 2020–21 mentions that India's fiscal policy should reflect _____ sentiment of 'a mind without fear'.

1. Jawaharlal Nehru's
2. Gurudev Rabindranath Tagore's
3. Mahatma Gandhi's
4. Shyama Prasad Mukherjee's

42. Saccharomyces Cerevisiae is commonly used to make _____.
1. yoghurt **2.** carbonated beverages
3. cheese **4.** bread

43. Which of the following was the first development bank in India?
1. National Housing Bank
2. Export Import Bank of India
3. Industrial Finance Corporation of India
4. Industrial Development Bank of India

44. Alladi Krishnaswami Ayyar was the chairman of the _____ of the Constituent Assembly of India.
1. Credential Committee
2. Union Powers Committee
3. Order of Business Committee
4. Fundamental Rights Sub-Committee

45. Which of the following events occurred before 1919?
1. Gandhi-Irwin Pact
2. Chauri Chaura Incident
3. Lahore Session of Congress
4. Partition of Bengal

46. William Hawkins met Emperor Jahangir as a representative of the _____ East India Company.
1. Portuguese **2.** Dutch **3.** French **4.** English

47. Who among the following won the 2020 JCB Prize for Literature?
1. Santhosh Echikkanam **2.** S Hareesh
3. KR Meera **4.** Kureepuzha Sreekumar

48. Which of the following musical instruments is also known as a 'Mangal Vadya'?
1. Shehnai **2.** Tabla **3.** Santoor **4.** Damaru

49. Which of the following states won the maximum number of medals at the Khelo India Youth Games 2020?
1. Punjab **2.** Kerala
3. Maharashtra **4.** Haryana

50. Which of the following sages of ancient India wrote the 'Mimamsa-sutras'?
1. Jaimini **2.** Charaka **3.** Badarayana **4.** Panini

Quantitative Aptitude

51. If $x + y + z = 7$, $xy + yz + zx = 8$, then what is the value of $x^3 + y^3 + z^3 - 3xyz$?
1. 200 **2.** 150 **3.** 125 **4.** 175

52. A sum of ₹18,000 becomes ₹21,780 after 2 years on compound interest compounded annually. What will be the compound interest (in ₹) on the same sum for the same period if the rate of interest increases by 5%?
1. 1,845 **2.** 4,670 **3.** 5,805 **4.** 5,500

53. A invested 30% more than B. B invested 40% less than C, who invested ₹ 8,000. The average of the total amount invested by all of them together (to the nearest ₹) is:
1. 6,347 **2.** 6,417 **3.** 6,215 **4.** 6,143

54. If $a^3 + b^3 = 218$ and $a + b = 2$, then the value of $\sqrt{1-ab}$ is:
1. 5 **2.** 3 **3.** 4 **4.** 6

55. From the body of a solid cube of edge 7 cm, a solid sphere is removed. The volume of the remaining solid was found to be $163\frac{1}{3}$ cm^3. What is the diameter (in cm) of the sphere? $\left(\text{Take } \pi = \frac{22}{7}\right)$
1. 10 **2.** 7 **3.** 5 **4.** 8

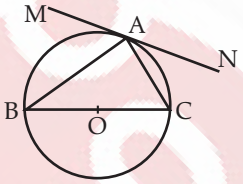
56. A takes 3 hours more than B to walk 'd' km. If A doubles his speed, then he can make it in 1 hour less than B. How much time (in hours) does A require to walk 'd' km?
1. 5 **2.** 9 **3.** 8 **4.** 4

57. The length of the shadow on the ground of a tall tree of height 30 m is $10\sqrt{3}$ m. What is the angle (in degrees) of elevation of the sun?
1. 60 **2.** 15 **3.** 30 **4.** 45

58. A shopkeeper offers his customers a discount of 10%. On an item marked at a price of ₹ 400. which was a little damaged, he offered additional discount of 10%. At what price (in ₹) is the item available to customers?
1. 340 **2.** 324 **3.** 320 **4.** 300

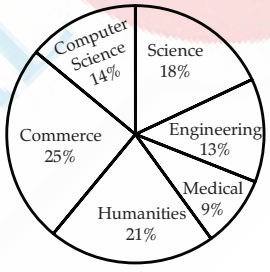
59. The profit earned by selling an article for ₹ 832 is equal to the loss incurred when the article is sold for ₹ 448. What should be the selling price (in ₹) to make a profit of 10%?
1. 750 **2.** 715 **3.** 640 **4.** 704

60. In the following figure, MN is a tangent to a circle with centre O at point A. If BC is a diameter and ∠ABC = 42°, then find the measure of ∠MAB.

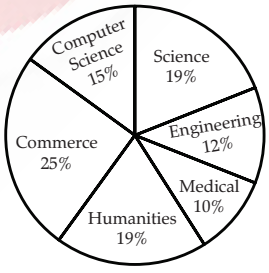


1. 84° **2.** 48° **3.** 42° **4.** 45°

61. The following pie charts show the number of students studying in different departments of an institute during the academic years 2019 and 2020. The total number of students was 2000 and 2400 in academic years 2019 and 2020, respectively.
Students studying Humanities in 2019 and 2020 taken together is what percentage of the total number of students studying during the two years taken together? (correct to 2 decimal places)



Academic year 2019



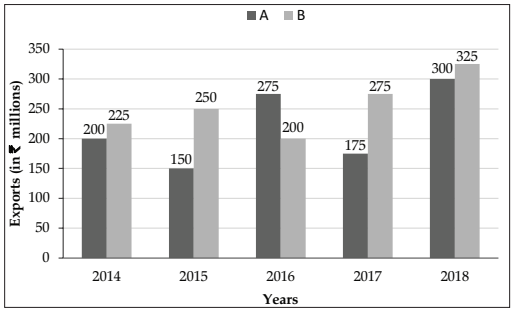
Academic year 2020

1. 18.75% **2.** 19.91% **3.** 19.19% **4.** 18.52%

62. Out the three numbers, second is one-third of the first number and is also three-fourth of the third number. If the average of three numbers is 112, then what is the smallest number?
1. 63 **2.** 45 **3.** 84 **4.** 189

63. A man started a business with a certain capital amount. In the first year, he earned 60% profit and donated 50% of the total capital (initial amount - profit). He followed the same procedure with the remaining capital after the second and the third year. If at the end of the third year, he is left with ₹ 15,360. what was the initial amount (in ₹) with which the man started his business?
1. 20,000 **2.** 30,000 **3.** 25,000 **4.** 32,000

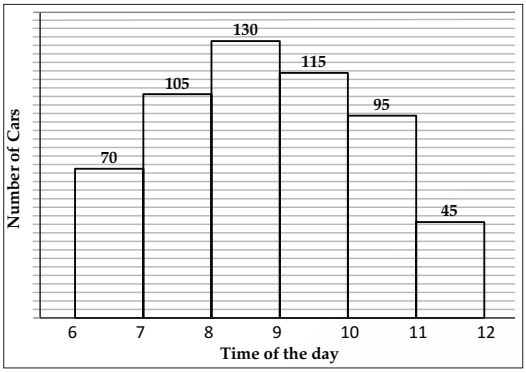
64. Study the given bar graph and answer the following question.
The bar graph shows the exports of cars of type A and B (in ₹ millions) from 2014 to 2018.



What is the ratio of the total exports of cars of type A in 2016 and 2018 to the total exports of cars of type B in 2014 and 2017?

1. 10 : 9 **2.** 11 : 10 **3.** 25 : 16 **4.** 23 : 20

65. The number of cars passing the road near a colony from 6 am to 12 noon has been shown in the following histogram. What is the maximum change percentage in the number of cars as compared to the previous hour? (correct to 2 decimal places)



1. Decrease of 52.63% **2.** Decrease of 58.5%
3. Increase of 55.56% **4.** Increase of 58.5%

66. If A = 60°, what is the value of: $\frac{10\ \sin\frac{A}{2}+8\ \cos A}{7\ \sin\frac{3A}{2}-12\ \cos A}$?

1. 10 **2.** 12 **3.** 9 **4.** 7

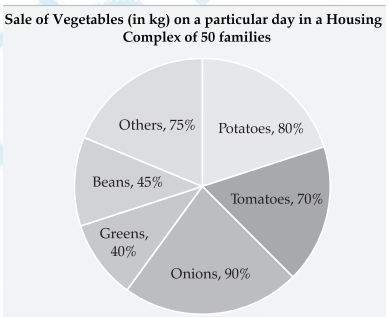
67. If $3\sin^2\theta + 4\cos\theta - 4 = 0, 0° < \theta < 90°$, then the value of $(\text{cosec}^2\theta + \cot^2\theta)$ is:

1. $\frac{5}{4}$ **2.** $\frac{25}{3}$ **3.** $\frac{4}{3}$ **4.** $\frac{17}{9}$

68. Three numbers are in the proportion of 3 : 8 : 15 and their LCM is 8,280. What is their HCF?

1. 60 **2.** 69 **3.** 75 **4.** 57

69. A vegetable vendor supplies vegetables to a complex of 50 families. On a particular day. the break-up sale of vegetables is represented in the form of a pie chart as shown. Study the pie chart carefully and answer the following questions.



Sale of Vegetables (in kg) on a particular day in a Housing Complex of 50 families

What is the ratio of the central angle corresponding to the sale of potatoes. tomatoes and beans together to the central angle corresponding to the combined sale of onions and others?

1. 13 : 15 **2.** 13 : 11 **3.** 11 : 13 **4.** 15 : 13

70. The value of $\frac{\left[\frac{3}{8}-\left\{\frac{3}{8}-\left(\frac{5}{8}-\frac{3}{8}\right)\right\}\right]\text{ of }4.8-0.9}{4\frac{1}{6}\div 2.5\times 0.2\div\frac{1}{5}\text{ of }50+\left(\frac{3}{4}-\frac{1}{8}\right)}$ is:

1. $\frac{30}{79}$ **2.** $\frac{42}{79}$ **3.** $\frac{36}{79}$ **4.** $\frac{24}{79}$

71. In ΔABC, D, E and F are the mid-points of side BC, CA and AB, respectively. If BC = 14.4 cm, CA= 15.2 cm and AB = 12.4 cm. What is the perimeter (in cm) of the ΔDEF?

1. 42 **2.** 28 **3.** 21 **4.** 35

72 14 men can complete a work in 15 days. If 21 men are employed, then in how many days will they complete the same work?

1. 10 **2.** 14 **3.** 12 **4.** 15

73. PQ and RS are two parallel chords of a circle of length 14 cm and 48 cm respectively, and lie on the same side of the centre O. If the distance between the chords is 17 cm, what is the radius (in cm of the circle?

1. 28 **2.** 24 **3.** 25 **4.** 20

74. Let ΔABC ~ ΔQPR and (Area of Δ ABC) : (Area of Δ PQR) = 121 : 64. If QP = 14.4 cm, PR = 12 cm and AC = 18 cm, then what is the length of AB?

1. 32.4 cm **2.** 21.6 cm **3.** 19.8 cm **4.** 16.2 cm

75. If each of the two numbers 5^{16} and 5^{25} are divided by 6, the remainders are R_1 and R_2, respectively. What is the value of $\frac{R_1+R_2}{R_2}$?

1. $\frac{1}{6}$ **2.** $\frac{5}{6}$ **3.** $\frac{1}{5}$ **4.** $\frac{6}{5}$

English Comprehension

76. Select the most appropriate ANTONYM of the given word.
Altercation
1. Agreement **2.** Argument **3.** Quarrel **4.** Controversy

77. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
She performed / the task / at the best / of her ability.
1. the task **2.** of her ability
3. She performed **4.** at the best

78. Select the most appropriate synonym of the given word.
Obstruct
1. Approve **2.** Block **3.** Match **4.** Permit

79. Select the option that expresses the given sentence in indirect speech.
"What is Sonia saying?" said Rohit.
1. Rohit asked what was Sonia saying.
2. Rohit asked what Sonia was saying.
3. Rohit asked that what was Sonia saying.
4. Rohit asked what is Sonia saying.

80. Select the option that can be used as a one-word substitute for the given group of words.
A fixed sum paid annually.
1. Bonus **2.** Honorarium
3. Annuity **4.** Alimony

81. Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'.
Such was his performance that the audience gave a standing ovation.

1. So was **2.** Much was
3. No substitution required **4.** Such as

82. Select the correct passive voice form of the given sentence.
The children are doing hard work.
1. Hard work is being done by the children.
2. Hard work is done by the children.
3. Hard work had been done by the children.
4. Hard work was being done by the children.

83. Select the option that gives the most appropriate meaning of the underlined idiom.
The new electrician is **a green horn**, but will learn fast.
1. Efficient **2.** Proficient
3. Professional **4.** Inexperienced

84. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
Several minutes passed / before she returned / carry milk / for the dog.
1. carry milk **2.** several minutes passed
3. For the dog **4.** before she returned

85. 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 has been / raining intermittently / since two days.
1. raining intermittently **2.** It has been
3. No error **4.** since two days

86. Select the most appropriate meaning of the given idiom.
Sticky fingers
1. An inclination to steal **2.** A habit of licking fingers
3. A tendency to interfere **4.** A tendency to forget

87. 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.
The Taj Mahal / is one of / the most beautiful / creation in the world.
1. The Taj Mahal **2.** the most beautiful
3. creation in the world **4.** is one of

88. Select the option that can be used as a one-word substitute for the given group of words.
A person who travels on foot.
1. Pedestrian **2.** Rover **3.** Dweller **4.** Flyer

89. Select the most appropriate ANTONYM of the given word.
Spacious
1. Cramped **2.** Extensive **3.** Boundless **4.** Roomy

90. Select the most appropriate option to fill in the blank.
I am expected to follow all your instructions, _____?
1. isn't it **2.** am I **3.** aren't I **4.** is it

91. Select the INCORRECTLY spelt word.
1. Ensure **2.** Adjourn **3.** Purity **4.** Exhast

92. Given below are four sentences which are jumbled. Pick the option that gives their correct order.
A. It also wants to know how many students have been provided nutritious food and improved their overall health.
B. The Midday Meal Scheme, that aims to provide free food to children, is in focus again.
C. About 1.3 million government schools are covered under this welfare program of children.
D. The Government now wants to take stock of the implementation of the program.
1. BCDA **2.** ADBC **3.** BACD **4.** ADCB

93. Select the option that expresses the given sentence in passive voice.
Arrest the thief.
1. Let the thief is arrested. **2.** The thief is arrested.
3. The thief has been arrested.
4. Let the thief be arrested.

94. Select the most appropriate synonym of the given word.
Commute
1. Consume **2.** Convert **3.** Condense **4.** Conserve

95. Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'.
In the olden days, many **people use to think** that the earth was flat.
1. people used to think **2.** people were used to think
3. people were thinking **4.** No substitution required

In the following passage, some words have been deleted. Select the most appropriate option to fill in each blank.
There is so much (1) _____ and confusion in life today because the goal of human beings is not clear. Each person (2) _____ to fulfil his desires and dreams without (3) _____ the interest of the other. When we have a (4) _____ motive, we lose the sense of the higher objective of attaining happiness. Therefore, there is lot of (5) _____ in our life.

96. Select the most appropriate option to fill in blank number 1.
1. certainty **2.** positivity **3.** uncertainty **4.** reliability

97. Select the most appropriate option to fill in blank number 2.
1. has want **2.** want **3.** have want **4.** wants

98. Select the most appropriate option to fill in blank number 3.
1. considering **2.** disregarding
3. excluding **4.** describing

99. Select the most appropriate option to fill in blank number 4.
1. selfless **2.** selfish **3.** humane **4.** noble

100. Select the most appropriate option to fill in blank number 5.
1. strife **2.** concord **3.** peace **4.** harmony

Answer Key

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

Answers with Explanations

General Intelligence and Reasoning

1. Option (2) is the correct.

Explanation:

F	A	S	T	E	R	:	A	E	F	R	S	T
6	1	19	20	5	18	:	1	5	6	18	19	20

K	I	N	G	D	O	M	:	D	G	I	K	M	N	O
11	9	14	7	4	15	13	:	4	7	9	11	13	14	15

2. Option (2) is the 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	11	8	13
S	K	H	M
–4	+4	–4	+4
15	15	4	17
O	O	D	Q
–4	+4	–4	+4
11	19	26	21
K	S	Z	U
–4	+4	–4	+4
7	23	22	25
G	W	V	Y
–4	+4	–4	+4
3	1	18	3
C	A	R	C

3. Option (1) is the correct.

Explanation:

Let,

$$\text{The amount of A} = 11x$$
$$\text{The amount of B} = 23x$$
$$\text{The amount of C} = 25x$$
$$\text{Total amount} = 11x + 23x + 25x$$
$$1{,}003 = 59x$$
$$\frac{1{,}003}{59} = x$$
$$17 = x$$

Now,

Amount B get more than A $= 23x - 11x = 12x$

Hence, $12x = 12 \times 17 = ₹\,204$

4. Option (4) is the correct.

Explanation: Given that:

5 : 27 :: 7 : ? :: 8 : 39

$5 \times 4 + 7 = 27$

$7 \times 4 + 7 = 35$

$8 \times 4 + 7 = 39$

Hence, the missing number is 35

5. Option (4) is the correct.

Explanation: Given that:

W % O – B ?C ? D

Z + Y = Y son of Z

Z $ Y = Y father of Z

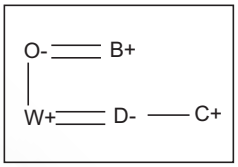
Y % Z = Y son-in-law of Z

Z – Y = Y wife of Z

Y * Z = Z brother of Y

Y # Z = Z only sister of Y

For D being the wife of W, D should be the daughter of B and sister of C and C should be either a son or daughter of B.



6. Option (1) is the 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

Now,

P +3 gives	S	opposite	H
16	19		8

S +4 gives	W	opposite	D
19	23		4

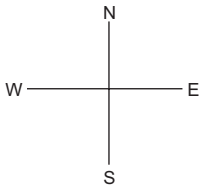
F +4 gives	J	opposite	Q
6	10		17

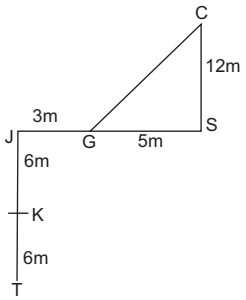
L +4 gives	p	opposite	K
12	16		11

7. Option (4) is the correct.

Explanation: Given that:

C 12 m $ S 5 m * G 3 m & J 6m % K! J T





Shortest distance: between G and C is:

$$= \sqrt{(12)^2 + (5)^2}$$

$= \sqrt{144 + 25}$

$= \sqrt{169} = 13$ m

8. Option (3) is the 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:

Vowels → +5 → Next letter

Consonant → –6 → Next letter

Now,

2	21	9	12	4	5	18
B	U	I	L	D	E	R
↓	↓	↓	↓	↓	↓	↓
–6	+5	+5	–6	–6	+5	–6
V	Z	N	F	X	J	L
22	26	14	6	24	10	12

Similarly,

16	1	18	11	9	14	7
P	A	R	K	I	N	G
↓	↓	↓	↓	↓	↓	↓
–6	+5	–6	–6	+5	–6	–6
J	F	L	E	N	H	A
10	6	12	5	14	8	1

9. Option (4) is the correct.

Explanation:

Hatchability	Hatchback	Hatchel	Hatchers	Hatchings

10. Option (1) is the correct.

Explanation: According to the BODMAS rule,

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

Given equation: $37 + 1152 \times 8 \div 768 - 47 = 22$

(4) 5 and 6

$\text{LHS} = 37 + 1{,}162 \times 8 \div 758 - 47$

$= 37 + 1{,}162 \times 0.010 - 47$

$= 37 + 12.26 - 47$

$= 49.26 - 47 = 2.26 \neq 22 \neq \text{RHS}$

(3) 4 and 5

$\text{LHS} = 37 + 1{,}142 \times 8 \div 768 - 57$

$= 37 + 1{,}142 \times 0.010 - 57$

$= 37 + 11.42 - 57$

$= 48.42 - 57 = -8.58 \neq 22 \neq \text{RHS}$

(1) 3 and 4

$\text{LHS} = 47 + 1{,}152 \times 8 \div 768 - 37$

$= 47 + 1{,}152 \times 0.010 - 37$

$= 47 + 12 - 37$

$= 59 - 37 = 22 = \text{RHS}$

(2) 2 and 3

$\text{LHS} = 27 + 1{,}152 \times 8 \div 758 - 47$

$= 27 + 1{,}152 \times 0.010 - 47$

$= 27 + 11.52 - 47$

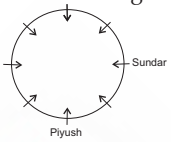
$= 38.52 - 47 = -8.48 \neq 22 \neq \text{RHS}$

Hence, the correct answer is 3 and 4

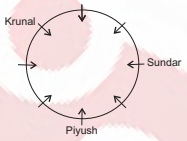
11. Option (3) is the correct.

Explanation:

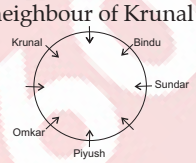
(1) Sundar sits second to the right of Piyush.



(2) Only two persons sit between Sundar and Krunal.



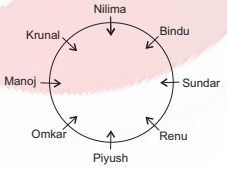
(3) Omkar sits opposite to Bindu, who is not an immediate neighbour of Krunal and Piyush.



(4) Manoj sits third to the right of Bindu.

(5) Nilima is the immediate neighbour of Krunal and Bindu.

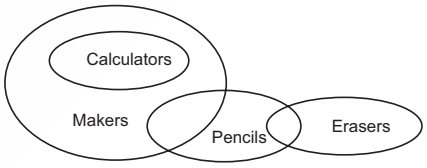
(6) Only one position left for Renu.



Nilima sits opposite the one who sits to the immediate left from Renu.

12. Option (1) is the correct.

Explanation:



(1) There is no definite relation between an eraser and a marker. Hence, there is no definite conclusion.

(2) No definite relation between pencil and calculator. Hence, no definite relation.

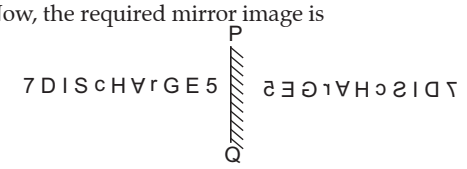
13. Option (4) is the correct.

Explanation:

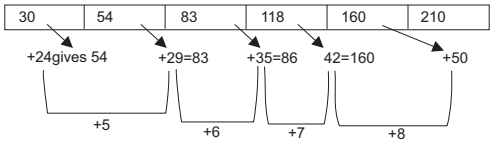
Logic:

In the mirror image, left becomes right and right becomes left.

Now, the required mirror image is



14. Option (4) is the correct.
Explanation: Given series is as follows:
30, ?, 83, 118, 160, 210



15. Option (2) is the correct.
Explanation:
28 54 32
56 8 7 65 8 18 84 ? 8
14 13 12
Logic:

28	54	32
56 8 7	65 8 18	84 ? 8
14	13	12
I	II	III

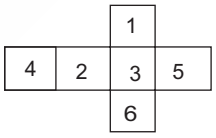
I. ⇒ 56 ÷ 14 = 4
⇒ 28 ÷ 7 = 4
⇒ Middle number = 4 + 4 = 8
Similarly,
II. ⇒ 65 ÷ 13 = 5
⇒ 54 ÷ 18 = 3
⇒ Middle number = 5 + 3 = 8
Similarly,
III. ⇒ 84 ÷ 12 = 7
⇒ 32 ÷ 8 = 4
⇒ Middle number = 7 + 4 = 11

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

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

Given series: 119 + 11 × 5 – 153 ÷ 17 = 201
(1) 119 and 153
LHS = 153 + 11 × 5 – 119 ÷ 17
= 153 + 11 × 5 – 7
= 153 + 55 – 7
= 208 – 7 = 201 = RHS
(2) 17 and 5
LHS = 119 + 11 × 17 – 153 ÷ 5
= 119 + 11 × 7 – 30.6
= 119 + 187 – 30.6
= 306 – 30.6 = 275.4 ≠ RHS
(3) 11 and 17
LHS = 119 + 17 × 5 – 153 ÷ 11
= 119 + 17 × 5 – 13.90
= 119 + 85 – 13.90
= 204 – 13.90 = 190.1 ≠ RHS
(4) 119 and 17
LHS = 17 + 11 × 5 – 153 ÷ 119
= 17 + 11 × 5 – 1.2857
= 17 + 55 – 1.2857 = 70.7143 ≠ RHS

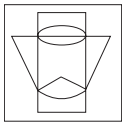
17. Option (4) is the correct.
Explanation:
Logic:
Alternate cubes are opposite faces.
Hence,



All are opposite to each otherwise.
4-3
2-5
1-6

18. Option (3) is the correct.
Explanation: Given that:
__A__GGA__GGAN__
After inserting the alphabets from option (3) we get,
GAN**G**/GA**N**/GAN**G**
Hence, it forms a meaningful series.

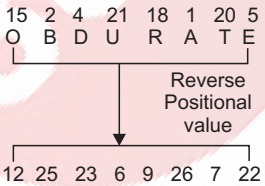
19. Option (2) is the correct.
Explanation:
Logic:
Find the embedded figure from the option figures. Hence,



20. Option (3) is the correct.
Explanation:
Table of Alphabetical series (point to remember)

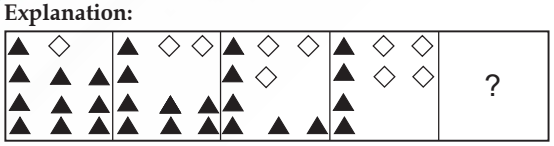
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

Now,
'G L O V E' is coded as 148
⇒ 20 + 15 + 12 + 5 + 22 = 148
Similarly,
'O B D U R A T E' is coded as

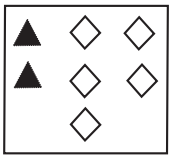


⇒ 12 + 25 + 23 + 6 + 9 + 26 + 7 + 22 = 520

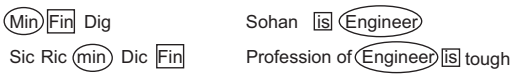
21. Option (3) is the correct.
Explanation:



Logic:
A sequential pattern is followed here in which triangles are vanishing and rhombus are occupying the place on opposite side.

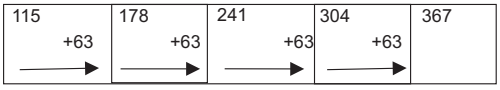


22. Option (4) is the correct.
Explanation:
Logic:



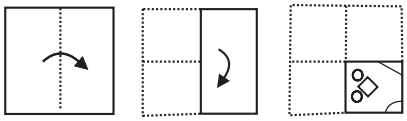
Hence, Sohan is coded is Dig.

23. Option (4) is the correct.
Explanation: Given that:
115, 178, 241, 304, ?
Logic is as follows:



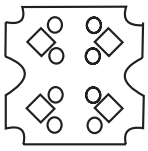
24. Option (4) is the correct.

Explanation:



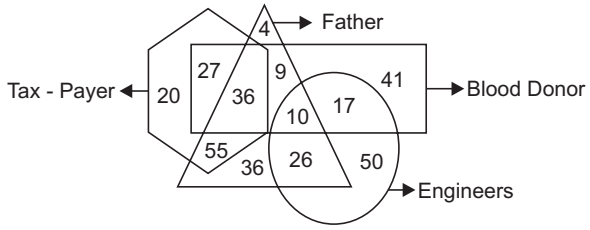
Logic:

The logic of symmetrical figure will be applied here.



25. Option (1) is the correct.

Explanation:



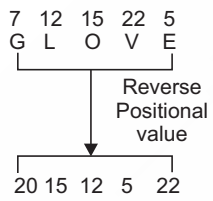
Hence, the number of tax payers who are also blood donors are=27 + 36 = 63.

General Awareness

26. Option (2) is correct.

There are two sodium atoms in one molecule of sodium peroxide. Sodium peroxide is a yellow inorganic compound with the formula Na_2O_2. So, according to the molecular formula there are two sodium atoms and oxygen atoms in the compound. It is a strong base.

27. Option (4) is correct.



Nitrogen dioxide is not a chemical coagulant used in water treatment. Coagulation of water is a process of chemical treatment to remove the solids from water. It is an important step of drinking water and wastewater treatment. It involves addition of iron or aluminium salts that are having positive charge to the water. Aluminium sulphate, ferric sulphate, ferric chloride or polymers are examples of coagulants. The positive charge on the coagulant neutralises the negative charge of the dissolved and suspended particles in water. The process of binding of these particles together is called flocculation. These particles become heavy on binding and settle to the bottom of water supply and this process is called sedimentation.

The process of coagulation successfully removes dissolved organic materials referred to as Natural Organic Matter (NOM) or Dissolved Organic Carbon (DOC). It can also remove suspended inorganic particles such as iron.

28. Option (1) is correct.

As per the theory of demographic transition, the post-transitional stage of demographic transition is characterised by low and nearly equal birth and death rates. This theory was given by American demographer Warren. S. Thompson.

This theory states that with the economic empower-ment, there is a reduction in the death rate and the five different stages of demographic transition that happen during economic development are:

First stage- This stage has high birth and high death rates which ultimately leads to a low population growth.

Second stage (Population explosion)- This stage has high birth rate and low death rates. This happens due to low socio-economic awareness.

Third stage- This stage is characterised by declining birth rate and low death rate. In this case, the population growth rate is slow.

Fourth stage- This stage is characterised by low birth rate and low death rate. This stage has population stability.

Fifth stage - In this stage, both fertility and mortality of the population falls down significantly. The population is either constant or steadily increasing.

29. Option (2) is correct.

'Sangken' is a festival of the Buddhists Communities. It is known as 'Festival of Water' and is celebrated by people of Khamti tribe of the Lohit District of Arunachal Pradesh. People gently sprinkle water on each other as a sign of respect and it is a part of cleansing ritual to welcome the New Year. During this day, the images of Lord Buddha are also bathed with holy water ceremoniously.

This festival is celebrated during April and corresponds to Sankranti of Baisakh. It is celebrated by Singpho, Khamyang, Tikhaks (Tangsa) and Phakyal community of Arunachal Pradesh.

30. Option (3) is correct.

The first and second test cricket matches (2021) between India and England held in Chennai. These were held at MA Chidambaram stadium, also known as Chepauk stadium in Chennai .

31. Option (4) is correct.

According to World Health Organisation (WHO), "Hygiene refers to conditions practices that help to maintain health and prevent the spread of diseases. The hygiene activities can be clubbed into personal, home and everyday, medical, sleep and food hygiene.

WHO is the United Nations agency are responsible for international public health and was founded on 7 April 1948. It is headquartered in Geneva, Switzerland. Its current Director General is Tedros Adhanom.

32. Option (3) is correct.

Laszlo Lovasz was honoured by the Abel Prize of 2021 in Mathematics. He along with Avi Wigderson won this prize for their foundational contributions to theoretical computer science and discrete mathematics, and their leading role in shaping them into central fields of modern mathematics.

The Abel Prize of 2022 in Mathematics was awarded to Dennis Sullivan for his groundbreaking contributions to topology in its broadest sense, and in particular its algebraic, geometric and dynamical aspects. He is an American Mathematician.

Abel Prize recognises the scientific achievements in the field of mathematics. It is awarded annually by King of Norway and is named after the Norwegian mathematician Niels Henrik Abel.

33. Option (3) is correct.

The word 'Federal' does NOT precede the word 'Republic' in the Preamble of the Constitution of India. It states that India is a Sovereign, Socialist, Secular Democratic Republic. The Preamble of Indian constitution was based on the ideals of Jawaharlal Nehru. It was adopted on 26th November 1949 and came into effect on 26 January 1950. The words 'socialist' and 'secularist' were added during the emergency by Indira Gandhi.

The term 'secular' and 'socialist' was added to the Preamble of the Indian Constitution by the 42nd Constitutional Amendment Act of 1976.

34. Option (2) is correct.

Blight is a type of plant disease which starts with chlorosis, leading to browning, and finally the death of tissue. Chlorosis is the inability of plant to produce chlorophyll. This situation is caused due to bacterial and fungal infestations. These attack the shoots and other young, rapidly growing tissues of a plant.

Botulism is a rare poisoning that is caused due to Clostridium botulinum bacteria. The bacteria attacks the nerves of the body and this is a life threatening disease.

Coccidiosis is a parasitic protozoan disease that affects intestinal tracts of animals. It is caused by coccidian protozoa. This disease spreads from one animal to another by contact with infected feces or ingestion of infected tissue.

Mastitis is the redness, pain, swelling, or infection of the breast tissue.

35. Option (2) is correct.

Atoll is a group of islands found in the tropical oceans consisting of coral reefs and a central depression. Around 440 of them are present in the Pacific Ocean.

A Guyot is an isolated underwater volcanic mountain with a flat summit or smooth top. It is also known as table mount or seamount. It is below more than 200 metres of sea level.

A lagoon is a shallow water body separated from a large water body. They are often called sounds, estuaries, bays, or lakes. Alappuzha in Kerala is famous for lagoons in India.

36. Option (2) is correct.

Right to Information Act 2005 mandates timely response to citizen requests for government information. This act came into force on 15 June 2005 and was enacted to promote transparency and accountability in the working of government. Some of the topics that are not covered under the RTI are internal security, international relations, intellectual property rights (IPR), etc. This act empowers citizens by prescribing a simple procedure and time frame for securing information. It also provides for disclosure of information exempted under the Official Secrets Act, 1923 if the larger public interest is served.

37. Option (1) is correct.

As per the Economic Survey of India 2021, SENSEX and NIFTY resulted in India's market-cap to GDP ratio crossing 100% for the first time since October 2010.

SENSEX stands for Sensitive Index. It is the index to measure the performance of market on the Bombay Stock Exchange. It picks up 30 companies on the basis of different criteria to come out with the final trend of market.

NIFTY is made up of two words National and Fifty. It is the index of National Stock Exchange (NSE). It takes into account 50 companies to determine the market trend.

The Economic Survey is an annual document prepared by the Ministry of Finance and presented by the Chief Economic Adviser of India. The 18th and current CEA of India is V Anantha Nageswaran.

38. Option (4) is correct.

Honoured with Padma Vibushan and Padma Bhushan, Kishori Amonkar was a renowned personality related to Music. Kishori Amonkar was a leading Indian classical vocalist. She belonged to Jaipur Gharana of distinctive musical style.

39. Option (4) is correct.

Plant is not abiotic. The term 'Biotic' is anything related to living organisms or life. These are plants, animals, fungi, birds, etc. Aboitic refers to non-living physical and chemical components of the ecosystem. These are water, soil, air, sunlight, and minerals.

40. Option (4) is correct.

Scorpion is an example of 'Arthropod.' Arthropod are basically invertebrate animals with jointed legs. They have a segmented body and is the largest phylum in the animal kingdom. The internal cavity of an arthropod is known as hemocoel. This phylum was created by Von Seibold in 1845. They have an open circulatory system and a chitinous exoskeleton. The respiratory organs are book gills, book lungs, or tracheal system and excretion takes place through malpighian tubules.

Arthropods lay eggs except Scorpion which give birth to the young ones.

41. Option (2) is correct.

The Economic Survey of 2020–21 mentions that India's fiscal policy should reflect Gurudev Rabindranath Tagore's sentiment of 'a mind without fear.' The theme of Economic survey was Saving Lives and Livelihood.

The Economic Survey is an annual document prepared by the Ministry of Finance and presented by the Chief Economic Adviser of India. The first Economic survey of India was presented in the year 1950–51.

42. Option (4) is correct.

Saccharomyces Cerevisiae is commonly used to make carbonated beverages. It is known as brewer's or baker's yeast. The yeast has an important role in baking, brewing, and winemaking. This yeast is derived from skin of grapes. It is a single celled fungus and is widely used because of its unique physiology and associated key roles. It is a type of budding yeast that can ferment sugar into carbon dioxide and alcohol.

Yogurt is produced by bacterial fermentation of milk. It is produced using a culture of of Lactobacillus delbrueckii subsp. bulgaricus and Streptococcus thermophilus bacteria.

43. Option (3) is correct.

Industrial Finance Corporation of India (IFCI) was the first development bank in India. It is a Development Finance Institution (DFI) which was established in the year 1948. It is a statutory corporation under the Union Ministry of Finance. It is registered as a Systemically Important Non-Deposit taking Non-Banking Finance Company (NBFC-ND-SI) and is also a notified Public Financial Institution under the Companies Act, 2013.

National Housing Bank is the apex financial institution for housing in India. It was established on 9 July 1988 and is headquartered in New Delhi.

Export Import Bank of India was established by the Government of India in the year 1982. It provides finances and line of credit to the exporters and importers in India. It also promotes foreign trade in India.

Industrial Development Bank of India was established in the year 1964. It is owned by LIC and the Government of India and is headquartered in Mumbai.

44. Option (1) is correct.

Alladi Krishnaswami Ayyar was the chairman of the Credential Committee of the of India. The different members of the committee and their head are:

Order of Business Committee- KM Munshi

Union Powers Committee - Jawaharlal Nehru

Fundamental Rights Sub-Committee-J.B. Kripalani

The Constituent Assembly was elected by the Provincial Assembly to frame the Constitution of India and this idea was first proposed by M. N. Roy in December 1934. The members of this assembly served as the nation's first Parliament as the 'Provisional Parliament of India'. The constituent assembly was formed on 9 December 1946 under the leadership of Rajendra Prasad with a total of 389 members. A total of 22 committees were created to deal with different tasks of constitution-making. Dr. B R Ambedkar is the chief architect of the Constitution of India.

45. Option (4) is correct.

Partition of Bengal occurred before 1919. The first Partition of Bengal occurred happened on 16 October 1905. It was announced on 19 July 1905 by the then Viceroy of India-Lord Curzon. This was done as British considered Bengal as a large province to be singly administered. The partition led to the division into West and East Bengal, where west Bengal was a Hindu majority and east Bengal was a muslim majority region. The West Bengal, Odisha and Bihar were a part of Western region and the Eastern region included Assam and East Bengal. However, Hindus opposed the division while it was favoured by the Muslims.

This decision was reversed by King George V at Delhi Durbar on 12 December 1911.

46. Option (4) is correct.

William Hawkins met Emperor Jahangir as a representative of the English East India Company. He was the commander of Hector, an East India company's ship. It was the first English ship to anchor at Surat. He was an envoy in the court of the Mughal Emperor Jahangir for two years and was sent to obtain formal permission to establish an English factory in Surat. Though Hawkins was unable to get the consent and this task was accomplished by Sir Tomas Roe, who was an ambassador sent by King James I.

Jahangir was the fourth Mughal emperor and was named after the Indian Sufi saint, Salim Chishti . His actual name was Nur-ud-Din Muhammad Salim. He was the son of Akbar with a Rajput wife.

47. Option (2) is correct.

S Hareesh won the 2020 JCB Prize for Literature. He is a Malayalam writer and won a prize money of ₹ 25 lakhs for his novel Moustache. It is an Indian literary award provided for the work of fiction to an Indian writer.

48. Option (1) is correct.

Shehnai is also known as a 'Mangal Vadya.' It is a musical reed instrument with seven holes in a wooden tube. It is played by opening and closing holes with the fingers. It is played on all auspicious occasions in North India. Reed instruments have one or two reeds inserted in the hollow tube of the instrument. These vibrate when air is blown into them. Some of the most notable shenanigans players are Ustad Bismillah Khan, Pt. Anant Lal, and Pt. Daya Shankar.

49. Option (3) is correct.

Maharashtra won the maximum number of medals at the Khelo India Youth Games 2020. Khelo India Youth Games are the national level games conducted annually under-17 years school students and under-21 college students.

The Khelo Indian Youth Games 2021 was won by Haryana.

50. Option (1) is correct.

Rishi Jamini wrote the 'Mimamsa-sutras.' It is also known as Purva Mimamsa Sutras and is one of the most important ancient Hindu philosophical texts. It is divided into twelve adhyayas or chapters. It is one of the most important Hindu Philosophical texts.

Charaka Samhita is one of the foundational texts of Ayurveda written in Sanskrit language. The book is based on the Agnivesha Samhita and was revised and renamed by Charaka.

Badarayana wrote the Brahma Sutras, which was the source text for the Hindu philosophical school of Vedanta.

Panini wrote the book Ashtadhyayi that describes a form of an early Indo Aryan language: Sanskrit.

Quantitative Aptitude

51. Option (4) is correct.

Given that: $x + y + z = 7$

$xy + yz + zx = 8$

Since we know that,

$a^3 + b^3 + c^3 - 3abc = (a + b + c)[(a + b + c)^2 - 3(ab + bc + ac)]$

Putting the given values in the above formula we get,

$x^3 + y^3 + z^3 - 3xyz = 7 \times (7^2 - 3 \times 8) = 7 \times (49 - 24)$

$= 7 \times 25 = 175$

So, the value of $x^3 + y^3 + z^3 - 3xyz$ is 175.

52. Option (3) is correct.

Given that, Sum, P = ₹ 18,000

Amount, A = ₹ 21,780

Time, t = 2 years

$$A = P\left(1+\frac{r}{100}\right)^t$$

And $$I = P\left(1+\frac{r}{100}\right)^t - P$$

Here, A = amount,

P = principal and sum

r = rate

t = time

I = interest

Let us assume that rate of interest be r

$$21,780 = 18,000\left(1+\frac{r}{100}\right)^2$$

$$\Rightarrow \frac{21,780}{18,000} = \left(1+\frac{r}{100}\right)^2$$

$$\Rightarrow \frac{1,089}{900} = \left(1+\frac{r}{100}\right)^2$$

$$\Rightarrow \left(\frac{33}{30}\right)^2 = \left(1+\frac{r}{100}\right)^2$$

$$\frac{33}{30} = \left(1+\frac{r}{100}\right)$$

$$\Rightarrow \frac{33}{30} = \left[\frac{100+r}{100}\right]$$

$$\Rightarrow 3,300 = 3,000 + 30r$$

$$30r = 300$$

$$\Rightarrow r = \frac{300}{30}$$

$$\Rightarrow r = 10$$

So, rate of interest = 10%

New rate = 15%

Now, $$I = 18,000\left(1+\frac{15}{100}\right)^2 - 18,000$$

$$= 18,000\left(1+\frac{3}{20}\right)^2 - 18,000$$

$$= 18,000\left[\frac{20+3}{20}\right]^2 - 18,000$$

$$= 18,000\left(\frac{23}{20}\right)^2 - 18,000$$

$$= 18,000 \times \left(\frac{529}{400}\right) - 18,000$$

$$I = 23,805 - 18,000$$

$$\Rightarrow I = 5,805$$

So,interest earned for the new rate of interest

= ₹ 5,805

53. Option (1) is correct.

Given that: A invested 30% more than B

B invested 40% less than C

Investment of C = ₹ 8,000

We know that,

$$\text{Average} = \frac{\text{Sum of elements}}{\text{No. of elements}}$$

Investment of B = 8,000 – 8,000 × 40% = ₹ 4,800

Investment of A = 4,800 + 4,800 × 30% = ₹ 6,240

Total investment by all three

= 6,240+ 4,800 + 8,000 = ₹ 19,040

Average of the investment of them

$$= \frac{19,040}{3} = ₹\ 6,346.67 \sim ₹\ 6,347$$

So, average of the total amount invested by A, B & C together is ₹ 6,347.

54. Option (4) is correct.

Given that, $a^3 + b^3 = 218$ and $a + b = 2$

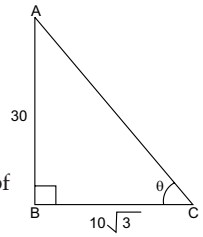
Since, $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

$$2^3 = 218 + 3 \times ab \times 2$$
$$\Rightarrow \quad 8 = 218 + 6ab$$
$$\Rightarrow \quad -\frac{210}{6} = ab$$
$$\Rightarrow \quad ab = -35$$
Now, $\sqrt{1-ab} = \sqrt{1-(-35)} = \sqrt{36} = 6$

55. Option (2) is correct.
Given that in question,
Side of cube = 7 cm
We know that, Volume of a cube = a^3
Volume of a sphere = $\left(\frac{4}{3}\right)\pi r^3$
a = side of the cube
r = radius of the sphere
Let u assume that radius of the sphere be x cm
According to the question,
$$a^3 - \left(\frac{4}{3}\right)\pi r^3 = 163\frac{1}{3}$$
$$\Rightarrow \quad 7^3 - \frac{4}{3}\pi r^3 = \frac{490}{3}$$
$$\Rightarrow \quad 343 - \frac{490}{3} = \frac{4}{3}\pi r^3$$
$$\Rightarrow \quad 539 = 4\pi r^3$$
$$\Rightarrow \quad r^3 = \frac{536 \times 7}{22 \times 4}$$
$$\Rightarrow \quad r^3 = 42.875$$
$$\Rightarrow \quad r = 3.5 \text{ cm}$$
Therefore, the diameter of sphere = 3.5 × 2 = 7 cm

56. Option (3) is correct.
Given that, A takes 3 hours more than B to walk a distance of 'd' km.
If A doubles his speed, then he can make it in 1 hour less than B for same distance.
Let the speed of the A be a and B be b
According to the problem,
$$\left(\frac{d}{a}\right) - \left(\frac{d}{b}\right) = 3 \qquad ...(1)$$
Again,
$$\left(\frac{d}{b}\right) - \left(\frac{d}{2a}\right) = 1 \qquad ...(2)$$
On adding eq. (1) and eq. (2) we get,
$$\frac{d}{2a} = 4$$
$$\Rightarrow \quad \frac{d}{a} = 4 \times 2 = 8$$
Therefore, it will take 8 hours by A to cover the distance d.

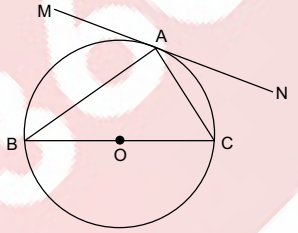
57. Option (1) is correct.
The length of the shadow of tree is $\frac{10}{\sqrt{3}}$ m.
Height of tree is 30 m.
Let us assume that AB be the height of the tree and BC be the length of the shadow.
Let the angle of elevation of the sun be θ.
In the given triangle,
$$\tan\theta = \frac{AB}{BC}$$
$$\Rightarrow \quad \tan\theta = \frac{30}{\frac{10}{\sqrt{3}}}$$
$$\Rightarrow \quad \tan\theta = \frac{3}{\sqrt{3}}$$
$$\Rightarrow \quad \tan\theta = \sqrt{3}$$
$$\Rightarrow \quad \tan\theta = \tan 60°$$
So, $\theta = 60°$
The angle (in degrees) of elevation of the sun is 60°.



58. Option (2) is correct.
Given that:
M.P. of the item = ₹ 400
Discount % for 1st time and 2nd time = 10%
We know that, SP = MP – (MP × Discount%)
Price after 1st discount = 400 – (400 × 10%) = ₹ 360
Price after 2nd discount
= 360 – (360 × 10%) = ₹ 324
The C.P. of the customers after two discounts is ₹ 324

59. Option (4) is correct.
Let the C.P. of the article = ₹ x
And profit & loss = ₹ y
According to question,
$$832 - y = 448 + y$$
$$\Rightarrow \quad y = ₹\,192$$
So, the C.P. = x = 640
$$\text{S.P. at 10\% Profit} = \frac{110}{100} \times 640 = ₹\,704$$

60. Option (2) is correct.



Since, angle between chord and tangent is equal to angle in alternate segment.
According to above theorem,
$\angle BAC = 90°$ (angle by diameter)
So, $\angle BCA = 180° - 42° - 90° = 48°$
Now, according to the concept,
$\angle MAB = \angle BCA$
So, $\angle MAB = 48°$

61. Option (2) is correct.
Total number of students in both the years
= 2,000 + 2,400 = 4,400
Number of students studying humanities in 2019 & 2020
$$= \frac{21}{100} \times 2{,}000 + \frac{19}{100} \times 2{,}400 = 876$$
Percentage required = $\frac{876}{4{,}400} \times 100$ = 19.90% (approx.)

62. Option (1) is correct.
Let the second number is = x
So, the first number = $3x$
and the third number = $\frac{4}{3}x$
Average of three numbers = $\frac{x + 3x + \frac{4}{3}x}{3} = \frac{16}{9}x$
According to question,
$$\frac{16}{9}x = 112$$
$$\Rightarrow \quad x = 63$$
Clearly, smallest number is = x = 63

63. Option (2) is correct.

Let the capital at the start is $=100a$

After first year, his capital

$= 100a + 100a \times 60\% = 160a$

After donation, his capital

$= 160a - 160a \times 50\% = 80a$

After second year, his capital

$= 80a + 80a \times 60\% = 128a$

After donating, his capital

$= 128a - 128a \times 50\% = 64a$

After third year, his capital

$= 64a + 64a \times 60\% = 102.4aa$

After donating, his capital

$= 102.4a - 102.4a \times 50\% = 51.2a$

As per the problem $51.2a = ₹\ 15{,}360$

$\Rightarrow \quad a = 300$

$\Rightarrow \quad 100a = 300 \times 100 = ₹\ 30{,}000$

So, his capital at the starting was ₹ 30,000

64. Option (4) is correct.

Total export of Car-A in 2016 & 2018

$= 275 + 300 = 575$

Total export of Car-B in 2014 & 2017

$= 225 + 275 = 500$

Required ratio $= \dfrac{575}{500} = 23:20$

65. Option (1) is correct.

% change in the no. of cars between 6 a.m. & 7 a.m.

$$= \frac{105-70}{70} \times 100\% = 50\%$$

% in the no. of cars between 7 a.m. & 8 a.m.

$$= \frac{(130-105)}{105} \times 100\% = 23.8\%$$

% change in the no. of cars between 8 a.m. & 9 a.m.

$$= \frac{115-130}{130} \times 100\% = -11.54\%$$

% change in the no. of cars between 10 a.m. & 11 a.m.

$$\frac{95-115}{115} \times 100\% = -17.39\%$$

% change in the no. of cars between 11 a.m. & 12 a.m.

$$\frac{45-95}{95} \times 100\% = -52.63\%$$

(–ve sign indicates % decrease)

So maximum change percentage in the no. of cars in comparison to the previous hour is 52.63%.

66. Option (3) is correct.

Given that $A = 60°$

$$\frac{10\sin\frac{A}{2} + 8\cos A}{7\sin\frac{3A}{2} - 12\cos A} = \frac{10\sin\frac{60°}{2} + 8\cos 60°}{7\sin\frac{3\times 60°}{2} - 12\cos 60°}$$

$$= \frac{10\times\sin 30° + 8\cos 60°}{7\sin 90° - 12\cos 60°} = \frac{10\times\frac{1}{2} + 8\times\frac{1}{2}}{7\times 1 - 12\times\frac{1}{2}}$$

$$= \frac{5+4}{7-6} = \frac{9}{1} = 9$$

67. Option (1) is correct.

Given that, $3\sin^2\theta + 4\cos\theta - 4 = 0;\ 0° < \theta < 90°$

$3\sin^2\theta + 4\cos\theta - 4 = 0$

$\Rightarrow \quad 3(1 - \cos^2\theta) + 4\cos\theta - 4 = 0$

$\Rightarrow \quad 3 - 3\cos^2\theta + 4\cos\theta - 4 = 0$

$\Rightarrow \quad 3\cos^2\theta - 4\cos\theta + 1 = 0$

$\Rightarrow \quad 3\cos^2\theta - 3\cos\theta - \cos\theta + 1 = 0$

$\Rightarrow \quad (3\cos\theta - 1)(\cos\theta - 1) = 0$

$\Rightarrow \quad \cos\theta = 1 \text{ or } \cos\theta = \dfrac{1}{3}$

Since, $0° < \theta < 90°$

So, $\quad \theta \neq 0°$

$\Rightarrow \quad \cos\theta = \dfrac{1}{3}$

Now, $(\text{cosec}^2\theta + \cot^2\theta)$

$$= \left(\frac{1}{\sin^2\theta} + \frac{\cos^2\theta}{\sin^2\theta}\right) = \left(\frac{1+\cos^2\theta}{\sin^2\theta}\right) = \frac{1+\cos^2\theta}{1-\cos^2\theta} = \frac{1+\left(\frac{1}{3}\right)^2}{1-\left(\frac{1}{3}\right)^2}$$

$$= \frac{1+\frac{1}{9}}{1-\frac{1}{9}} = \frac{10}{8} = \frac{5}{4}$$

68. Option (2) is correct.

The given ratio of the 3 numbers is 3 : 8 : 15

Let us assume that the 3 numbers be $3x$, $8x$, and $15x$

Here, x is their HCF

LCM of $3x$, $8x$, and $15x = 120x$

As per the question,

$120x = 8{,}280$

$\Rightarrow \quad x = \dfrac{8{,}280}{120}$

$\Rightarrow \quad x = 69$

Therefore, the HCF of the numbers is 69.

69. Option (2) is correct.

According to the given data,

Total sales of potatoes, tomatoes and beans

$= 80 + 70 + 45 = 195$

Total sales of onions, others $= 90 + 75 = 165$

So, the required ratio of them $= 195 : 165 = 13 : 11$

70. Option (3) is correct.

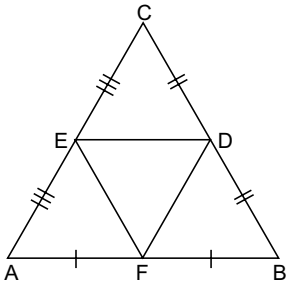
Given that, $\dfrac{\left[\frac{3}{8} - \left\{\frac{3}{8} - \left(\frac{5}{8} - \frac{3}{8}\right)\right\}\right] \text{ of } 4.8 - 0.9}{4\frac{1}{6} \div 2.5 \times 0.2 \div \frac{1}{5} \text{ of } 50 + \left(\frac{3}{4} - \frac{1}{8}\right)}$

$$= \frac{\left[\frac{3}{8} - \left\{\frac{3}{8} - \frac{2}{8}\right\}\right] \text{ of } 4.8 - 0.9}{\left(\frac{25}{6} \times \frac{10}{25}\right) \times \left(\frac{2}{10} \times \frac{1}{10}\right) + \left(\frac{5}{8}\right)} = \frac{36}{79}$$

71. Option (3) is correct.

Given that, BC = 14.4 cm, AB = 12.4 cm & CA = 15.2 cm

As per the given data, we can draw the figure



F and E are the mid-point of AB and AC

So, according to the question,

$FE = \left(\dfrac{BC}{2}\right)$

Similarly,

$DE = \left(\frac{AB}{2}\right)$ and $FD = \left(\frac{AC}{2}\right)$

Now,

Perimeter of $\Delta DEF = DE + FE + FD$

$\Rightarrow \left(\frac{BC}{2}\right)+\left(\frac{AB}{2}\right)+\left(\frac{AC}{2}\right)$

$\Rightarrow \frac{1}{2}(BC + AB + AC)$

$\Rightarrow \frac{1}{2}(14.4 + 12.4 + 15.2)$

$\Rightarrow \frac{1}{2}(42) = 21$

So, the perimeter of the ΔDEF is 21 cm.

72. Option (1) is correct.

14 men can complete a task in 15 days

We know that

$$M_1 \times D_1 = M_2 \times D_2$$

Here,

M_1 = People at the 1st case

D_1 = Time at the 1st case

M_2 = People at the 2nd case

D_2 = Time at the 2nd case

As per the question,

$M_1 = 14$

$D_1 = 15$

$M_2 = 21$

Let D_2 be y

So, $14 \times 15 = 21 \times y$

$\Rightarrow 210 = 21y$

$\Rightarrow y = \frac{210}{21}$

$\Rightarrow y = 10$

So, $D_2 = 10$ days

73. Option (3) is correct.

Given that: RS = 48 cm

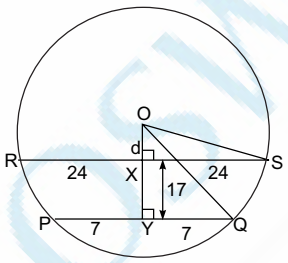
PQ = 14 cm

O is the centre

We know that,

Perpendicular from the center of a circle to a chord bisects the chord.

As per the given data we will draw the figure,



Since, $OX \perp RS$ and $OY \perp PQ$

Let us assume that OX be d

And XY = 17 cm

Therefore, OY = (d + 17)

Applying Pythagoras theorem in ΔOXS

$OS^2 = OX^2 + XS^2$

$\Rightarrow OS^2 = d^2 + 24^2$

Again,

In ΔOYQ

$OQ^2 = OY^2 + YQ^2$

$OQ^2 = (d+17)^2 + 7^2$

Now, $d^2 + 24^2 = (d + 17)^2 + 7^2$

[Since, OS = OQ = radius of the circle]

$d^2 + 576 = d^2 + 17^2 + 2 \times d \times 17 + 49$

$\Rightarrow 576 = 289 + 34d + 49$

$34d = 576 - 289 - 49 = 238$

$\Rightarrow 34d = 238$

$\Rightarrow d = \frac{238}{34}$

$\Rightarrow d = 7$

Now, $OS^2 = 7^2 + 24^2$

$OS^2 = 49 + 576 = 625$

$\Rightarrow$ OS = 25 cm

The radius of the circle is 25 cm.

74. Option (3) is correct.

Since we know that the ratio of the areas of two similar triangles is equal to the ratio of the squares of the corresponding sides.

$$\frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \frac{AB^2}{PQ^2} = \frac{AB^2}{14.4^2}$$

$$\frac{121}{64} = \frac{AB^2}{14.4^2}$$

Taking square root of both sides

$\Rightarrow \frac{11}{8} = \frac{AB}{14.4}$

$\Rightarrow AB = \frac{11 \times 14.4}{8} = 19.8$

75. Option (4) is correct.

Two nos. 5^{16} and 5^{25} are divided by 6, the remainders are R_1 & R_2 respectively.

We know that,

If a number in the form of $(b-1)^n$ is divided by b

Then,

Remainder = 1 ; if n is an even number

Remainder = $(b-1)$; if n is an odd number

$5^{16} = (6-1)^{16}$

So, remainder $= \frac{(6-1)^{16}}{6} = 1$ i.e., R_1

$5^{25} = (6-1)^{25}$

So, remainder $= \frac{(6-1)^{25}}{6} = (6-1) = 5$ i.e., R_2

Now, $\frac{R_1 + R_2}{R_2} = \frac{1+5}{5} = \frac{6}{5}$

So, the required solution is $\frac{6}{5}$.

English Comprehension

76. Option (1) is correct.

Explanation: The meaning of "altercation" is "heated argument." The words 'quarrel' 'controversy' and 'argument' are the synonyms of the word conflict and hence considered associated words. The antonym of "altercation" is "agreement."

77. Option (4) is correct.

Explanation: This question checks a student's ability to understand idiomatic expression. The correct idiomatic expression is "to the best of one's ability." Hence, the error is in part (4), which says "at the best of her ability."

78. Option (2) is correct.

Explanation: "Obstruct" means "block (an opening, path, road, etc.); be or get in the way of". Example: "She was obstructing the entrance." Hence, the correct answer is option (2). Approve and permit are antonyms of obstruct.

79. Option (2) is correct.

Explanation: In indirect speech, where reported speech is kept in an assertive form, question words like what, why, where,

etc. work only as conjunctions, and the remaining sentence is written in normal form (subject + verb). When the reporting verb in direct speech is in the past tense, then the verbs to be reported will be changed to the corresponding past tense in indirect speech. In the given sentence, the reporting verb is in the past tense. So, the the verb to be reported will be converted into the past tense in reported speech.

80. Option (3) is correct.

Explanation: A fixed paid sum annually is called an "annuity." Hence, option (3) is the correct answer. The remaining words are defined as follows: "bonus" is "a sum of money added to a person's wages as a reward for good performance." "Honorarium" means "a payment given for professional services that are rendered nominally without charge." "Alimony" is "financial support that a person is ordered by a court to give to their spouse during separation."

81. Option (3) is correct.

Explanation: The sentence is grammatically correct. Hence, no correction is required.

82. Option (1) is correct.

Explanation: 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 to 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 present tense and is in the active voice. Hence, the passive form will be in the present tense only.

83. Option (4) is correct.

Explanation: This question checks a student's knowledge of idioms and phrases. "A greenhorn" means "an inexperienced amateur." Hence, the correct answer is option (4). The rest of the three options are antonyms of the given idiom.

84. Option (1) is correct.

Explanation: The error is in the expression "carry milk." The given sentence has two clauses: a main clause and a subordinate clause. The subordinate clause, i.e., the before clause, has the verb "returned," which is a transitive verb. Hence, "returned" needs an object after it. "Carry" is a verb, so it cannot be used after being returned. Thus, change "carry" to the participle form "carrying."

85. Option (4) is correct.

Explanation: The error is in part (4). "Since" is used to refer to a point in time, and "for" is used to refer to the duration of time. In the given sentence, the time duration of "two days" is mentioned. Hence, "for" should be used in place of "since."

86. Option (1) is correct.

Explanation: This question checks a student's knowledge of idioms and phrases. "To have sticky fingers" means to have a tendency or inclination to steal things. Example: I think the new cashier we hired has sticky fingers, because money has begun disappearing from the till on the days that he is working.

87. Option (3) is correct.

Explanation: The error is in part (3). The expression "one of the" is followed by a plural noun and a singular verb. Hence, the sentence should be: "The Taj Mahal is one of the most beautiful creations in the world."

88. Option (1) is correct.

Explanation: A person who travels on foot is known as a "pedestrian." Hence, option (1) is the correct answer. The rest of the words are:

Rover: a person who spends his time wandering. Example: "They became rovers who departed further and further from civilisation."

Dweller: a person or animal that lives in or at a specified place. Example: "The majority of urban dwellers live in small apartments."

Flyer: a person or thing that flies. Example: Frequent flyers are given heavy discounts by all the airlines.

89. Option (1) is correct.

Explanation: "Spacious" means "full of space, roomy." The opposite of spacious is cramped.

90. Option (3) is correct.

Explanation: We often use question tags when we expect the listener to agree with our statement. In this case, when the statement is positive, we use a negative question tag. Question tags are formed with the auxiliary or modal verb from the statement and the appropriate subject. The auxiliary, or verb to be, of the statement matches the verb of the question tag. Example: Jack is from Spain, isn't he? But some verbs and expressions have different question tags.

I am - I am attractive, aren't I?

Positive imperative: Stop daydreaming, will / won't you?

Negative imperative: Don't stop singing, will you?

Let's - Let's go to the beach, shall we?

Since "I am" appears in the given statement, the question tag will be "aren't I?"

91. Option (4) is correct.

Explanation: The incorrectly spelled word is "exhast". The correct spelling is "exhaust."

92. Option (1) is correct.

Explanation: Statement "A" cannot be the opening statement because it states "it also," which means there should be some antecedent to this statement. Hence, option (2) and option (4) are eliminated. The paragraph is about "mid-day meal," and this is introduced in the statement "B." Hence, "B" will be the obvious opener. "B" will be followed by "C," because it refers to the mid-day meal mentioned in statement 'B'. This combination is present only in option (1). As a result, option (1) is the correct answer.

93. Option (4) is correct.

Explanation: 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 present tense and is in the active voice. The passive voice of the given sentence is in option (4).

94. Option (2) is correct.

Explanation: "Commute" means "to change one thing into another, and to travel from one place to another." Example: People used to believe that you could commute base metals into gold. Hence, the correct synonym of "commute" is "convert."

95. Option (1) is correct.

Explanation: The sentence is structured using past tense. The correct idiomatic expression is "used to." Hence, the error is in the part "people use to think." It should be "people used to think."

96. Option (3) is correct.

Explanation: When two words are connected with the conjunction "and," they should have a similar tone. Here the blank needs a negative word because the next word connected with the conjunction "and" is a negative word, i.e., "confusion." The only negative word given in the option is "uncertainty."

97. Option (4) is correct.

Explanation: The sentence is in assertive form. The sentence should be in simple present tense.

98. Option (1) is correct.

Explanation: According to the sentence, everyone wants to fulfil one's own desires without considering others. Consideration is the best fit to fill in the blank in this context.

99. Option (2) is correct.

Explanation: Because the preceding sentence discusses people's desires to fulfil desires without regard for the interests of others, the next line talks about this characteristic. The best word to fill the blank is "selfish."

100. Option (1) is correct.

Explanation: The passage talks about a man's desire to achieve things without considering others' inconvenience. And in this process, a man loses his objective of attaining happiness. The next line says that because of this, there are a lot of disagreements in our lives. In this context, "strife" is the best fit in the blank.