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

General Intelligence and Reasoning

1. In the following question, select the related word from the given alternatives.
   Pressure : Barometer : : ? : Odometer
   1. Humidity   **2.** Distance   **3.** Thickness   **4.** Wind

2. In the following question, select the related letters from the given alternatives.
   AEDM : ZQRN : : FLMO : ?.
   1. BZYS   **2.** CZYS   **3.** SZYB   **4.** YZBC

3. In the following question, select the related number from the given alternatives.
   243 : 578 : : 163 : ?
   1. 291   **2.** 326   **3.** 347   **4.** 443

4. In the following question, select the odd word from the given alternatives.
   1. Flower   **2.** Fruit   **3.** Leaves   **4.** Root

5. In the following question, select the odd letters from the given alternatives.
   1. CEAC   **2.** FHDF   **3.** PRMP   **4.** TVRT

6. In the following question, select the odd number pair from the given alternatives.
   1. 2132 – 161   **2.** 2678 – 672 **3.** 4325 – 120   **4.** 6931 – 162

7. Arrange the given words in the sequence as they occur in the dictionary.
   1. Dillydallying   **2.** Dillydallied
   3. Dillydally   **4.** Dilled
   5. Dillydallies
   1. 42351   **2.** 42531   **3.** 45312   **4.** 45321

8. In the following question, which one set of letters when sequentially placed in the gaps in the given letter series shall complete it?
   l m _ o _ n m _ l _ n _ _ n m l
   1. molnon   **2.** nolmoo   **3.** nomloo   **4.** noolmm

9. In the following question, select the missing number from the given series.
   21, 25, 52, 68, 193, ?
   1. 229   **2.** 242   **3.** 257   **4.** 409

10. Kamal starts walking from his home facing west direction. After walking 10 km, he takes a right turn and walks another 10 km. He takes another right turn and walks 10 km to reach his school. How far (in km) and in which direction is he from his home?
    1. 10, North   **2.** 10, South
    3. 20, North-East   **4.** 20, South-West

11. In a class, P has more marks than Q and R does not have the least marks. S has more marks than T and T has more marks than P. Who among them will have the least marks?
    1. P   **2.** Q   **3.** S   **4.** T

12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
    RECIPROCATE
    1. PROCEED **2.** RACE   **3.** REPEAT   **4.** TEAR

13. In a certain code language, "CASIO" is written as "3119915". How is "CITIZEN" written in that code language?.
    1. 295629134   **2.** 3192295614 **3.** 39126592144 **4.** 3920926514
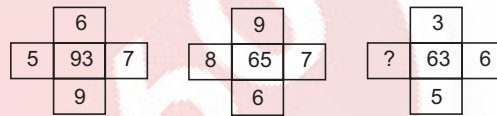
14. In the following question, correct the equation by interchanging the two signs.
    6 ÷ 17 x 51 + 6 – 12 = – 4
    1. x and ÷   **2.** + and ÷   **3.** + and –   **4.** – and ÷

15. If 6 * 9 – 4 = 58 and 3 * 9 – 7 = 34, then in the expression A * 4 – 9 = 91, what is the value of 'A'?
    1. 6.5   **2.** 17.5   **3.** 20.5   **4.** 30.5

16. In the following question, select the number which can be put in place of question mark(?) from the given alternatives.

6			9			3	
5	93	7	8	65	7	?	63	6
9			6			5	

    1. 4   **2.** 6   **3.** 8   **4.** 16

17. How many triangles are there in the given figure ?
    1. 4   **2.** 5
    3. 6   **4.** 7

18. In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusions logically follows the given statements.
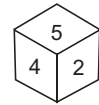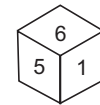   **Statements:**
    I. Some staplers are pins.
    II. All pins are markers.
    Conclusions:
    I. Some staplers are markers.
    II. All markers are pins.
    1. Only conclusion (I) follows.
    2. Only conclusion (II) follows.
    3. Neither conclusion (I) nor conclusion (II) follows.
    4. Both conclusions follow.

19. Two positions of a cube are shown below. What will come opposite to the face containing '4'?
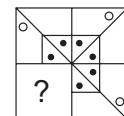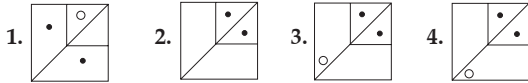   **1.** 1   **2.** 2   **3.** 3   **4.** 6

20. Identify the diagram that best represents the relationship among the given classes.
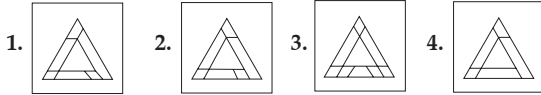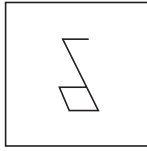   Green, Mango, Fruits
    1.   **2.**   **3.**   **4.**

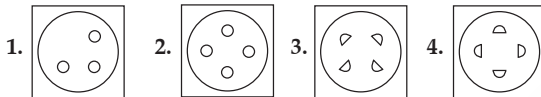21. Which of the following figure in the options will complete the pattern of the given figure?
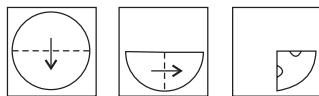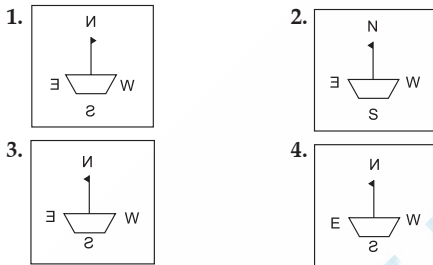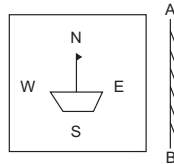
22. From the following figures in the options, select the one in which the given figure is hidden/embedded.

23. A piece of paper is folded and punched as shown below in the figures. From the given option figure, indicates how it will appear when opened?

24. If a mirror placed on the line AB, then which of the option figure is the right image of the given figure?

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'A' can be represented by 20, 43, etc, and 'U' can be represented by 68, 87, etc. Similarly, you have to identify the set for the word "GUIDE"

Matrix - I					
	0	1	2	3	4
0	G	L	A	R	E
1	L	A	R	E	G
2	A	R	E	G	L
3	R	E	G	L	A
4	E	G	L	A	R

Matrix - II					
	5	6	7	8	9
5	B	U	I	L	D
6	L	D	B	U	I
7	U	I	L	D	B
8	D	B	U	I	L
9	I	L	D	B	U

1. 00, 68, 95, 58, 04
2. 14, 75, 88, 87, 40
3. 23, 99, 76, 78, 31
4. 41, 87, 57, 66, 12

General Awareness

26. In which market form, a market or industry is dominated by a few firms?
  1. Perfect Competition   **2.** Monopoly
  3. Oligopoly   **4.** Monopolistic

27. Which amongst the following is not a component of monetary policy in India?
  1. Repo rate   **2.** Moral suasion
  3. Credit Rationing   **4.** Public Debt

28. Who among the following is not a member of any of the two houses of our country?
  1. Prime Minister   **2.** Finance Minister
  3. President   **4.** Railway Minister

29. Which article of the Indian Constitution has the provision for National Emergency?
  1. Article 350   **2.** Article 352
  3. Article 312   **4.** Article 280

30. Who led the Bardoli Satyagraha movement?
  1. Mahatma Gandhi   **2.** Rabindranath Tagore
  3. Sardar Vallabhbhai Patel   **4.** Chittaranjan Das

31. . Who is known as the 'Father of Indian Unrest'?
  1. Anant Singh   **2.** Bal Gangadhar Tilak
  3. Bhagat Singh   **4.** Dadabhai Naoroji.

32. Which of the following region is covered by tropical evergreen forest?
  1. Eastern Ghat   **2.** Vindhyanchal
  3. Aravalli   **4.** . Western Ghat

33. The final boundary between the Earth and the outer space is called _____.
  1. magnetosphere   **2.** ionosphere
  3. mesopause   **4.** magnetopause

34. What is the name of the hormone produced by the thymus gland?
  1. Thyroxine   **2.** Auxins   **3.** Cytokinins   **4.** Thymosin

35. Photosynthesis takes place in the presence of chlorophyll and _____.
  1. water   **2.** nutrients
  3. carbon-dioxide   **4.** sunlight

36. Which blood group is a universal acceptor?
  1. O+   **2.** O–   **3.** AB   **4.** AB+

37. If objects appear enlarged and inverted in a rear view mirror, then which type of mirror is used?
  1. Concave   **2.** Convex   **3.** Cylindrical   **4.** Plane

38. Soap bubble attains spherical shape due to _____.
  1. inertia   **2.** pressure
  3. surface tension   **4.** viscosity

39. CAD stands for _____.
  1. Common Aided Design   **2.** Computer Aided Design
  3. Complex Aided Design
  4. Communication Aided Design

40. Which of the following is a characteristic of an exothermic reaction?
  1. Release of heat   **2.** Absorption of heat
  3. Does not involve any change in temperature
  4. None of the above

41. What is the chemical formula for Sodium Chloride (Salt)?
  1. $NaCl_2$ **2.** $NaCl$ **3.** Na_2Cl **4.** Na_2C

42. Which of the following gas contributes the maximum to the phenomena of global warming?
  1. Methane   **2.** Chlorofluorocarbon (CFC)
  3. Nitrogen dioxide   **4.** Carbon dioxide

43. Who selects the Social Audit Committee under MGNREGA scheme?
  1. Chief Minister   **2.** Gram Sabha
  3. Mayor   **4.** B.D.O.

44. Which of the following was invented by Sir Humphrey Davy?
  1. Safety Pin   **2.** Steam Engine
  3. Safety Lamp   **4.** X-Rays

45. Who won the 2016 Men's Single title at the US Open?
  1. Novak Djokovic   **2.** Rafael Nadal
  3. Stan Wawrinka   **4.** Andy Murray

46. Match the following:
  Dancer   Dance
  1. Radha Reddy   a. Bharatnatyam
  2. Padma Subrahmanyam   b. Kathak
  3. Sitara Devi   c. Kuchipudi
  1. 1-b, 2-a, 3-c   **2.** 1-c, 2-b, 3-a   **3.** 1-c, 2-a, 3-b   **4.** 1-a, 2-c, 3-b

47. Who has recently been awarded with Nobel Prize for peace in 2016?
  1. Juan Manuel Santos   **2.** Henry Dunant
  3. Kailash Satyarthi   **4.** Malala Yousefzai

48. Which of the following book is written by Shashi Tharoor?
  1. It's Not About You   **2.** Invisible People
  3. An Era of Darkness   **4.** Democrats and Dissenters

49. With which country did India has recently decided to become partner for strategic storage of crude oil in southern India?
  1. Iran   **2.** Iraq
  3. United Arab Emirates **4.** United States of America

50. Which neighbouring country of India is also referred as 'Druk Yul'?
  1. Myanmar   **2.** Maldives   **3.** Bhutan   **4.** Afghanistan

Quantitative Aptitude

51. How many numbers are there between 1 to 200 which are divisible by 3 but not by 7?
  1. 38   **2.** 45   **3.** 57   **4.** 66

52. 10 women can do a piece of work in 6 days, 6 men can do the same work in 5 days and 8 children can do it in 10 days. What is the ratio of the efficiency of a woman, a man and a child, respectively?
  1. 4 : 6 : 3   **2.** 4 : 5 : 3   **3.** 2 : 4 : 3   **4.** 4 : 8 : 3

53. The ratio of the volume of two cylinders is 7 : 3 and the ratio of their heights is 7 : 9. If the area of the base of the second cylinder is 154cm^2, then what will be the radius (in cm) of the first cylinder?
  1. $6\sqrt{2}$ **2.** $6\sqrt{3}$ **3.** $7\sqrt{2}$ **4.** $7\sqrt{3}$

54. Kanchan bought a clock with 25% discount on marked price. She sold it with 75% gain on the price she bought. What was her profit percentage on the marked price?
  1. 31.25%   **2.** 50%   **3.** 56.25%   **4.** 60%

55 A, B and C received an amount of ₹ 8,400 and distributed among themselves in the ratio of 6 : 8 : 7, respectively. If they save in the ratio of 3 : 2 : 4, respectively and B saves ₹ 400, then what is the ratio of the expenditures of A, B and C, respectively?
  1. 6 : 8 : 7   **2.** 8 : 6 : 7   **3.** 9 : 14 : 10   **4.** 12 : 7 : 9

56. The average age of 24 students is 12 years. It was observed that while calculating the average age, the age of a student was taken as 14 years instead of 8 years. What will be the correct average age (in years)?
  1. 11.25   **2.** 11.5   **3.** 11.75   **4.** 12.25

57. 70% of the cost price of an article is equal to the 40% of its selling price. What is the profit or loss percentage?
  1. 63% loss   **2.** 70% loss   **3.** 75% profit   **4.** 80% profit

58. a% of b + b% of a = _____.
  1. $2a$% of b **2.** $2a$% of $2b$ **3.** $2a$% of $2a$ **4.** $2b$% of $2b$

59. If I walk at 7/6 of my usual speed, then I reach my office 15 minutes early. What is the usual time taken (in minutes) by me to reach the office?
  1. 60   **2.** 75   **3.** 90   **4.** 105

60. A person lent ₹ 10,000 to B for 3 years and ₹ 6,000 to C for 4 years on simple interest at the same rate of interest and

received ₹ 5,400 from both of them as interest. What is the rate of interest (in %)?
  1. 10   **2.** 12.5   **3.** 15   **4.** 20

61. If $x^3 + 2x^2 - 5x + k$ is divisible by $x + 1$, then what is the value of k?
  1. – 6   **2.** – 1   **3.** 0   **4.** 6

62. If $3x + \left[\dfrac{1}{(5x)}\right] = 7$, then what is the value of $\dfrac{5x}{(15x^2 + 15x + 1)}$?
  1. 1/5   **2.** 1/10   **3.** 2/5   **4.** 10

63. If $x + \left[\dfrac{1}{(4x)}\right] = \dfrac{5}{2}$, then what is the value of $\dfrac{(64x^6 + 1)}{8x^3}$?
  1. 110   **2.** 115   **3.** 125   **4.** 140

64. If $x^2 + x = 19$, then what is the value of $(x + 5)^2 + \left[\dfrac{1}{(x + 5)^2}\right]$?
  1. 77   **2.** 79   **3.** 81   **4.** 83

65. In triangle ABC, AD, BE and CF are the medians intersecting at point G and area of triangle ABC is 156 cm^2. What is the area (in cm^2) of triangle FGE?
  1. 13   **2.** 26   **3.** 39   **4.** 52

66. In triangle ABC, ∠ABC = 150. D is a point on BC such that AD = BD. What is the measure of ∠ADC (in degrees)?
  1. 15   **2.** 30   **3.** 45   **4.** 60

67. The length of a diagonal of a square is 9√2 cm. The square is reshaped to form a triangle. What is the area (in cm^2) of the largest incircle that can be formed in that triangle?
  1. 6π   **2.** 9π   **3.** 12π   **4.** 15π

68. The length of the common chord of two intersecting circles is 12 cm. If the diameters of the circles are 15 cm and 13 cm, then what is the distance (in cm) between their centres?
  1. 7/2   **2.** 7   **3.** $7\sqrt{2}$ **4.** 14

69. What is the simplified value of $\sec^4\theta - \sec^2\theta\tan^2\theta$?
  1. cosec$^2\theta$ **2.** sec$^2\theta$ **3.** co^{2}t θ **4.** sec θ tan θ

70. What is the simplified value of $(\sin A - \mathrm{cosec}\,A)(\sec A - \cos A)(\tan A + \cot A)$?
  1. 1   **2.** – 1   **3.** 0   **4.** 2

71. If $\left(\dfrac{1}{\cos\theta}\right) - \left(\dfrac{1}{\cot\theta}\right) = \dfrac{1}{P}$, then what is the value of cos θ?
  1. $\dfrac{(P+1)}{(P-1)}$ **2.** $\dfrac{(P^2+1)}{2P}$ **3.** $\dfrac{2(P^2+1)}{P}$ **4.** $\dfrac{2P}{(P^2+1)}$

72. The table given below represents the production and sales of wheat in 4 different countries A, B, C, and D over a period of 4 years. At the end of year 2010, A, B, C, and D had a stock of 5200, 3500, 7835 and 1956 (in '000 quintals') of wheat, respectively. For any given year, the stock of wheat is calculated as:
Stock of year (n + 1) = stock end of year (n) + production in years (n + 1) – sales in year (n + 1)
And surplus of year (n) = production in year (n) – sales in year (n)

	Wheat production and sales (in '000 quintals')							
Year	Country A		Country B		Country C		Country D	
	Prod.	Sales	Prod.	Sales	Prod.	Sales	Prod.	Sales
2011	1218	1413	1881	1798	2035	2247	3126	2417
2012	1554	1783	2067	2389	1821	2018	2987	2911
2013	1671	1641	1328	2063	1937	2563	2143	3188
2014	1103	1002	1578	1239	3014	2922	4126	3563

What is the surplus (in '000 quintals') of country A of years 2013 and 2014 taken together?
  l. 122   **2.** 131   **3.** 143   **4.** 158

73. The table given below represents the production and sales of wheat in 4 different countries A, B, C and D over a period of 4 years. At the end of years 2010, A, B, C and D had a stock of 5200, 3500, 7835 and 1956 (in '000 quintals')

of wheat, respectively. For any given year, the stock of wheat is calculated as:

Stock of year (n + 1) = stock at end of year (n) + production in year (n + 1) – sales in year (n + 1)

And, Surplus of year (n) = production in year (n) – sales in years (n)

| Year | Wheat production and sales (in '000 quintals') | | | | | | | |
| | Country A | | Country B | | Country C | | Country D | |
	Prod.	Sales	Prod.	Sales	Prod.	Sales	Prod.	Sales
2011	1218	1413	1881	1798	2035	2247	3126	2417
2012	1554	1783	2067	2389	1821	2018	2987	2911
2013	1671	1641	1328	2063	1937	2563	2143	3188
2014	1103	1002	1578	1239	3014	2922	4126	3563

What is the stock (in '000 quintals') of country C at end of the 4-year period?

1. 5926   2. 6213   3. 6826   4. 8844

74. The table given below represents the production and sales of wheat in 4 different countries A, B, C and D over a period of 4 years. At the end of year 2010, A, B, C and D had a stock of 5200, 3500, 7835 and 1956 (in '000' qunrtals) of wheat, respectively. For any given year, the stock of wheat is calculated as:

Stock of year (n + 1) = stock at end of year (n) + production in year (n + 1) – sales in year (n + 1)

And, surplus of year (n) = production in year (n) – sales in year (n)

| Year | Wheat production and sales (in '000 quintals') | | | | | | | |
| | Country A | | Country B | | Country C | | Country D | |
	Prod.	Sales	Prod.	Sales	Prod.	Sales	Prod.	Sales
2011	1218	1413	1881	1798	2035	2247	3126	2417
2012	1554	1783	2067	2389	1821	2018	2987	2911
2013	1671	1641	1328	2063	1937	2563	2143	3188
2014	1103	1002	1578	1239	3014	2922	4126	3563

What is the difference (in '000 quintals') in average production and average sales, respectively of country C in the given four years?

1. – 252.25   2. – 415.50   3. 350.75   4. 275.25

75. The table given below represents the production and sales of wheat in 4 different countries A, B, C and D over a period of 4 years. At the end of year 2010, A, B, C and D had a stock of 5200, 3500 7835 and 1956 (in '000 quintals') of wheat, respectively. For any given year, the stock of wheat is calculated as:

Stock of year (n + 1) = stock at end of year (n) + production in year (n + 1) – sales in year (n + 1)

And, Surplus of year (n) = production in year (n) – sales in year (n)

| Year | Wheat production and sales (in '000 quintals') | | | | | | | |
| | Country A | | Country B | | Country C | | Country D | |
	Prod.	Sales	Prod.	Sales	Prod.	Sales	Prod.	Sales
2011	1218	1413	1881	1798	2035	2247	3126	2417
2012	1554	1783	2067	2389	1821	2018	2987	2911
2013	1671	1641	1328	2063	1937	2563	2143	3188
2014	1103	1002	1578	1239	3014	2922	4126	3563

What can be said about the total surplus of country B and country D over the 4 years?

1. Surplus of B = Surplus of D
2. Surplus of D > Surplus of B
3. Surplus of B > Surplus of D
4. No relation is there

English Comprehension

76. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

Inspite of the doctor's stern warning (1)/ Latika continued taking (2)/ sugars in her milk. (3)/ No Error (4)

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

77. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

Myself and Roshni (1)/ will take care of (2)/ the event on Sunday. (3)/ No Error (4)

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

78. In the following question, the sentence given with the blank needs to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option. _____ the rain stopped, the concert had to be suspended.

1. Until   2. Unless   3. Till   4. While

79. In the following question, the sentence given with the blank needs to be filled with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option. The elephant stampeded and tore _____ the streets.

1. on   2. out   3. off   4. down

80. In the following question, out of the four alternatives, select the word similar in meaning to the word given. Scuttle

1. Solitary   2. Superficial   3. Soothing   4. Brazier

81. In the following question, out of the four alternatives, select the word similar in meaning to the word given. Loquacious

1. Talkative   2. Foolishness 3. Graceful   4. Entertainer

82. In the following question, out of the four alternatives, select the word opposite in meaning to the word given. Obfuscate

1. Envelop   2. Puzzle   3. Haze   4. Clarify

83. In the following question, out of the four alternatives, select the word opposite in meaning to the word given. Triumph

1. Establish   2. Sorrow   3. Disdain   4. Elation

84. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase. Chicken-hearted

1. Coward   2. Short tempered
3. Composed   4. Bold

85. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase. Red letter day

1. Starting day   2. Holiday
3. Significant day   4. Ending day

86. Improve the bracketed part of the sentence. He jumped off the train while it (had been running).

1. has been running   2. ran
3. was running   4. No improvement

87. Improve the bracketed part of the sentence. I (didn't see) him since we met two years ago.

1. am not seeing   2. have not seen
3. had not seen   4. No improvement

88. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase. One who is new to a profession

1. Nuance   2. Pun   3. Tyro   4. Vandal

89. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase. A speech or a presentation made without previous preparation.

1. Euphemism   2. Obituary
3. Extempore   4. Soliloquy

90. In the following question, four words are given out of which one word is incorrectly spelt.
Find the incorrectly spelt word.
1. Millionaire   2. Omission
3. Foreign   4. Propriety

91. In the following question, four words are given out of which one word is incorrectly spelt.
Find the incorrectly spelt word.
1. Acquaintence   2. Appeasement
3. Abnormality   4. Accentuate

92. The question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.
P: And the victims are likely to be the poorest of the poor as well as the very sources of water- rivers, wetlands and aquifers.
Q: In India, water conflicts are likely to worsen before they begin to be resolved.
R: Till then, they pose a significant threat to economic growth, security and health of the ecosystem.
S: Water is radically altering and affecting political boundaries all over world, between as well as within countries.
1. SQPR   2. PRQS   3. QRPS   4. PSQR

93. The question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.
P: For one, very few entrepreneurs are willing to take on a new outsource, unless it comes with a guarantee of a certain level of sales.
Q: This invariably acts as an incentive for outsources to be lax in developing the business.
R: Despite being the dominant partner in the relationship, the outsource does not always have all the advantages.
S: The trade refers to it as the minimum guarantee clause, which means that if a outsource is unable to reach an anticipated sales level, he will be compensated for the balance amount.
1. PRQS   2. SPQR   3. QSPR   4. RPSQ

94. In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
Somebody told me that there had been a robbery in the jewellery exhibition.
1. I was informed that there was a robbery in the jewellery exhibition.
2. I was told by somebody that there has been a robbery in the jewellery exhibition.
3. I was told by somebody about a robbery in the jewellery exhibition.
4. I was told about a robbery in the jewellery exhibition.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in indirect/Direct speech.
Rohan said, "Where shall I be this time next month"?
1. Rohan contemplated where shall he be that time the following month.
2. Rohan asked that where should be that time next month.
3. Rohan wondered where he should be that time the next month.
4. Rohan wondered where he would be that time the following month.

96. In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The modes of action are _____ in science and religion. Science relies on experiment, whereas religion is based on experience. Any religious _____ whether it is Christ's or Ramakrishna's is personal and _____ . Science, on the other hand, is marked by objectivity. Theory has to be corroborated by _____ proof providing material comforts. The frontiers of science do not end in knowledge but are _____ to the formation of appliances for actual use.

The modes of action are _____ in science and religion.
1. similar   2. different   3. equal   4. relevant

97. In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.
The modes of action are _____ in science and religion. Science relies on experiment, whereas religion is based on experience. Any religious _____ whether it is Christ's or Ramakrishna's is personal and _____ . Science, on the other hand, is marked by objectivity. Theory has to be corroborated by _____ proof providing material comforts. The frontiers of science do not end in knowledge but are _____ to the formation of appliances for actual use.
whereas religion is based on experience. Any religious _____ whether
1. experience   2. thought   3. festival   4. activity

98. In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.
The modes of action are _____ in science and religion. Science relies on experiment, whereas religion is based on experience. Any religious _____ whether it is Christ's or Ramakrishna's is personal and _____ . Science, on the other hand, is marked by objectivity. Theory has to be corroborated by _____ proof providing material comforts. The frontiers of science do not end in knowledge but are _____ to the formation of appliances for actual use.
_____ is Christ's or Ramakrishna's is personal and it.
1. significant   2. irrelevant   3. subjective   4. objective

99. In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.
The modes of action are _____ in science and religion. Science relies on experiment, whereas religion is based on experience. Any religious _____ whether it is Christ's or Ramakrishna's is personal and _____ . Science, on the other hand, is marked by objectivity. Theory has to be corroborated by _____ proof providing material comforts. The frontiers of science do not end in knowledge but are _____ to the formation of appliances for actual use.
Theory has to be corroborated by _____ proof providing material comforts.
1. intangible   2. transparent
3. tangible   4. unique

100. In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.
The modes of action are _____ in science and religion. Science relies on experiment, whereas religion is based on experience. Any religious _____ whether it is Christ's or Ramakrishna's is personal and _____ . Science, on the other hand, is marked by objectivity. Theory has to be corroborated by _____ proof providing material comforts. The frontiers of science do not end in knowledge but are _____ to the formation of appliances for actual use.
The frontiers of science do not end in knowledge but are _____ to the formation of appliances for actual use.
1. implied   2. associated   3. designated   4. extended

Answer Key

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

Answers with Explanations

General Intelligence and Reasoning

1. Option (2) is correct.
As we know that, a barometer is used to check pressure. Similarly, an odometer is used to measure the distance.

2. Option (1) is correct.
Given that:　　　AEDM : ZQRN
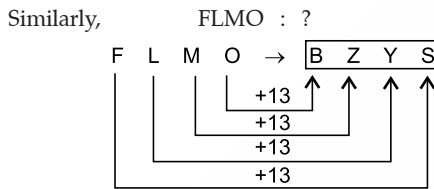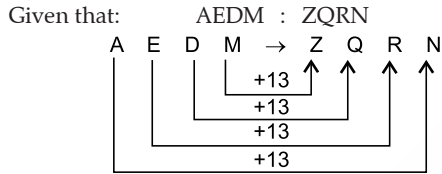
Similarly,　　　FLMO : ?

3. Option (2) is correct.
Given that: 243 : 578
$2 \times 4 \times 3 = 24$
$24 \times 24 + 2 = 576 + 2 = 578$
Similarly,
163 : ?
$1 \times 6 \times 3 = 18$
$18 \times 18 + 2 = 324 + 2 = 326$

4. Option (4) is correct.
Except option (4), all are visible above the ground in a tree and root is under the tree. So, root is the odd one out.

5. Option (3) is correct.
From option (1):

From option (2):

Form option (3):
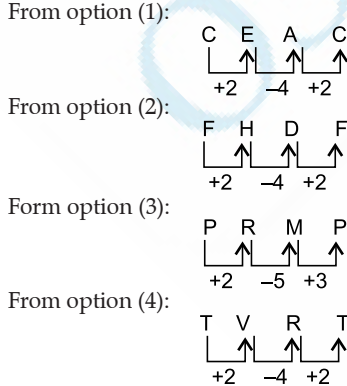
From option (4):

Therefore, option (3) is different from othe ₹

6. Option (1) is correct.
From option (1):　　2132 - 161
$(2+ 1 + 3 + 2) - (1 + 6 + 1)$
8 -8
From option (2): 2678 - 672
$(2 + 6 + 7 + 8) - (6 + 7 + 2)$
23 - 15
From option (3): 4325 - 120
$(4+ 3 + 2 + 5) - (1 + 2 +0)$
14 - 3
From option (4): 6931 - 162
$(6 + 9 + 3 + 1) - (1 + 6 + 2)$
19 - 9
Therefore, option (1) is-an odd number from other

7. Option (2) is correct.
The given words in the sequence in which they occur in the dictionary is as follows:

Dilled	4
Dillydallied	2
Dillydallies	5
Dillydally	3
Dillydallying	1
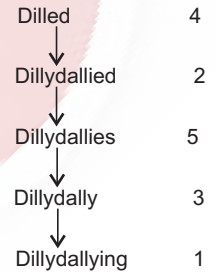
8. Option (2) is correct.
The pattern of the series is as follows:
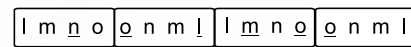
9. Option (1) is correct.
The pattern of the series is as follows:

$21 + 2^2 \quad 25 + 3^3 \quad 52 + 4^2 \quad 68 + 5^3 \quad 193 + 6^2$
$(21 + 4) \quad (25 + 27) \quad (52 + 16) \quad (68 + 125) \quad (193 + 36)$

10. Option (1) is correct.
The direction diagram of Kamal is as follows:
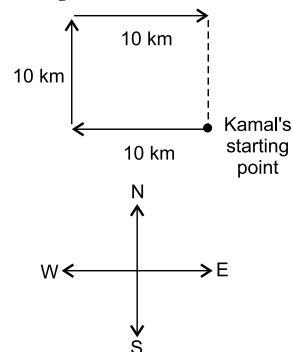
From the above direction diagram, we can say that Kamal is in the North direction from his home/starting point.

11. Option (2) is correct.

From the given question:

P has more marks than Q: P > Q (and R does not have the least marks)

S has more marks than: T, S > T

And, T has more marks than P: T > P

Since, R does not have least marks therefore, arrangement of marks is as follows.

R > S> T>P>Q

Therefore,Q will have the least marks.

12. Option (1) is correct.

Except word PROCEED, all others can be formed using the letters RECIPROCATE. Because RECIPROCATE does not have the letter D.

13. Option (4) is correct.

As,   CASIO is written as 3119915

C	A	S	I	O
↓	↓	↓	↓	↓
3	1	19	9	15

Alphabetical numbers

Similarly,
CITIZEN is written as

C	I	T	I	Z	E	N
↓	↓	↓	↓	↓	↓	↓
3	9	20	9	26	5	14

14. Option (1) is correct.

Given expression:

$6 \div 17 \times 51 + 6 - 12 = -4$

After interchanging signs:

$6 \times 17 \div 51 + 6 - 12 = -4$

$2 + 6 - 12 = -4$

$-4 = -4$

15. Option (3) is correct.

Let – sign be taken as + and solve equation

$6 \times 9 - 4 = 58$ as $6 \times 9 + 4 = 58$

$3 \times 9 - 7 = 34$ as $3 \times 9 + 7 = 34$

Similarly, $A \times 4 - 9 = 91$ as $A \times 4 + 9 = 91$

$4A + 9 = 91$

$4A = 91 - 9$

$4A = 82$

$A = 20.5$

16. Option (1) is correct.

The pattern of the 1st figure:

$(9 \times 3) = (9 + 7 + 6 + 5)$

$27 = 27$

The pattern of the 2nd figure:

$(6 \times 5) = (6 + 7 + 9 + 8)$

$30 = 30$

Similarly, in the 3rd figure:

$(6 \times 3) = (5 + 6 + 3 + ?)$

$18 = 14 + ?$

$? = 4$

17. Option (3) is correct.

The given figure is labelled as:

ΔABC, ΔDEF, ΔGHI, ΔLJC, ΔMKF, ΔNOC

Therefore, there are 6 triangles in the given figure.
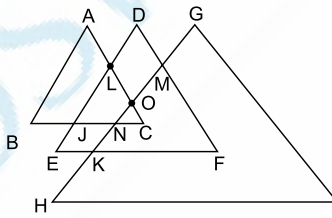
18. Option (1) is correct.

The Venn diagram of the given condition is as follows:

From the Venn diagram, we can say that all markers are pins.
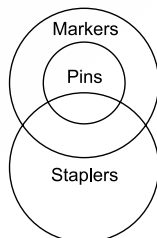
19. Option (1) is correct.

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

5-6-1 Clockwise

5-2-4 Clockwise

Hence, 6 is opposite to 2 and 1 is opposite to 4.

20. Option (2) is correct.

The Venn diagram of the given condition is as follows:
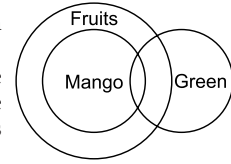
We can say that all mangoes are fruits, but some mangoes are green in colour and some fruits are also green.

21. Option (4) is correct.

In option (4), complete the given figure.
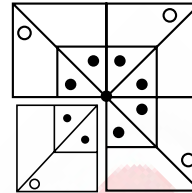
22. Option (2) is correct.

The question figure embedded in the following is as shown below:

23. Option (2) is correct.

After unfolding the paper, it will appear as shown below:
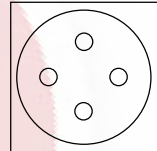
24. Option (3) is correct.

The mirror image of the given figure is as follows:

In the mirror image, left becomes right and right becomes left.
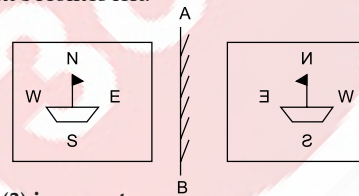
25. Option (3) is correct.

From option (1): 00, 68, 95, 58, 04 = GUILE

From option (2): 14, 75, 88, 87, 40 = GUIUE

From option (3): 23, 99, 76, 78, 31 = GUIDE

From option (4): 41, 87, 57, 66, 12 = GUIDR

General Awareness

26. Option (3) is correct.

Oligopoly is a form of market in which only few companies manufacturing the same type of goods. The fundamental characteristic of oligopoly is few sellers and numerous purchase Oligopoly is the term for a market condition when there are just a few companies in the industry providing either a homogeneous product or maybe having product differentiation in a specific field of production. Oligopolies can be created, maintained, or dismantled as a result of economic, legal, and technological considerations. It is challenging for a small start-up company to compete in an oligopoly market.

27. Option (4) is correct.

Public debt, also known as government debt, is owed by the government, whereas the RBI sets, develops, and implements monetary policy. The public debt cannot ever be a factor in monetary policy because it is included under fiscal policy of the government.

28. Option (3) is correct.

The President of India has the authority to call both houses together and even dissolve them although he/she is not a member of either of the two houses.

The Prime Minister and Finance Minister may be members of the House of Representatives or the Council of States (Rajya Sabha).

The Rajya Sabha included three prime ministers: Indira Gandhi in 1966, Deve Gowda in 1996, and Manmohan Singh in 2004.

29. Option (2) is correct.

Article 352 of Indian constitution says that the President can impose an emergency if he agrees that a grave security threat exists whereby the security of India or any part of her territory is threatened whether by war, external aggression, or armed rebellion, he/she can declare emergency rule in the whole of India or on any part of the Indian Territory.

30. Option (3) is correct.

For the Bardoli peasants to fight unfair tax rises during the struggle of independence, Sardar Vallabhai Patel organised the Bardoli Satyagraha in 1928. Indian peasants attempted to mount a peaceful uprising against British control in India during the Bardoli Satyagraha. The Civil Disobedience Movement, a part of the Indian Independence Struggle, reached a turning point at that time.

31. Option (2) is correct.

In 1890, Bal Gangadhar Tilak joined the congress. He was referred to as the "Father of Indian Unrest" by Valentine Chirol because he originally sought total "Swarajya."

32. Option (4) is correct.

Tropical evergreen forests are found in regions with high temperatures and heavy rainfall. It is found on the western slopes of the Western Ghats, the islands of Lakshadweep, Andaman and Nicobar, Northeast India, and some parts of the Tamil Nadu coast.

33. Option (4) is correct.

The magnetopause is the last point at which the Earth and the magnetosphere part ways. It is the region where the planet's magnetic field and the solar wind meet, according to planetary science. A region of the Earth's magnetosphere is called the magnetopause. The planet's magnetic field dominates the border between Earth and outer space.

34. Option (4) is correct.

The thymus gland's hormone is called thymosin. It is in charge of promoting the growth of T cells that fight illness. Only until puberty is the thymus gland functional; beyond that, it steadily decreases and is replaced by fat.

35. Option (4) is correct.

Photosynthesis is a process in which light energy from the sun is used by the plants to prepare starch from carbon dioxide and water.

36. Option (4) is correct.

A, B, and Rh antigens are present in the blood group AB$^+$, which has no serum antibodies and is the universal acceptor. On the other hand, blood group O$^-$ is the universal donor since it lacks the antigens A, B, or Rh and, as a result, possesses A, B, and Rh antibodies in its serum.

37. Option (1) is correct.

Depending on how close an object is to the concave mirror, the picture can be either enlarged or shrunk. Either the real or virtual image can be upright. While a convex mirror, regardless of how far an object is from the mirror, always creates a virtual, erect, and diminished picture.

38. Option (3) is correct.

Surface tension causes a soap bubble to become spherical. According to the surface tension phenomenon, the fluid tends to acquire the smallest surface area possible, but when it is not on the surface, it adopts a spherical form to acquire the smallest surface area possible.

39. Option (2) is correct.

Using computer-based software to assist in design processes is known as computer-aided design, or CAD. Various kinds of engineers and designers regularly utilise CAD software. Two-dimensional (2-D) drawings and three-dimensional (3-D) models both can be produced using CAD software.

40. Option (1) is correct.

A chemical reaction known as an exothermic reaction is one that releases energy in the form of heat or light. The terms "thermic" and "exo" both refer to heat. An exothermic process is one in which heat is released, with or without the presence of light.

41. Option (2) is correct.

Sodium chloride has the chemical formula NaCl. Chlorine has 7 electrons in its valence shell compared to sodium's 1 electron. Chlorine takes one electron away from sodium, which then forms an electrovalent connection. Since, they both contain 8 electrons in their outermost shells, they both become stable.

42. Option (4) is correct.

Carbon dioxide makes 72% of all greenhouse gases released (CO_2). Therefore, carbon dioxide emissions are the main contributor to global warming. Fuels such as oil, natural gas, diesel, organic-diesel, gasoline, organic-petrol, and ethanol must be burned in order to release CO_2.

43. Option (2) is correct.

The Social Audit Committee for the MGNREGA programme is chosen by the Gram Sabha. According to the 73rd Amendment of the Constitution, the Gram Sabha also performs other duties such as reviewing audit reports and perusing all public records in addition to conducting social audits.

44. Option (3) is correct.

In the year 1815, Sir Humphry Davy created the Safety Lamp. It was designed for use in coal mines and was made up of a wick lamp with a flame contained within a mesh screen.

45. Option (3) is correct.

Stan Wawrinka won the men's singles tennis championship at the 2016 US Open by defeating Novak Djokovic in the championship match 6-7(1-7), 6-4, 7-5, 6-3. He had beaten the No. 1 in the world on each of his three previous Grand Slam victories.

46. Option (3) is correct.

- Indian Kuchipudi dancers Radha Reddy, who were born on February 15 1955, is also a teacher and a choreographer. She is well known for being Kuchipudi dancer from South India.
- Indian classical dancer Padma Subrahmanyam was born in Madras on February 4 1943. She specialises in Bharata Natyam. In addition, she is an author, dancer, teacher, researcher, and Indologist.
- Sitara Devi (born Dhanlakshm; 8 November 1920–25 November 2014) was an Indian actress, singer, and traditional Kathak dancer.

47. Option (1) is correct.

The Nobel Peace Prize 2016 was awarded to Juan Manuel Santos "for his resolute efforts to bring the country's more than 50-year-long civil war to an end"

48. Option (3) is correct.

The Sahitya Akademi Award for 2019 was won by Indian politician, author, and Congress party member Shashi Tharoor. An Era of Darkness: The British Empire in India, written by a Lok Sabha member from Thiruvananthapuram, received the honourable medal. The book was published in 2016.

On December 18, 2019, the Sahitya Akademi released a press release in 23 languages announcing the recipients of the yearly Sahitya Akademi Awards. Shashi Tharoor made the list as one of the winne₹ His English-language creative non-fiction work earned him the prize. Shashi Tharoor's book examines the effects of British colonial control in India as well as how the colonists mistreated the country.

49. Option (3) is correct.

India recently made the decision to work with the United Arab Emirates to store crude oil strategically in southern India. According to the agreement, the OPEC member from the Gulf can store 6 million barrels of crude oil in Mangalore, Karnataka.

50. Option (3) is correct.

Bhutan is the neighbouring country of India which is also referred to as 'Druk Yul'. The Druk, which means thunder dragon is the national symbol of Bhutan and appears on its

flag as well. Bhutan is called Druk Yul, which means 'Land of Druk' and the leaders of Bhutan are called Druk Gyalpo, which means 'Thunder Dragon Kings'.

Quantitative Aptitude

51. Option (3) is correct.

Number divisible by 3 = 3, 6, ..., 198

$\therefore \qquad 198 = 3 + (n-1)3$

$\Rightarrow \qquad n - 1 = \dfrac{195}{3} = 65$

$\Rightarrow \qquad n = 66$

Number divisible by 21 = 21, 42, ... , 189

$\therefore \qquad 189 = 21 + (n-1)\,21$

$\Rightarrow \qquad n - 1 = \dfrac{168}{21} = 8$

$\Rightarrow \qquad n = 9$

Numbers which is divisible by 3 but not by 7= 66 − 9 = 57

52. Option (4) is correct.

10 women can do a piece of work in 6 days

1 women can do work in 1 day = $\dfrac{1}{60}$ parts

6 men can do a piece of work in 5 days

1 man can do work in 1 day = $\dfrac{1}{30}$ parts

8 children can do a piece of work in 10 days

1 child can do work in 1 day = $\dfrac{1}{80}$ parts

Ratio of the efficiency of a woman, a man and a child

$= \dfrac{1}{60} : \dfrac{1}{30} : \dfrac{1}{80}$

L.C.M of 60, 30, 80 = 240

$\therefore \qquad \text{Ratio} = \dfrac{240}{60} : \dfrac{240}{30} : \dfrac{240}{80}$

$= 4 : 8 : 3$

53. Option (4) is correct.

Given that, area of base of second cylinder $= \pi r_2^2 = 154$

A.T.Q. $\dfrac{\text{Volume of cylinder 1}}{\text{Volume of cylinder 2}} = \dfrac{7}{3}$

$\Rightarrow \qquad \dfrac{\pi r_1^2}{\pi r_2^2} \times \dfrac{h_1}{h_2} = \dfrac{7}{3}$

$\Rightarrow \qquad \dfrac{\pi r_1^2}{154} \times \dfrac{7}{9} = \dfrac{7}{3}$

$\Rightarrow \qquad \pi r_1^2 = \dfrac{7}{3} \times \dfrac{9}{7} \times 154$

$\Rightarrow \qquad r_1^2 = 3 \times 154 \times \dfrac{7}{22}$

$\Rightarrow \qquad r_1 = \sqrt{3 \times 7 \times 7} = 7\sqrt{3} \text{ cm}$

54. Option (1) is correct.

Let marked price be ₹ 100

Price after discount $= 100\left(1 - \dfrac{25}{100}\right) = 75$

Profit $= 75 \times \dfrac{75}{100} = 56.25$

S.P $= 75 + 56.25 = 131.25$

Profit with respect to marked price

$= 131.25 - 100 = 31.25$

$\therefore \qquad$ Profit % $= 31.25\%$

55. Option (3) is correct.

Amount received by A $= \dfrac{6}{21} \times 8,400 = 2,400$

Amount received by B $= \dfrac{8}{21} \times 8,400 = 3,200$

Amount received by C $= \dfrac{7}{21} \times 8,400 = 2,800$

Let amount saved by B = 2x = 400

x = 200

$\therefore$ Amount saved by A = 3x = 600

Expenditures of A = 2,400 − 600 = ₹ 1,800

Expenditures of B = 3,200 − 400 = ₹ 2800

Amount saved by C = 4x = 800

Expenditure of C = 4x = 800

Expenditure of C = 2,800 − 800 = ₹ 2,000

Ratio of expenditures = 1,800 : 2,800 : 2,000

$= 9 : 14 : 10$

56. Option (3) is correct.

Sum of age of 24 students = 24 × 12 = 288

correct sum of age = 288 − 14 + 8 = 282

$\therefore$ Average age of 24 students $= \dfrac{282}{24} = 11.75$

57. Option (3) is correct.

Let cost price be ₹ 100

Since, 70% of the cost price = 40% of S.P

$\dfrac{70}{100} \times 100 = \dfrac{40}{100} \times \text{S.P}$

$\text{S.P} = \dfrac{7,000}{40} = 175$

Profit = 175 − 100 = 75

$\therefore \qquad$ Profit % = 75%

58. Option (1) is correct.

$a\% \text{ of } b + b\% \text{ of } a = \dfrac{a}{100} \times b + \dfrac{b}{100} \times a = \dfrac{2}{100} \times ab = 2\,a\% \text{ of } b$

59. Option (4) is correct.

Let usual speed be x m/min and usual time is t minutes

Distance = speed × Time = xt

New speed be $\dfrac{7x}{6}$ m/min .

Distance = speed × time $= \dfrac{7x}{6}(t - 15)$

A.T.Q. $\qquad xt = \dfrac{7x}{6}(t - 15)$

$6t = 7t - 105$

$t = 105 \text{ minutes}$

60. Option (1) is correct.

ATQ

$\dfrac{10,000 \times 3 \times R}{100} + \dfrac{6,000 \times R \times 4}{100} = 5,400$

$\Rightarrow \qquad 300R + 240R = 5,400$

$\Rightarrow \qquad 540R = 5,400$

$\Rightarrow \qquad R = \dfrac{5,400}{540} = 10\%$

61. Option (1) is correct.

Let $p(x) = x^3 + 2x^2 - 5x + k$

because it is divisible by $x + 1$

$\therefore p(-1) = (-1)^3 + 2(-1)^2 - 5(-1) + k = 0$

$-1 + 2 + 5 + k = 0$

$k = -6$

62. Option (2) is correct.

$$3x + \frac{1}{5x} = 7$$

Now, $\dfrac{5x}{15x^2 + 15x + 1} = \dfrac{5x}{5x\left(3x + 3 + \dfrac{1}{5x}\right)} = \dfrac{1}{7+3} = \dfrac{1}{10}$

63. Option (1) is correct.

$$x + \frac{1}{4x} = \frac{5}{2}$$

$$\Rightarrow 2x + \frac{1}{2x} = 5$$

Now,

$$\left(2x + \frac{1}{2x}\right)^3 = (2x)^3 + \left(\frac{1}{2x}\right)^3 + 3 \times 2x \times \frac{1}{2x}\left(2x + \frac{1}{2x}\right)$$

$$(5)^3 = 8x^3 + \frac{1}{8x^3} + 3(5)$$

$$\frac{64x^6 + 1}{8x^3} = 125 - 15 = 110$$

64. Option (2) is correct.

Because $x^2 + x = 19$

$x^2 + x - 19 = 0$

$$x = \frac{-1 \pm \sqrt{77}}{2}$$

Take $\qquad x = \dfrac{-1 + \sqrt{77}}{2}$

$\therefore \qquad x + 5 = \dfrac{9 + \sqrt{77}}{2}$

Now, $(x+5)^2 + \dfrac{1}{(x+5)^2} = \left[(x+5) + \dfrac{1}{(x+5)^2}\right]^2 - 2$

$$= \left[\frac{9 + \sqrt{77}}{2} + \frac{2\left(9 - \sqrt{77}\right)}{\left(9 + \sqrt{77}\right)\left(9 - \sqrt{77}\right)}\right]^2 - 2$$

$$= \left[\frac{9 + \sqrt{77}}{2} + \frac{2\left(9 - \sqrt{77}\right)}{4}\right]^2 - 2$$

$$= (9)^2 - 2 = 81 - 2 = 79$$

65. Option (1) is correct.

Given that

Area of $\triangle ABC = 156$ cm²

$\therefore$ Ar $\triangle AFC = \dfrac{1}{2} \times 156$

(Median divides in two equal part)

$= 78$ cm²

In $\triangle AFC$, FE is median

$\therefore$ Ar $\triangle CEF = \dfrac{1}{2} \times 78 = 39$ cm²

Since median divides median in 2 : 1

ratio i.e.,
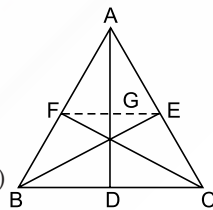
CG : GF = 2 : 1

$\therefore$ Ar $\triangle EFG = \dfrac{1}{3}$ Ar $\triangle CEF$

$= \dfrac{1}{3} \times 39 = 13$ cm² .

66. Option (2) is correct.

In $\triangle ABD$

AD = BD

So, $\angle ABD = \angle BAD = 15°$
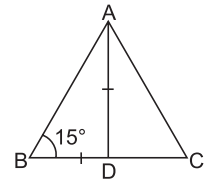
$\angle ADC = \angle ABD + \angle BAD$ (exterior angle)

$= 15° + 15° = 30°$

67. Option (3) is correct.

Length of diagonal of square $= \sqrt{2}a$

$\sqrt{2}a = 9\sqrt{2} \Rightarrow a = 9$ cm

Perimeter of square $= 4 \times 9 = 36$ cm

We have equilateral triangle have largest incircle.

$\therefore$ Perimeter of equilateral triangle

$= 3 \times$ side $= 36$ cm

$\therefore \qquad$ Side $= 12$ cm

We have radius of incircle of equilateral triangle

$$= \frac{\text{side}}{2\sqrt{3}} = \frac{12}{2\sqrt{3}} = \frac{6}{\sqrt{3}}$$

$\therefore$ Area of circle $= \pi r^2 = \pi\left(\dfrac{6}{\sqrt{3}}\right)^2 = \pi\dfrac{36}{3} = 12\pi$ cm²

68. Option (2) is correct.

$AD = \dfrac{12}{2} = 6$ cm

$AC_1 = \dfrac{15}{2}$ cm
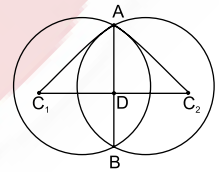
$AC_2 = \dfrac{13}{2}$ cm

$C_1D = \sqrt{\left(\dfrac{15}{2}\right)^2 - (6)^2} = \sqrt{\dfrac{225}{4} - 36} = \dfrac{9}{2}$

$C_2D = \sqrt{\left(\dfrac{13}{2}\right)^2 - (6)^2} = \sqrt{\dfrac{169}{4} - 36} = \dfrac{5}{2}$

$\therefore$ Distance between centres C_1C_2

$= C_1D + C_2D = \dfrac{9}{2} + \dfrac{5}{2} = 7$ cm

69. Option (2) is correct.

$\sec^4\theta - \sec^2\theta \cdot \tan^2\theta$

$= \sec^2\theta (\sec^2\theta - \tan^2\theta)$

$= \sec^2\theta$

70. Option (2) is correct.

$(\sin A - \text{cosec } A)(\sec A - \cos A)(\tan A + \cot A)$

$$= \left(\sin A - \frac{1}{\sin A}\right)\left(\frac{1}{\cos A} - \cos A\right)\left(\frac{\sin A}{\cos A} + \frac{\cos A}{\sin A}\right)$$

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

$$= \frac{-\cos^2 A}{\sin A} \times \frac{\sin^2 A}{\cos A} \times \frac{1}{\sin A.\cos A} = -1$$

71. Option (4) is correct.

Given that $\dfrac{1}{\cos\theta} - \dfrac{1}{\cot\theta} = \dfrac{1}{P}$

$\Rightarrow \qquad \sec\theta - \tan\theta = \dfrac{1}{P}$

$P = \dfrac{1}{\sec\theta - \tan\theta} \times \dfrac{\sec\theta + \tan\theta}{\sec\theta + \tan\theta}$

$P = \dfrac{\sec\theta + \tan\theta}{\sec^2\theta - \tan^2\theta} = \sec\theta + \tan\theta$

$\sec\theta - \tan\theta = \dfrac{1}{P}$

$\underline{\sec\theta + \tan\theta = P}$

$2\sec\theta = P + \dfrac{1}{P} = \dfrac{P^2 + 1}{P}$

$\sec\theta = \dfrac{P^2 + 1}{2P}$

$\cos\theta = \dfrac{2P}{P^2 + 1}$

72. Option (2) is correct.
For country A
surplus of year 2013 = Production – Sales = 1671 –1641 = 30
Surplus of year 2014 = 1103 – 1002 = 101
Total surplus of year 2013 and 2014 = 101 + 30 = 131

73. Option (3) is correct.
For country C
Total production in 4 years
 = 2035 + 1821 + 1937 + 3014 = 8807
Total sales in 4 years
 = 2247 + 2018 + 2563 + 2988 = 9816
Stock in 2010 = 7835
∴ Total stock in 4 years
 = 7835 + 8807 – 9816 = 6826

74. Option (1) is correct.
For country C

Average production = $\dfrac{8807}{4} = 2201.75$

Average sales = $\dfrac{9816}{4} = 2454$

Difference = 2201.75 – 2454 = – 252.25

75. Option (2) is correct.
Total surplus of B
= (1881 + 2067 + 1328 + 1578) – (1798 + 2389 + 2063 + 1239) = – 635
Total surplus of D = (3126 + 2987 + 2143 + 4126) – (2417 + 2911 + 3188 + 3563) = 302
Hence, surplus D > surplus B

English Comprehension

76. Option (3) is correct.
Explanation: Uncountable nouns do not have plural forms. Sugar is an uncountable noun and, therefore, does not have any plural form. Hence, 'sugars' is incorrect. Thus, the error is in part (3).

77. Option (1) is correct.
Explanation: "Myself" is a reflexive or emphatic pronoun. It is used either as an object or to emphasise that the task is done by the subject itself. In both cases, one antecedent pronoun

has to be there. Here the sentence starts with "myself." This is incorrect. A sentence should not begin with "myself.". Also, the sequence that should be used when multiple pronouns are used is 231. Thus, it should be "Roshni and I." As a result, error is in (1).

78. Option (1) is correct.
Explanation: "Unless" means except if (used to introduce the case in which a statement being made is not true or valid). While 'till' means by that time, but it cannot be used to begin a sentence. 'While' denotes continuity. Hence, it is not suitable for the given sentence. 'Until' is used in situations where one event is dependent on another event. In this case, the 'suspension' was dependent on the 'stopping of the rain'.

79. Option (4) is correct.
Explanation: "Tear" is not followed by "on" because it is grammatically incorrect. "Tear off/ out" is used when we relate something to do with material like paper, cloth, etc. "Tear down" is a phrasal verb that means to intentionally destroy a building or other structure. In the context of the given sentence, "tore down" is an apt option.

80. Option (4) is correct.
Explanation: "Scuttle" means a metal container with a handle, used to fetch and store coal for a domestic fire. "Bazier" means a metal container with a handle, used to fetch and store coal. Hence, "scuttle" and "brazier" are synonyms. Meaning of rest of the words are:
Solitary: done or existing alone. Example: "I live a pretty solitary life." Soothing: having a gently calming effect. Example: "she put on some soothing music." Hence, option (4) is the correct answer.

81. Option (1) is correct.
Explanation: "Loquacious" means tending to talk a great deal; talkative. Hence, "talkative" is the correct synonym of "loquacious."

82. Option (4) is correct.
Explanation: "Obfuscate" means make obscure, unclear, or unintelligible. "Haze" and "puzzle" are synonyms of "obscure." Antonym of "obscure" is "clarify."

83. Option (2) is correct.
Explanation: "Triumph" means a great victory or achievement. "Elation" is "happiness." Opposite of "triumph" is "sorrow."

84. Option (4) is correct.
Explanation: "Chicken-hearted" means "coward." Opposite of "chicken-hearted" is "bold."

85. Option (3) is correct.
Explanation: This question checks your understanding of phrases and idioms. The meaning of "red letter day" is "a day that is pleasantly noteworthy or memorable." Example: "Many a trout angler has had a red-letter day on Loch Awe."

86. Option (3) is correct.
Explanation: Since the former part of the sentence is in the past tense and denotes an action that took place in the past (jumped off), the latter part of the sentence will also be in the past tense. "While" shows that the former action took place while the latter action was going on.

87. Option (2) is correct.
Explanation: Since the sentence says that the person met someone two years ago. Since then, the person has not met the referred person. Thus, the sentence should be in the present perfect tense. The present perfect tense is used to indicate a link between the present and the past. Such sentences take the form of Subject + has/have + V_3 (participle) +Object.

88. Option (3) is correct.
Explanation: A "novice," "tyro," or "fresher" is someone who is new to a profession. Hence, option (3) "tyro" is the correct answer. "Pun" means a joke exploiting the different possible meanings of a word or the fact that there are words that sound alike but have different meanings. Example: "The Railway Society reception was an informal party of people of all stations (excuse the pun) in life." "Nuance" means a subtle difference or shade in meaning, expression, or sound. Example: "He was

familiar with the nuances of the local dialect." "Vandal" means a person who deliberately destroys or damages property belonging to others.

89. Option (3) is correct.

Explanation: A speech or presentation made without previous preparation is called extempore. "Euphemism" means a mild or indirect word or expression substituted for one considered to be too harsh or blunt. Example: "The jargon has given us 'downsizing' as a euphemism for cuts." "Obituary" means a notice of a death, especially in a newspaper, typically including a brief biography of the deceased person. Example: "It is premature to write the obituary of British science." "Soliloquy" stands for the act of speaking one's thoughts aloud, whether by oneself or regardless of any hearers, especially by a character in a play.

90. Option (4) is correct.

Explanation: The incorrectly spelt word is "Proprietry". It should be "Proprietary," which means relating to an owner or ownership.

91. Option (1) is correct.

Explanation: The incorrectly spelled word is "acquaintance." It should be "acquaintance," which means familiarity.

92. Option (1) is correct.

Explanation: The topic of the paragraph is water conflicts and the troubles they pose. The topic is introduced in the sentence "S." Thus, it will be the opening sentence. There is only one option starting with "S" and that is option (1). Hence, it is the correct answer.

93. Option (4) is correct.

Explanation: The paragraph is about sales and outsource₹ The topic is stated in the sentence "R." Thus, it will be the opening statement. Moreover, the rest of the statements have indicators that need antecedents. So, they can't start the paragraph.

94. Option (2) 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 to convert to passive voice.

Active: Subject + verb + s/es + object…

Passive: Object + is/are + verb (3rd from) + by + subject

The given sentence is in active voice. Option (2) is an appropriate passive voice for the given sentence.

95. Option (4) is correct.

Explanation: Reporting the message of the speaker in the exact words as spoken by him is called direct speech. Reporting the message of the speaker in our own words is called 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 in indirect speech. In the given sentence, the reporting verb is in the past tense. So, the reported speech will be converted into the past tense.

96. Option (2) is correct.

Explanation: The passage clarifies the differences between science and religion. Therefore, the correct word to fill in the blank is 'different'.

97. Option (1) is correct.

Explanation: Since the previous statement is about experience, and the next sentence elaborates on it by giving examples of Ramkrishana and Christ.

98. Option (3) is correct.

Explanation: The previous sentence states that religion is based on experience, which differs from person to person and is not constant. 'Subjective' means 'based on feelings, experiences, and changes by the individual'.

99. Option (3) is correct.

Explanation: The passage talks about science and religion. The sentence says that all theoretical proofs need to have some practical or physical proof as well. 'Tangible' means 'perceptible by touch'. Hence, "tangible" is the correct option.

100. Option (4) is correct.

Explanation: The sentence says that science is not restricted only to knowledge but is applied for actual use as well. 'Extended' means 'make larger or apply to'.