

# MATSAMPLE PAPER

## Quantitative Techniques

1. What is the simplified value of  $\frac{4\frac{3}{11} - 15\frac{1}{12} + 32\frac{2}{3} + 31\frac{2}{17} \times 4\frac{16}{25}}{7\frac{1}{11} \times 32\frac{2}{3}}$ ?

- (a) 1.93 (b) 15.63 (c) 0.013 (d) 156.3

The income of Q is 25% less than the income of R. The income of P is 20% higher than that of Q. What percent less is P's income from R's income?

- (a) 40%  
 2. (b) 12%  
 (c) 10%  
 (d) 8%

3. What is the square root of  $\frac{a^5 - 1}{a - 1} \div (a^3 + 2a^2 + a)$ ?

- (a)  $\sqrt{a^3 + a^2 + 2a + 1}$   
 (b)  $a^2 + a + 1$   
 (c)  $a^2 - a + 1$   
 (d)  $a^2 + a - 1$

4. A dealer of scientific instrument offers successive discount of 20%, 10% and 5% respectively on the marked price of Rs. 1500. He offers successive discounts of 20%, 20% and 10% respectively on another scientific instrument which is marked 2000. What is the sum of selling prices of both of the scientific equipments?

- (a) 2578  
 (b) 1260  
 (c) 1846  
 (d) 2178

In  $\Delta PQR$ ,  $\angle QPR = 90^\circ$  and  $QR = 2PQ$ , then what is the measure of  $\angle PRQ$ ?

5. (a)  $30^\circ$   
 (b)  $45^\circ$   
 (c)  $15^\circ$   
 (d)  $60^\circ$

6. In how much time (in years), will a sum of money become thrice of itself at the rate of 25% per annum simple interest?

- (a) 6 years  
 (b) 8 years

(c) 12 years (d) 10 years

- The half of the average value of three number is 20. The second number is thrice the third number and first number is twice the second number. What is the sum of smallest and largest number?
7. (a) 68  
(b) 56  
(c) 84  
(d) 96

- If a train runs at 50 km/hr, it reaches 60 minutes earlier than its schedule time at its destination but if it runs at 8.33 m/s it reaches at its destination 300 minutes late, find the correct time for the train to complete its journey.
8. (a) 10 hours  
(b) 6.5 hours  
(c) 7.44 hours  
(d) 13.3 hours

- Average age of a nuclear family of 4 members, five years ago was 12 years. On including age of the boy from neighbourhood, the present average age is 15 years. What is the present age of the boy from the neighbourhood?
9. (a) 17  
(b) 9  
(c) 7  
(d) 12

10. If  $x^2 + \frac{1}{2} - 18 = 0$ , then what is the value of  $x^3 - \frac{1}{3}$ ?
- (a)  $46x$   
(b) 54  
(c) 88  
(d) 76

11. A team of 20 men completes the work in 18 days. The team of 20 men works 11 days together, how many workers are added to the team if the work is finished in next five days?
- (a) 4  
(b) 5  
(c) 8  
(d) 12

12. If  $p + q + r - 11 = 0$  (where p, q, r are real numbers), then what is the minimum value of  $p^2 + q^2 + r^2$ ?
- (a) 41  
(b) 45  
(c) 27  
(d) 33

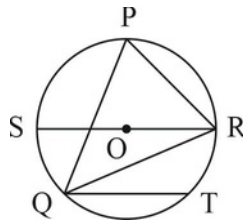
13. In an isosceles triangle PQR,  $PQ = PR$  and  $\angle PRQ = 65^\circ$ . PT is the median to the base QR, then  $\angle QPT$  is \_\_\_\_\_.
- (a)  $35^\circ$
  - (b)  $115^\circ$
  - (c)  $65^\circ$
  - (d)  $25^\circ$
14. A shopkeeper sold a bat at a loss of 15%. If he had sold it for Rs. 700 more, then he would have earned 20% profit. What is the cost price?
- (a) 1120
  - (b) 2500
  - (c) 2000
  - (d) 3225
15. The length of a shadow of a building is  $\sqrt{3}$  times of height. The angle of inclination is:
- (a)  $30^\circ$
  - (b)  $45^\circ$
  - (c)  $75^\circ$
  - (d)  $90^\circ$
16. If the breadth of a rectangle is increased 20% and length decreases by 15%, a square of area 576  $m^2$  is obtained. The area of the rectangle is:
- (a) 564.7  $m^2$
  - (b) 625.3  $m^2$
  - (c) 897.2  $m^2$
  - (d) 211.3  $m^2$
17. In  $\Delta PQR$ , exterior bisector of  $\angle PQR$  and  $\angle PRQ$  meet at O. If  $\angle QPR = 80^\circ$ , then  $\angle QOR$  is:
- (a)  $30^\circ$
  - (b)  $25^\circ$
  - (c)  $50^\circ$
  - (d)  $60^\circ$
18. If  $p : q = 6 : 11$  and  $r : s = 2p : 3q$ , then  $pr : qs = ?$
- (a) 35 : 133
  - (b) 20 : 97
  - (c) 124 : 421
  - (d) 24 : 121
19. Three pipes P, Q and R are attached to a tank. The water coming through the pipe has following discharge rate 42 litre/hr, 56 litre/hr and 48 litre/hr respectively. P and Q are inlet and R is a outlet. If all the pipes are working simultaneously, tank is filled in 16 hours. What is the capacity of the tank?
- (a) 600
  - (b) 800
  - (c) 500
  - (d) 1100

20. The amount of 1457 was to be divided among Ram, Shyam and Arjun in the ratio of  $\frac{1}{5} : \frac{1}{4} : \frac{1}{3}$  respectively but by mistake it was divided in the ratio of 16 : 17 : 14. What is the excess amount received by P?
- (a) 244  
(b) 124  
(c) 278  
(d) 96
21. A reduction of Rs. 2 per kg allows a man to spend money to buy 4 kg of more sugar for Rs. 16. What is the original price of sugar?
- (a) Rs. 12  
(b) Rs. 10  
(c) Re. 1  
(d) Rs. 4
22. An amount of Rs. 5551 is lent out by a money lender in three parts at the interest of 5% for period 2 years, 3 years and 4 years respectively. After some period of time, amount of each parts become equal. What is the sums that are lent out in each parts?
- (a) 4561, 1231, 2334  
(b) 1848, 1932, 1771  
(c) 1432, 1337, 1526  
(d) 1576, 2106, 1418
23. A car passes through the hands of three dealers each of whom loses 6%. If the third sells it for Rs. 103823, what did the first pay for it?
- (a) 111250  
(b) 142000  
(c) 316250  
(d) 125000
24. What is the height of building if the elevation of its top at an unknown distance from the base is  $60^\circ$  and at a distance 10 km further off from the building along the same line, the angle of elevation is  $30^\circ$ ?
- (a) 10 m  
(b) 26 m  
(c) 42 m  
(d) 5 m
25. What is the change in the area (in percentage) of an equilateral triangle whose three sides are increased by 12%?
- (a) 12%  
(b) 24%  
(c) 44%  
(d) 72%

26. A year ago, the cost of pulsar bike and bullet bike were in ratio of 3 : 4. The ratio of the costs a year ago to the present costs for pulsar bike and bullet bike are 4 : 5 and 2 : 3 respectively. If the sum of their present cost is 3.9 lakhs. Find the cost of bullet bike a year ago?

- (a) 1.6 lakh
- (b) 1.4 lakh
- (c) 1.75 lakh
- (d) 1.9 lakh

27. In the given figure,  $\angle RPQ$  is  $70^\circ$ , RS is diameter and QT chord is parallel to RS, then what is the value of  $\angle TQR$ ?



- (a)  $30^\circ$
- (b)  $20^\circ$
- (c)  $40^\circ$
- (d)  $10^\circ$

28. Two trains of lengths 250 m and 150 m are moving with a certain speeds. If they are moving in same direction, the faster train crosses the slower one in 50 seconds. If they are travelling in opposite directions, they cross each other in 10 seconds. What is the speeds of the trains (in m/s)?

- (a) 16, 21
- (b) 24, 12
- (c) 16, 24
- (d) 12, 21

29. A mixture of certain quantity of milk with 16 litres of water is worth Rs. 90 per litre. If pure milk be worth Rs. 108 per litre, how much milk is there in the mixture?

- (a) 80
- (b) 120
- (c) 50
- (d) 150

30. Three wheels completing 24, 36, 12 revolutions in a minute from a certain point in their circumference downwards. By what time will they come together again in the same position?

- (a) 15 seconds
- (b) 10 seconds
- (c) 8 seconds
- (d) 5 seconds

31. A blue light flashes 3 times per second and a red light flashes 5 times in 2 seconds at equal intervals. If both lights start flashing at the same time, how many times do they flash together in a minute?

- (a) 30

- (b) 45
- (c) 24
- (d) 50

32. Solve the following  $752 + 362 + 492 + 682 + 912 - 252 - 512 - 442 - 422 - 1192$ ?

- (a) 114
- (b) 1140
- (c) 11400
- (d) 114000

33. If four whole numbers taken at random are multiplied together, what is the chance that last digit in the product is 1, 3, 7 or 9?

- (a)  $\frac{25}{219}$
- (b)  $\frac{125}{729}$
- (c)  $\frac{16}{625}$
- (d)  $\frac{256}{725}$

34. A tent is of the shape of a right circular cylinder up to a height of 2 metres and then becomes a right circular cone with a maximum height of 11 metres above the ground. What is the total surface area of the tent, if the radius is 14 m?

- (a) 676.25 m<sup>2</sup>
- (b) 732.33 m<sup>2</sup>
- (c) 1315.23 m<sup>2</sup>
- (d) 959.2 m<sup>2</sup>

35. If two dice are rolled or thrown simultaneously, what is the probability that the sum of numbers is equal or more than 11?

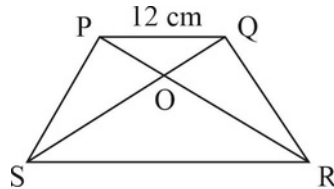
- (a)  $\frac{2}{13}$
- (b)  $\frac{1}{36}$
- (c)  $\frac{1}{12}$
- (d)  $\frac{3}{27}$

36. In a bag, there are 13 red, 12 blue and 7 orange balls. 3 balls are drawn at random. What is the probability that at least one red ball is drawn?

- (a)  $\frac{1466}{4960}$
- (b)  $\frac{2544}{4960}$
- (c)  $\frac{3991}{4960}$
- (d)  $\frac{826}{4960}$

37. A circle of radius 14 cm is given. A rectangle is inscribed in one of the quadrant. What is the length of its diagonal?  
 (a) 7 (b) 21 (c) 14  
 (d)  $7\sqrt{2}$

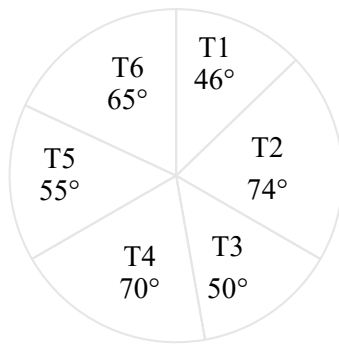
38. In the given figure,  $\frac{PO}{OR} = \frac{QO}{OS} = \frac{1}{2}$  and  $PQ = 12$  cm. Find the value of SR.



- (a) 24  
 (b) 6  
 (c) 12  
 (d)  $6\sqrt{2}$
39. How many spherical bullets can be made out of solid cube lead with edge of 44 mm, if each bullet radius is 2 cm?  
 (a) 3561  
 (b) 6250  
 (c) 2125  
 (d) 2541
40. The length and breadth of a cuboid are increased by 20% and 10% respectively. The height of cuboid decreased by 5%. Find the percentage change in the volume of cuboid.  
 (a) 12.5  
 (b) 12.36  
 (c) 25.6  
 (d) 30.68

### Data Interpretation

**Directions for questions 1 to 5:** The pie chart given below shows the number of 6 different desserts sold. The total number of desserts sold were 7200.



1. If  $V_1$  is sum of number of desserts T3 and T5 sold, then  $V_1$  is what percentage less or more than the T6 desserts? (a) 61.54% (b) 59.62% (c) 67.62% (d) 64.32%

If sales of T1 desserts increased by 44% and sales of T6 desserts increased by 15% what is the difference between the number of T1 and T6 new sales?

2.

- (a) 327
- (b) 170
- (c) 129
- (d) 514

3. If number of T5 sold decreases by 10%, what is the sum of new value of T5 and T4?

- (a) 3254
- (b) 3236
- (c) 2162
- (d) 2390

4. The number of T4 desserts sold is what percent of T3 desserts sold?

- (a) 113%
- (b) 80%
- (c) 40%
- (d) 140%

5. If  $L_1$  is sum of number of T1 and T2 desserts sold and  $L_2$  is sum of T3 and T4 desserts sold  $L_1$  is what percent more or less than  $L_2$ ?

- (a) 0%
- (b) 110%
- (c) 112%
- (d) 64%

**Direction for questions 6 to 10:** The question is consist of a question and two statements I and II Decide whether the data – provided in the statement are sufficient to answer the question mark answer as

- (a) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
- (b) if the data in statement II alone are sufficient to answer the question while the data in statement I alone are not sufficient to answer the question.
- (c) if the data in both in statements I and II are required to answer the question.
- (d) if the data in both statements I and II together are not sufficient to answer the question.

6. The sum of age of Guddu, Munna and Faisal is 60 years. What is Munna’s age?

- I. Guddu is 15 years older than Munna.
- II. Faisal age is 35 years.

7. Who among the A, B, C, D and E is the heaviest?

- I. C and B are heavier than E and E is not the lightest.
- II. D lighter than C but heavier than B.

8. Who is the best salesmen in the company?

- I. Srijith sold maximum number of product this month.
- II. Company has recovered from the loss and now is in profit because of new CEO.

9. How many student qualify for JEE advance exam this year?

- I. Last year 45000 girls qualified the exam.
- II. There is 15% increase in participation of girls in the exam.

10. Who is the son of T among the group of C, B, A and Q?

- I. C and B are sister of Q.
- II. A is the mother of B and wife of M.

**Direction for question 11 to 15:** The table given below shows the number of teachers in 5 different schools. It also shows the ratio of male to female teachers in that school.

	M : F	Number of total teachers
T1	4 : 3	2800
T2	3 : 2	2500
T3	5 : 1	6600
T4	2 : 7	8181
T5	1 : 1	4632

11. What is the ratio of male teachers from school T2 and difference between male and female teachers from school T4?

- (a) 100 : 303

- (b) 100 : 205
- (c) 206 : 303
- (d) 124 : 332

12. What is the sum of number of male teachers of T2 school and T3 school?

- (a) 5500
- (b) 11500
- (c) 6200
- (d) 7000

13. If the male teachers number decreased by 20 percent and female teachers number increased by 20 percent of school T3 and T1 respectively. The difference between male teachers of T3 school and female teachers of T1 schools.

- (a) 2960
- (b) 3560
- (c) 2870
- (d) 1600

14. What is the average number of teachers in a school?

- (a) 4943
- (b) 6234
- (c) 2973
- (d) 5622

15. If J1 is sum of male teachers in school T3, T4, T5 and J2 is sum of female teachers of school T4 and T5. J2 is what percent more or less than J1?

- (a) 5.53 percent
- (b) 14.31 percent
- (c) 9.91 percent
- (d) 0.87 percent

**Direction for questions 16 to 20:** The table given below shows 4 different types of calculators sold in 4 different shops.

	C1	C2	C3	C4
S1	800	2000	1000	5000
S2	2100	3000	1250	8000
S3	5800	4100	2250	10000
S4	10000	11000	5800	12500

16. If L1 is average of calculators C1 sold in all 4 shops, L2 is average of calculators C2 sold in all 4 shops and L3 is average of C3 calculators sold in all 4 shops. What is the ratio of difference between L1 and L2 and difference between L3 and L1?

(a)  $\frac{121}{370}$

2

(b) 7

(c)  $\frac{1}{6}$

(d)  $\frac{45}{189}$

17. The calculators C2 sold in shop S2 is what percent more than the number of calculators C3 sold in S1?

(a) 500

(b) 330

(c) 200

(d) 100

18. If the sales of calculators C1 of shop S3 drop by half. What is the sum of calculators C1 of shop S2 and new sales of calculators C1 of S3 shop?

(a) 5000

(b) 7520

(c) 4900

(d) 4760

19. If J1 is sum of calculators C3 sold in shops S2 and S3 and J2 is the difference of calculator C2 sold in shop S1 and S2. The value of J1 : J2 is:

(a) 25 : 23

(b) 7 : 3

(c) 14 : 15

(d) 9 : 7

20. The sum of number of calculators C4 sold in shops S1 and S2 is what percent of C2 calculators sold at S4 shop?

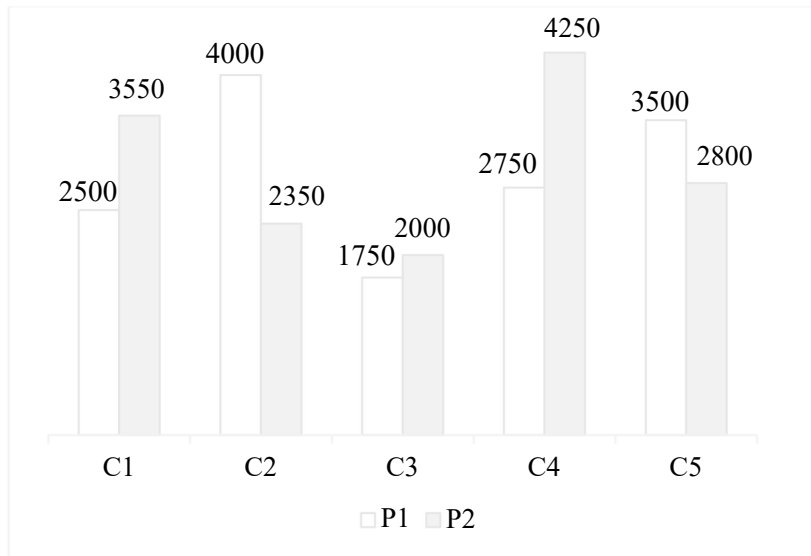
(a) 118.18 percent

(b) 82.33 percent

(c) 129.3 percent

(d) 154.2 percent

**Direction for questions 21 to 25:** The bar graph given below shows the comics of two different publishers sold in 5 different cities. Choose the correct answer of the following questions.



21. If L1 is sum of comics C1 and C2 of publisher P1. L2 is sum of comics C3 of both publishers. What is the ratio of L1 and L2?
- (a) 28 : 15  
 (b) 13 : 15  
 (c) 26 : 15  
 (d) 28 : 13
22. If L1 is the sum of comics C1 of publisher P2 and comic C2 of publisher P1. L1 is what percent more or less then total number of C2 comics?
- (a) 18.9%  
 (b) 25.63%  
 (c) 32.33%  
 (d) 10.93%
23. If the price marked by publisher for C4 is Rs. 30 per comic of P1 publisher and Rs. 20 per comic of P2 publisher, then what is the total money obtained by selling C4 comics?
- (a) 217500  
 (b) 318650  
 (c) 167500  
 (d) 25400
24. The average of number of comics C2 and C4 of publisher P2 sold is what percent of average of number of comics C3 and C4 sold of publisher P1?
- (a) 146.67%  
 (b) 154.32%  
 (c) 117.33%  
 (d) 181.53%
25. What is the net difference between the number of comics sold of publisher P1 and number of comics sold of publisher P2?
- (a) 1050  
 (b) 860

(c) 450

(d) 40

**Directions for questions 26 to 30:** In each of these questions two quantities I & II are given. Compare the quantities.

26. The volume of the sphere is 4851.

I. The radius of the sphere.

II. The surface area of semicircle.

(a) if the quantity I is greater than quantity II

(b) if the quantity II is greater than quantity I

(c) if the quantity I and II are equal

(d) if comparison cannot be made

27. Arun sold a watch to Rohan at 10% profit. Rohan sold the same watch at again 10% profit.

I. The price of watch at which Rohan bought is Rs. 5500

II. Arun buys the watch at price Rs. 500 more than previous cost price.

(a) if quantity I is greater than quantity II

(b) if quantity II is greater than quantity I

(c) if quantity I and II are equal

(d) if comparison cannot be made

28. Rohan earns 40000 per month.

I. Rohan saves  $\frac{2}{5}$  of his salary.

II. Rohan's expenditure on food is Rs. 15000 per month.

(a) if quantity I is greater than quantity II

(b) if quantity II is greater than quantity I

(c) if quantity I and II are equal

(d) if comparison cannot be done

29. The average age of 4 people is 16 two years ago.

I. If one more person added, the present average age of all the people is 18. Then age of new person.

II. The age of the oldest person among the four is 20.

(a) if the quantity I is greater than quantity II

(b) if the quantity II is greater than quantity I

(c) if the quantity I and II are equal

(d) if the comparison cannot be done

30. Pipe P1 and P2 can together fill the tank in 12 hrs.

I. Pipe P1 alone can fill the tank in 15 hrs. The pipe P2 can fill the tank in  $t_1$  hrs.

II. If tank has leakage which results of 20 hr time to fill the tank. The leakage can empty tank in  $t_2$  hr.

(a) if quantity I is greater than quantity II

(b) if quantity II is greater than quantity I

(c) if the quantity I and II are equal

(d) if the comparison cannot be done

**Direction for questions 31 to 35:** Study the following information carefully and answer the questions below:

In a college there are 4000 students who are studying in 4 different streams, of engineering namely Computer Science, Mechanical, Electronics and Civil.

The ratio of male to female students are 3 : 2. 40% of male students are studying in Mechanical stream & 25% are studying in Civil stream. The remaining male students are studying in Electronics and Computer Science stream in the ratio of 3:4. The number of female students studying Mechanical stream and other stream are 1 : 7. 25% of female students who are not studying in Mechanical stream are studying in Electrical. The remaining female students are studying in Civil and Computer Science streams in the ratio of 3 : 4.

31. What is the sum of total number of students who are studying in Mechanical and Electrical streams?
- (a) 1156
  - (b) 1870
  - (c) 1730
  - (d) 1735
32. What is the ratio of male students studying in Computer Science and Electrical streams to the total number of female student studying in Mechanical branch?
- (a) 21 : 5
  - (b) 32 : 15
  - (c) 19 : 6
  - (d) 17 : 48
33. The total number of female students in Mechanical and Computer Science streams is what percent more or less than the difference between male students of Mechanical & Electrical stream?
- (a) 45.67%
  - (b) 64.33%
  - (c) 72.36%
  - (d) 33.33%
34. The total number of students studying in Electrical stream is what percent of total number of female students?
- (a) 133.25%
  - (b) 75.40%
  - (c) 79.36%
  - (d) 44.37%
35. If L1 is the difference between male and female students of Computer Science and L2 is the difference between male and female student of Mechanical stream. What is the ratio of L1 and L2?
- (a) 2 : 5
  - (b) 7 : 11
  - (c) 11 : 17
  - (d) 3 : 19

**Direction for question 36 to 40:** Each of the following questions has a question and the statements labelled I and II. You have to decide whether the data provided in the statement are sufficient to answer the question. Read both the statement and give your answer as (a) if data in statement I alone are sufficient to answer the question while the data in statement II

alone are not sufficient to answer the question

(b) if the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question

(c) if the data even in both the statements together are not sufficient to answer the question.

(d) if the data in both the statements I and II together are needed to answer the question.

36. Sumit scored an average of 60 marks in Physics, Chemistry and Hindi. How much did he get in Chemistry?

I. His average score in Physics and Hindi is 45.

II. He got marks in Hindi.

37. Pradeep, Qureshi and Raj's salary is in the ratio 4 : 5 : 7, respectively. How much is Qureshi's salary?

I. The difference between Qureshi and Raj's salary is double that of Pradeep and Qureshi.

II. Qureshi gets Rs. 4000 less than Raj.

38. What is difference in the ages of Kim and George?

I. Kim is 20 years older than Andy.

II. Andy is 2 years younger than Zidane.

39. In a certain code language, '146' means 'adopt good habits'. What is code of 'habit' in that language?

I. '4732' means 'like good picture'

II. '826' means 'passion becomes habit'

40. How old is Vrinda now?

I. Vrinda was twice as old as his brother 2 years back and his brother's age now is 20 years.

II. Vrinda was 10 years old when his brother was born.

### Logical Reasoning

1. Complete the following series.

2, 6, 15, 28, 55, ? (a) 110 (b) 85

(c) 78 (d) 53

**Direction for questions 2 to 4:** Select the related word/number/letters from given alternates.

2. 12 : 1716 :: 15 : ?

(a) 2235 (b) 6875

(c) 3360

- (d) 5350 Plant : Starch :: Animal : ?
3. (a) Glycogen  
(b) Protein  
(c) Vitamin  
(d) Cholestrol
- Marriage : 21 :: Vote : ?
4. (a) 25  
(b) 36  
(c) 12  
(d) 18
- Arrange the following words as per dictionary order.
1. Annually  
2. Annular  
3. Description  
4. Design  
5. Development
5. (a) 1, 2, 4, 3, 5  
(b) 1, 2, 3, 4, 5  
(c) 2, 1, 3, 5, 4  
(d) 2, 1, 5, 3, 4

**Direction for questions 6 to 8:** Select the odd letter/word/number from the given alternatives.

6. (a) 39  
(b) 289  
(c) 78  
(d) 126
7. (a) Turnip  
(b) Radish  
(c) Tomato  
(d) Carrot
8. (a) POTS  
(b) GOATS  
(c) JOKE  
(d) LOCK

9. Pointing towards a child, the woman said, "That child is the daughter of brother-in-law of my mother's husband's only daughter-in-law". How is the women related to the child?
- (a) Grandmother  
(b) Mother  
(c) Aunt  
(d) Sister

10. I, J, P, Q, R and T are friends. The height of P is more than I. I is not the shortest person. Q and J are taller than I. T is taller than R. Q is taller than J who is taller than T but shorter than P. P is taller than Q. Who is the shortest person?

- (a) J
- (b) Q
- (c) T
- (d) R

11. In certain code language HELP is written as FDKR and BOTHER is written as ZMSIGV. How is QUENCH written in code language?

- (a) NSFPEL
- (b) NSDOEK
- (c) PTFPEL
- (d) PSDOEL

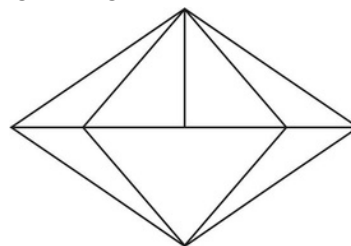
12. In certain code language, JOGGER is written as LMIEGP and PRICK is written as RPKAM. How is SWEET written in that code language?

- (a) VUGCV
- (b) UUGCV
- (c) TTVGS
- (d) TVGCS

13. If '@' means '+', '^' means '-', '&' means '×' and '#' means '÷', then which one of the following equation is correct?

- (a)  $15 \# 3 @ 14 ^ 3 \& 4 = 7$
- (b)  $16 \& 2 @ 15 ^ 20 \# 5 = 48$
- (c)  $32 \# 8 @ 6 \& 3 ^ 12 = 22$
- (d)  $6 ^ 18 \# 2 @ 5 \& 3 = 8$

14. Find the number of triangles in the given figure.



- (a) 7
- (b) 26
- (c) 16
- (d) 14

In the given dice, which number is opposite to 4?

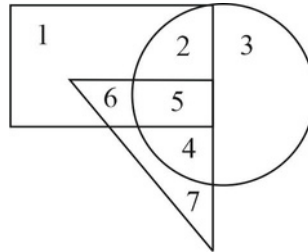
15.



- (a) 3
- (b) 5

(c) 6 (d) 2

In the following diagram, rectangle represents pilots, triangle represents painters and circle represents cricketers. Which number represents pilots that are also cricketers?



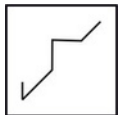
- (a) 2
- (b) 6
- (c) 5
- (d) 4

17. Identify the diagram that best represents the relationship among classes given below.

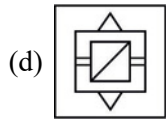
Sun, Moon, Mars

- (a)
- (b)
- (c)
- (d)

18. From the given answer figure, select the ones in which the question figure is hidden and embedded.



- (a)
- (b)
- (c)



19. In the following question, two statements are given followed by two conclusions (I) and (II). You have to consider the statements to be true, even if they seem to be at variance from the commonly known facts. You have to decide which of the given conclusions, if any, follow from the given statements.

**Statements:**

- I. Gravitational force of earth attracts every body towards itself.
- II. Gravitational force is directly proportional to the mass of body.

**Conclusions:**

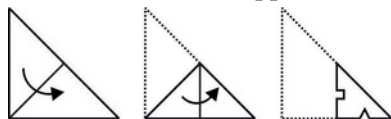
- I. Like poles of magnets repelling each other is due to gravitational force.
- II. When ball is thrown up, it comes back to ground due to gravity.

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

20. If 'LEMON' is written as 'OCPMQ' and 'RUST' is written as 'USVQ', then how will you code 'COMPLICATION'?

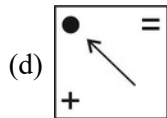
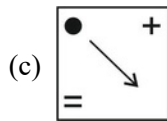
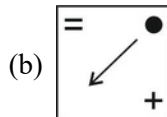
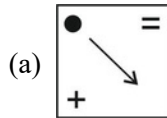
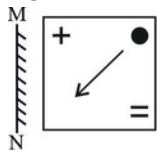
- (a) FMPSOGGYUGMQ
- (b) GMPSPFGYUGMQ
- (c) GMPSOFGYUGMQ
- (d) FMPSOGFYWGMQ

21. A piece of paper is folded and cutas shown below in the question figure. From the given answers, indicate how it will appear whenopened?



- (a)
- (b)
- (c)
- (d)

22. If a mirror is placed on MN line, then which of the answer figures is the right image of the given figure?



23. A solid cube painted red on all faces is cut by 3 parallel planes from each side dividing the cube into smaller identical cubes. How many cubes have no sides painted?

- (a) 6  
 (b) 12  
 (c) 8  
 (d) 16

24. If '-' stands for '÷', '+' stands for '-', '×' stands for '+' and '÷' stands for '×', then what will be the value of the expression?

$$14 \times 56 - 16 \div 12 + 32$$

- (a) 54  
 (b) 24  
 (c) 36  
 (d) 116

**Direction for questions 25 to 27:** Select the correct alternatives from the given ones that will complete the series.

25. 72, 70, 74, 68, 76, ?

- (a) 56  
 (b) 66  
 (c) 68  
 (d) 54

26. D, K, R, Y, ?

- (a) H  
 (b) D  
 (c) F

(d) L

27. p \_ p p q \_ p \_ p q \_ q p p \_ \_ q \_ q q

(a) p q q q q p q

(b) q q p q p p q

(c) q q q p p q p

(d) p q p q p q p

28. Six people are sitting in a circle facing the centre of the circle. Rohan is between Vidhya and Jyoti. Zahir is between Chaman and Sumit. Chaman is to the immediate left of Vidhya. Who is to the immediate right of Vidhya?

(a) Jyoti

(b) Zahir

(c) Rohan

(d) Chaman

29. The given question has two statements followed by two conclusions I and II. Decide which of the following conclusion follows from the statements.

**Statements:**

I. All poets are reader.

II. No reader is wise.

**Conclusions:**

I. No poet is wise.

II. All readers are poets.

(a) Only Conclusion I follow

(b) Only Conclusion II follow

(c) Both conclusion I and II follow

(d) Neither conclusion I nor II follow

**Directions for questions 30 to 32:** The given question has Assertion (A) followed a Reasoning (R). Choose the correct alternative from the options given below.

(a) Both (A) and (R) are true and (R) is the correct explanation of (A)

(b) Both (A) and (R) are true and (R) is not the correct explanation of (A)

(c) (A) is true but (R) is false

(d) (A) is false but (R) is true

30. **Assertion (A):** Earthworms are not good for agriculture.

**Reasoning (R):** Earthworms break down the soil into fine particles and make it soft.

31. **Assertion (A):** Diamond is used for cutting glass.

**Reasoning (R):** Diamond is the hardest material.

32. **Assertion (A):** Akbar found Din-e-Illahi.

**Reasoning (R):** He was motivated by self-glorification.



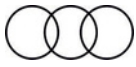

33. In a certain code 'TREAD' is written as '8#@23' and 'CORD' is written as '\$#%3'. How is 'TORE' written in the code?

(a) 8#@

- (b) %2#@
- (c) #38%
- (d) \$@38

34. Which of the following diagram depicts the relationship among the given classes?

Students, Scholars, Books

- (a) 
- (b) 
- (c) 
- (d) 

**Direction for questions 35 and 36:** The questions are based on the information given below.

A group of seven dancers facing the audience are standing in a line such that,

- (i) S is to the right of R.
- (ii) U is standing beside L.
- (iii) Q is to the left of U.
- (iv) T is to the left of P.
- (v) One person is sitting between Q and R.
- (vi) One person is sitting between P and S.

35. Who is second to the left of the extreme right?

- (a) U
- (b) Q
- (c) L
- (d) T

36. Who is standing third to the left of S?

- (a) P
- (b) R
- (c) Q
- (d) T

**Direction for questions 37 and 38:** Select the correct alternatives from the given options that will complete the series.

37. 12, 16, 40, 132, ?

- (a) 412
- (b) 544
- (c) 466
- (d) 724

38. BAG, T, KS, LMY, ?

- (a) UDT
- (b) XBR
- (c) WGT
- (d) OPT

39. If 'A + B' means that A is mother of B, 'A ÷ B' means that A is father of B, 'A – B' means that A is the sister of B, then which of the following relationship shows that M is the daughter of R?

- (a)  $R + N \div P - M$
- (b)  $R \div M - P - N$
- (c)  $N + R \div M - P$
- (d)  $M \div P - R + N$

40. Introducing a girl, Gopal said, "Her mother is the only daughter of my mother in law's husband". How is Gopal related to that girl?

- (a) Cousin
- (b) Uncle
- (c) Father
- (d) Brother

### **Indian and Global Environment**

1. Which institution launched an information database including a repository of information pertaining to municipal bonds?

- (a) IRDAI
- (b) NABARD
- (c) RBI
- (d) SEBI

2. Which ministry has recently (in Dec '22) launched the Stay Safe Online campaign & G-20 Digital Innovation Alliance (DIA) program in New Delhi, Delhi?

- (a) Ministry of Electronics and Information Technology
- (b) Ministry of Education
- (c) Ministry of Science and Technology
- (d) Ministry of Home Affairs

3. In January 2023, "World's First Palm-Leaf Manuscript Museum" was inaugurated in which state of India?

- (a) Maharashtra
- (b) Kerala
- (c) Tamil Nadu
- (d) Karnataka

4. Which company in January 2023 has signed an MoU with the Indian Space Research Organisation (ISRO) to empower Space technology startups in India?

- (a) Microsoft India
- (b) Infosys Limited

- (c) Larsen and Turbo
- (d) Reliance limited

5. Who authored the book, “Revolutionaries- The Other Story of How India Won Its Freedom” that was released by Union Minister of Home Affairs, Amit Shah in January 2023?

- (a) Rakesh Sharma
- (b) Bibek Debroy
- (c) Sanjeev Sanyal
- (d) Amit Agrawal

6. Who was declared as the next president of Bangladesh by the election commission of Bangladesh in February 2023?

- (a) Zillur Rahman
- (b) Mohammad Shahabuddin Chuppu
- (c) Anisul Huq
- (d) AK Abdul Momen

7. Which Indian movie has won 5 awards in the 6th Annual Hollywood Critics Association (HCA) Film Awards 2023?

- (a) Pushpa
- (b) The Kashmir Files
- (c) RRR
- (d) Laal Singh Chaddha

8. Which cricket team won the 8th edition of ICC Women’s T20I World Cup 2023 by defeating South Africa women’s team & claimed their 6th overall & 3rd consecutive ICC Women’s T20I World Cup title?

- (a) Australia
- (b) England
- (c) India
- (d) West Indies

9. Which of the following statements is/are CORRECT with respect to the amendment made by the Reserve Bank of India (RBI) on the bank locker rules w.e.f. January 1, 2023?

I. Banks should ensure that any unfair terms or conditions are not incorporated in their locker agreements.

II. All the existing locker depositors are required to sign a renewal agreement before the specified date.

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

10. What was the theme of International Day of Happiness 2023 (Observed on 20th March, 2023)?

- (a) Happiness Forever
- (b) All that surrounds is happiness
- (c) Be Mindful, Be Grateful, Be Kind
- (d) Harmony and happiness

11. Which of the following statements is correct regarding the India's first underwater metro train?  
I. Kolkata Metro Rail Corporation Limited (KMRCL) successfully conducted the trial run of India's 1st underwater metro train under the river bed of Hooghly through a tunnel of 32 meters below water level.

II. This Metro is expected to cover the 520-metre stretch under the river Hooghly in a span of 45 seconds.

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

12. According to 'Artificial Intelligence Index Report 2023', the 6th edition of the annual Artificial Intelligence (AI) index report published by Stanford University's Human-Centred Artificial Intelligence (HAI), which country is ranked 5th with most AI investments?

- (a) India
- (b) Pakistan
- (c) Russia
- (d) France

13. Who authored the book, "The World: A Family History"?

- (a) Simon Sebag Montefiore
- (b) Rao Inderjit Singh
- (c) Lucy Worsley
- (d) Harish Mehta

14. On 4th April 2023, \_\_\_\_\_ became the 31st member of the North Atlantic Treaty Organization (NATO).

- (a) Finland
- (b) Italy
- (c) Iceland
- (d) Syria

15. What is the maximum limit of instant transactions made using UPI LITE wallet?

- (a) Rs. 100
- (b) Rs. 200
- (c) Rs. 500
- (d) Rs. 2000

16. The world's first 200-meter-long Bamboo Crash Barrier, named "Bahu Balli," has been installed in which state of India? (a) Odisha (b) Maharashtra (c) West Bengal (d) Tamil Nadu

17. Which state passed the 'Protection of Drinking Water Catchment Areas Bill, 2023'?

- (a) Assam

- (b) Uttar Pradesh
- (c) Arunachal Pradesh
- (d) Odisha

18. Which of the following statements is correct regarding the PM SHRI scheme?

I. It is a new centrally sponsored scheme that aims at developing more than 14500 schools across the country.

II. The PM SHRI schools will aim at delivering quality teaching for the cognitive development of students and creating and nurturing holistic and well-rounded individuals equipped with key 21st-century skills.

III. This scheme was approved on March 7, 2023.

- (a) I and II
- (b) II and III
- (c) Only I
- (d) I, II and III

19. Which Insurance company rebranded itself as Zuno General Insurance Limited in February 2023?

- (a) Max Life Insurance Co. Ltd.
- (b) Reliance General Insurance
- (c) ICICI Lombard General Insurance
- (d) Edelweiss General Insurance

20. Which state/UT has initiated a programme called “alternate agriculture system for sustainability project” to boost organic food production in February 2023?

- (a) Jammu and Kashmir
- (b) Bihar
- (c) Assam
- (d) Odisha

21. What is the name of the book that has won the 2022 JCB Prize for Literature?

- (a) Valli
- (b) The Paradise of Food
- (c) The Far Field
- (d) Tomb of Sand

22. In November 2022, ISRO conducted its \_\_\_\_\_ consecutively successful launch of the Rohini “RH-200” sounding rocket from Thiruvananthapuram, Kerala.

- (a) 65th
- (b) 30th
- (c) 200th
- (d) 100th

23. Which State/Union territory Celebrated Losar Festival along with another State/Union territory to Mark their New Year in December 2022?

- (a) Nagaland and Arunachal Pradesh
- (b) Ladakh and Jammu & Kashmir
- (c) Mizoram and Assam
- (d) Bihar and Jharkhand

24. Nirmla Sitharaman announced the 'Dekho Apna Desh' scheme. In this new plan, the finance minister said that a total of \_\_\_\_\_ destinations in the country will be selected to be developed as a whole package in tourism with a challenging mode.

- (a) 50
- (b) 30
- (c) 25
- (d) 65

25. The centuries-old monastic dances specially the dance of deities Palden Lhamo and Gonpo or Mahakala were introduced for the first time in Palpung Zangdok Palri Monastery. This monastery is situated in which state/UT of India?

- (a) Assam
- (b) Ladakh
- (c) Arunachal Pradesh
- (d) West Bengal

26. Which bank was honoured with the 'Innovation in Consumer Tech' award for its India's 1st visual-voice-vernacular banking app at the 13th Aegis Graham Bell Awards (AGBA)?

- (a) Suryoday Small Finance Bank
- (b) Ujjivan Small Finance Bank
- (c) Utkarsh Small Finance Bank
- (d) Fincare Small Finance Bank

27. Which country abolished the Prevention of Terrorism Act (PTA) and introduced an Anti-Terrorism Act in March 2023?

- (a) Sri Lanka
- (b) Afghanistan
- (c) Saudi Arabia
- (d) Turkey

28. According to the EY (Ernst & Young) report, India's economy will reach USD 26 trillion by \_\_\_\_\_.

- (a) 2025
- (b) 2040
- (c) 2050
- (d) 2047

29. In which city, Prime Minister Narendra Modi inaugurated the program 'Commemoration of 50 years of Project Tiger' in April 2023?

- (a) Guwahati, Assam
- (b) Ujjain, Madhya Pradesh
- (c) Mysuru, Karnataka
- (d) Palakkad, Kerala

30. Padma Shri Awardee 'Prabhaven Sobhaghchand Shah', who passed away in January 2023, received Padma Shri award 2022 in which field?

- (a) Literature and Education

- (b) Social Worker
- (c) Art
- (d) Public Affairs

31. Who has been re-appointed as the Deputy Governor of the Reserve Bank of India (RBI) for one year in January 2023?

- (a) Michael Debabrata Patra
- (b) Urjit R. Patel
- (c) Raghuram Rajan
- (d) Subir Gokarn

32. Which of the following statements is correct regarding the instruments of monetary policy of the RBI?

I. The MSF rate is placed at 25 basis points above the policy repo rate.

II. Open market operations include outright purchase/sale of government securities by the Reserve Bank for injection/absorption of durable liquidity in the banking system.

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

33. Which among the following about the Indo-Gangetic-Brahmaputra Plain is NOT correct?

I. It is the largest alluvial tract of the world.

II. The western boarder is marked by Sulaiman and Kirthar ranges.

III. This place is highly suited for the cultivation of sugarcane.

- (a) I and II
- (b) II and III
- (c) Only I
- (d) Only II

34. On April 14, 2023, the Union Minister Parshottam Rupala, Ministry for Fisheries, Animal Husbandry and Dairying (MoFAHD), launched projects, 'Animal Pandemic Preparedness Initiative' (APPI) and \_\_\_\_\_-funded 'Animal Health System Support for One Health' (AHSSOH).

- (a) World Bank
- (b) IMF
- (c) New Development Bank
- (d) UNDP

35. Which of the following statements is correct regarding the Indian revolt of 1857?

I. In India it is often called the First War of Independence.

II. The mutiny broke out in the Bengal army because it was only in the military sphere that Indians were organized.

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

36. Who among the following won the 71st Miss Universe 2022 title?

- (a) Nadia Ferreira
- (b) Amanda Dudamel
- (c) Celeste Cortesi
- (d) R'Bonney Gabriel

37. Which Mutual Fund (MF) has rebranded itself as Bandhan Mutual Fund?

- (a) IDFC Mutual Fund
- (b) SBI Mutual Fund
- (c) LIC Mutual Fund
- (d) TATA Mutual Fund

38. When was World Rotaract Day 2023 observed across the globe?

- (a) 11th March 2023
- (b) 13th March 2023
- (c) 14th March 2023
- (d) 9th March 2023

39. Who among the following was not one of the seven members of the Drafting Committee of the Constituent Assembly?

- (a) B.R. Ambedkar
- (b) Dr. K M Munshi
- (c) N. Gopaldaswami
- (d) G. V. Mavlankar

40. Which state became the 7th state to achieve 100% household tap water supply in rural areas under the 'Jal Jeevan Mission' (JJM)?

- (a) Bihar
- (b) Madhya Pradesh
- (c) Gujarat
- (d) Haryana

### Language Comprehension

**1. Fill in the blank with an appropriate word and complete the given sentence.**

Rajathad a bad \_\_\_\_\_ and couldn't get along with his co-workers.

- (a) surcharge
- (b) temper
- (c) dialect
- (d) position

**2. Fill in the blanks with the appropriate words and complete the given sentence.**

It is mainly for this reason that \_\_\_\_\_ modern economic thinkers maintain that society would prosper when people are left alone to \_\_\_\_\_ their self-interests.

- (a) latter, surrender
- (b) late, replicate

- (c) latest, navigate
- (d) late, pursue

**3. Fill in the blanks with the appropriate words and complete the given sentence.**

It wasn't until 1820 when human technology and navigation was \_\_\_\_\_ enough to allow anyone to \_\_\_\_\_ far enough south to even see Antarctica for the first time.

- (a) sophisticated, sail
- (b) perplexed, sail
- (c) cynical, sail
- (d) turbulent, slay

**4. Fill in the blank with the appropriate words and complete the given sentence.**

**The average male adult has approximately 5.5 litres of blood \_\_\_\_\_ and the average female adult approximately 4.5 litres.**

- (a) tattling
- (b) enshrouding
- (c) dispersing
- (d) circulating

**5. What is the meaning of the idiom/phrase – Go bananas?**

- (a) To become very excited or angry
- (b) To rely on false information
- (c) To announce a relationship
- (d) To move in a wrong direction

**6. What is the meaning of the idiom/phrase– Engine room?**

- (a) The place where all mechanical tests take place
- (b) The place where all bad things happen
- (c) The main source of talent, power, or ability in a team or group,
- (d) A person with no moral obligations

**7. Which of the phrases should replace the highlighted phrase in the following sentence to make the sentence grammatically correct?**

International travel could require a visa *depending at the location* and duration of your trip.

- (a) depend on the location
- (b) depending on the location
- (c) depending in the location
- (d) No correction required

**8. Which of the phrases should replace the highlighted phrase in the following sentence to make the sentence grammatically correct?**

The story exposes the whole system of *corruption that led to a massive* explosion taking innocent lives and poisoning multiple generations.

- (a) corruption that leads to massive
- (b) corrupt that led to a massive
- (c) corruption which led to massive
- (d) No correction required

**9. Read each part of the sentence for grammatical or idiomatic errors. Choose the part that contains an error.** (a) The Neapolitan troops in first occupied Rome, (b) but, being badly handled by their leader (c) the Austrian general, Mack, they were (d) soon scattered in flight.

**10. Read each part of the sentence for grammatical or idiomatic errors. Choose the part that contains an error.** (a) For you to achieve extraordinary results, (b) the people that surrounding you (c) and your physical surroundings (d) must support your goals.

**11. Read each part of the sentence for grammatical or idiomatic errors. Choose the part that contains an error.** (a) It wouldn't have been so (b) much fun for him if she (c) has reacted the way he did when (d) she told him she was pregnant.

**12. In the following question, two of the words are related in some way i.e., they are similar or opposites. Pick out the option which represents this pair.** (a) Matter, Haphazard (b) Gloomy, Dark (c) Soiled, Barbaric (d) Mobilise, Slim

**13. In the following question, two of the words are related in some way i.e., they are similar or opposites. Pick out the option which represents this pair.** P. Grown Q. Mulled R. Impoverished S. Splash (a) P-Q (b) S-Q (c) P-R (d) S-R

**14. Choose the most appropriate synonym of the given word.**

**Desolate**

- (a) Cynical
- (b) Mirthful
- (c) Blithe
- (d) Morose

**15. Choose the most appropriate synonym of the given word.**

**Agglomeration**

- (a) Clutter
- (b) Mitigate
- (c) Blister
- (d) Corroborate

**16. Choose the most appropriate antonym of the given word.**

**Prune**

- (a) Extend
- (b) Pinch
- (c) Poll
- (d) Nip

**17. Choose the word which can replace the given group of words.**

**One who is all powerful**

- (a) Omnifarious
- (b) Omnipresent
- (c) Omniscient
- (d) Omnipotent

**18. Choose the word which can replace the given group of words.**

**Morbid compulsion to start a fire**

- (a) Mythomania
- (b) Monomania
- (c) Pyromania
- (d) Satyromania

**19. Sentences of a paragraph are given below in a jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.**

P. Putting off your alarm to get an extra five minutes of sleep, which tends to turn into an hour somehow is not an alien concept.

Q. Especially, if you genuinely want to turn into a morning person.

R. Hence, setting a calming alarm without the snooze option and not letting your sleepy mind make the bad decision of extending your cosy bedtime can be your best bet.

S. Try it to believe it.

- (a) PSQR
- (b) PRQS
- (c) SRPQ
- (d) QPRS

**20. Sentences of a paragraph are given below in a jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.**

P. However, for the higher levels different patterns can be seen.

Q. When looking at the level of education completed, there are hardly any differences between women and men in the EU at lower education level.

R. Almost equal shares of women and men aged 25 to 64 in the EU (22 % of women and 23 % of men) had at most completed the low education level (lower secondary education) in 2017.

S. A smaller share of women (44 %) than men (48 %) in the EU had successfully completed at most the medium level of education (a) PSQR (b) QRSP (c) QPRS (d) SQRP

**Direction for questions 21 to 25: Read the passage above and answer the given questions.**

There is a place forty kilometres north-east of Portland, Victoria, which makes for an unusual visit. It is Lake Condah. Here are to be found remains of aboriginal settlements: the circular stone bases of several hundred huts, rock-lined water channels, and stone tools chipped from rock not normally found in the area. One of the attractions of Lake Condah long ago was its fish and the most startling evidence of aboriginal technology and engineering to be found there are the systems built to trap fish. Water courses had been constructed by redirecting streams, building stone sides and even scraping out new channels. At strategic spots, they piled rocks across the water courses to create weirs and build funnels to channel eels and fish into conical baskets. This is an eel-fishing technique which has hardly changed to the present day. Beside some of the larger traps, there are the outlines of rectangular, stone-lined ponds, probably to hold fish and keep them fresh. On the bluffs overlooking the lake, stone circles are all that remain of ancient dwellings. Not all the stones were quarried locally. The huts vary in size, but all have gaps for doorways located on the lee side, away from the prevailing wind. One theory is that the stone walls were only waist to shoulder high, with the top roofed by branches and possibly packed with mud. The site presents a picture of a semi-settled people quite different from the stereotype of nomadic hunter-gatherers of the desert.

21. Lake Condah is seen as unusual, mainly because:

- (a) it is so close to a main town
- (b) there are remains of buildings still to be seen
- (c) it reveals a society that was at least partly settled and had building and engineering skills
- (d) there is evidence that some of the building stone was imported

22. Which of the following statements is NOT correct regarding the huts around the lake?

- (a) They varied in size.
- (b) All had gaps for doorways located on the lee side.
- (c) They were situated away from the prevailing wind.
- (d) They were very colourful.

23. The word 'stereotype' as used in the above passage means:

- (a) distant culture.
- (b) opposite picture.
- (c) electronic print version.
- (d) standard view

24. Lake Condah was majorly used for which of the following purposes?

- (a) To trap fish
- (b) To provide irrigation facilities
- (c) To harvest the water
- (d) To make houses

25. What does 'on the bluffs' mean in the passage?

- A. On the contrary
- B. On the hills
- C. As an advantage
- D. On the way

**Direction for questions 26 to 30: Read the passage above and answer the given questions.**

As the world gets hotter and more crowded, our engines continue to pump out dirty emissions, and half the world has no access to clean fuels or technologies (e.g. stoves, lamps), the very air we breathe is growing dangerously polluted: nine out of 10 people now breathe polluted air which kills 7 million people every year.

The health effects of air pollution are serious – one third of deaths from stroke, lung cancer and heart disease are due to air pollution. This is having an equivalent effect to that of smoking tobacco, and much higher than, say, the effects of eating too much salt.

Air pollution is hard to escape, no matter how rich an area you live in. It is all around us. Microscopic pollutants in the air can slip past our body's defences, penetrating deep into our respiratory and circulatory system, damaging our lungs, heart and brain.

Air pollution is closely linked to climate change – the main driver of climate change is fossil fuel combustion which is also a major contributor to air pollution – and efforts to mitigate one can improve the other. This month, the UN Intergovernmental Panel on Climate Change warned that coal-fired electricity must end by 2050 if we are to limit global warming to 1.5°C. If not, we may see a major climate crisis in just 20 years.

26. What is the primary purpose of the passage above?

- (a) To describe the dependency of climate change on various pollution
- (b) To describe the deadly health effects of air pollution on a person
- (c) To describe the harmful effects of air pollution on environment
- (d) To suggest the usage of non-conventional sources of energy to curb air pollution

27. Which of the following arguments best describes 'rich' in this statement – 'no matter how rich an area you live in'?

- (a) Area with spacious houses.
- (b) Area with expensive apartments and flats.
- (c) Area filled with lush greenery and clean environment.
- (d) Area with wealthy people and society.

28. Which of the following statements is correct according to the passage?

- (a) Air pollution is hard to escape.
- (b) Climate crisis is inevitable without action.
- (c) Stove and lamps are considered technology of clean fuels.
- (d) Air polluting majorly affects our digestive system.

29. Which of the following is the main driver of climate change?

- (a) Fossil fuel combustion
- (b) Nuclear plants
- (c) Use of methane in industries
- (d) Construction activities

30. Which word means the same as the word **-penetrating** used in the passage?

- (a) Balmy
- (b) Exciting
- (c) Departing
- (d) Intruding

Cloud computing has evolved from the most emerged technologies like grid computing, virtualization, utility computing, and SaaS. The concept of Cloud Computing came into existence in the year 1950 with implementation of mainframe computers, accessible via thin/static clients. The cloud computing has evolved from the concepts of grid, utility and SaaS. The development towards cloud computing started in the late 1980s with the concept of grid computing. Grid computing is also named as On Demand Computing centres around moving a workload to the area of the required computing assets, which are for the most part remote and are promptly accessible for utilize. A grid is a group of servers where a huge task could be separated into smaller tasks which will be kept running in parallel frameworks. Starting hereof view, a grid could really be seen as only one virtual server and oblige application to fit in with the grid programming interfaces. In the 1990s, the idea of virtualization was extended beyond virtual servers to higher levels of abstraction. Storage and network resources, and subsequently the virtual application, which has no specific underlying infrastructure were applied in virtual platform. Utility Computing is a concept established by John McCarthy, who predicted already in the late 1960s that "computation may someday be organized as a public utility". In utility computing, clusters are presented as virtual platforms for computing with a metered business model. Characteristics of clusters are that the computers being linked to each other are normally distributed locally, and have the same kind of hardware and operating system. Therefore, cluster workstations are connected together and can possibly be used as a super computer. The utility approach also known as pay per-use or metered services is increasingly common in enterprise computing and is sometimes used for the consumer market for Internet service, file sharing, web site access and other applications. More recently software as a service (SaaS) has raised the level of virtualization to the application, with a plan of action of charging not by the resources devoured but rather by the estimation of the application to supporters. In 2001, IBM began autonomic computing likewise called self-revision in which computers can naturally rectify themselves without human mediation.

**31. Arrange the following events in the chronological order.**

- I. The idea of virtualization was extended
  - II. The concept of grid computing came into existence
  - III. IBM began autonomic computing
- (a) III, I, II
  - (b) II, I, III
  - (c) I, II, III
  - (d) II, III, I

32. Which of the following statements is NOT correct according to the passage?

- (a) Utility Computing is a concept established by John McCarthy.
- (b) The development towards cloud computing started in the late 1980s.
- (c) The cloud computing has evolved from the concepts of artificial intelligence.
- (d) Utility computing is associated with metered business model.

33. How software as a service (SaaS) has raised the level of virtualization to the application?

- (a) By linking operating systems
- (b) By making cluster of services
- (c) By the resources deployed
- (d) By the estimation of the application to supporters

34. Which of the following words in the passage means the same as – **depleted**?

- (a) Mediation
- (b) Rectify
- (c) Devoured
- (d) Abstraction

35. Which of the following was called self-revision?

- (a) Mobile computing
- (b) Automatic computing
- (c) Grid computing
- (d) Utility computing

**Direction for questions 36 to 40: Read the passage above and answer the given questions.**

The work by Corry Gellatly, a research scientist at the university, has shown that men inherit a tendency to have more sons or more daughters from their parents. This means that a man with many brothers is more likely to have sons, while a man with many sisters is more likely to have daughters. In many of the countries that fought in the World Wars, there was a sudden increase in the number of boys born afterwards. The year after World War I ended, an extra two boys were born for every 100 girls in the UK, compared to the year before the war started. The gene, which Mr Gellatly has described in his research, could explain why this happened.

As the \_\_\_\_\_ were in favour of men with more sons seeing a son return from the war, those sons were more likely to father boys themselves because they inherited that tendency from their fathers. In contrast, men with more daughters may have lost their only sons in the war and those sons would have been more likely to father girls. This would explain why the men that survived the war were more likely to have male children, which resulted in the boy-baby boom. In most countries, for as long as records have been kept, more boys than girls have been born. In the UK and US, for example, there are currently about 105 males born for every 100 females.

It is well-documented that more males die in childhood and before they are old enough to have children. So in the same way that the gene may cause more boys to be born after wars, it may also cause more boys to be born each year.

36. What is the central idea of the given passage?

- (a) Explaining the theory behind why more men are born after wars.
- (b) Deducing the fact behind less females as compared to males.
- (c) Sharing different war stories and related the theory with it.
- (d) Describing the importance of parents in deciding future progeny.

37. Which of the following statements is true according to the given passage?

- (a) More females die in teenage, resulting in more females to be born each year.
- (b) In the UK and US, male population is less than the female population.
- (c) Man with many brothers has the tendency to give birth to many daughters.
- (d) In most countries, more men were born after the war in their region.

38. What had been described in the research of Mr Gellatly?

- (a) With more daughters seeing a daughter return from the war, those daughters were more likely to mother daughters.
- (b) With more daughters seeing a son return from the war, those sons were more likely to father twins.
- (c) With more sons seeing a son return from the war, those sons were more likely to father boys.
- (d) With more mothers seeing a son return from the war, those sons were more likely to father daughters.

39. What happened after the World War I ended, in the UK?

- (a) An extra two boys were born for every 100 girls.
- (b) An extra two boys were born for every 105 girls.
- (c) An extra three boys were born for every 100 girls.
- (d) 100 males were born for every 105 girls

40. Which of the following words can be filled in the blank given in the passage?

- (a) odds
- (b) premises
- (c) leaps
- (d) obstacles

# MATSAMPLE PAPER SOLUTION

## Quantitative Techniques

$$1. (a) : \frac{\frac{47}{11} - \frac{17}{12} + \frac{11}{3} + \frac{63}{17} \times \frac{116}{25}}{\frac{78}{11} \times \frac{11}{3}}$$

$$\frac{\frac{564}{36} - \frac{187}{36} + \frac{7308}{425}}{26} = 1.93$$

$$2. (c) : \text{Income of Q} = \frac{75}{100}R$$

$$\text{Income of P} = \frac{120}{100}Q = \frac{6}{5} \times \frac{3}{4} \times R$$

$$= \frac{9}{10}R = 0.1R = 10\% R$$

P income is 10% less than R.

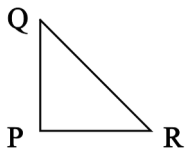
$$3. (b) : \frac{a^5 - 1 + a^4 + 2a^3 + a^2 - a^3 - 2a^2 - a}{a - 1}$$

$$= (a^3 - 1)(a^2 + a + 1)(a - 1)$$

$$\sqrt{\frac{(a-1)(a^2+a+1)(a^2+a+1)}{(a-1)}}$$

$$4. (d) : \text{The SP of 1st instrument is} = \frac{95}{100} \times \frac{9}{10} \times \frac{4}{5} \times 1500 = 1026$$

5. (a) :



$$QR = 2 PQ$$

$$\frac{1}{2} = \frac{PQ}{QR}$$

$$\sin \theta = \frac{P}{H} = \frac{PQ}{QR}$$

$$\sin \theta = \frac{1}{2}$$

$$\theta = 30 \text{ degree}$$

6. (b) :  $SI = \frac{P \times R \times T}{100}$

To have sum of money thrice of its initial sum we need simple interest twice the amount of principle.

$$2P = \frac{25 \times t \times P}{100}$$

8 years

7. (c) : The average of 3 number =  $\frac{p+q+r}{3} = 40$

$$P + q + r = 120$$

Since q is thrice of r and p is twice of q.

$$q = 3r$$

$$p = 2q = 6r$$

$$6r + 3r + r = 120$$

$$R = 12$$

$$\text{Sum of smallest largest} = 12 + 6 \times 12 = 84$$

8. (a) : Time taken by train when running 50 km/h

$$= \frac{x}{50} = 1 + t$$

Time taken when running at 8.33 m/s

$$\frac{\frac{x}{25} \times \frac{18}{3}}{\frac{5}{5}} = 5\text{hr} + t$$

For same distance x

$$(1 + t) 50 = 30 (5 + t)$$

$$20t = 100$$

$$t = 10 \text{ hr}$$

9. (c) : Present Average age of 4 member

$$= 12 \times 4 + 20 = 68$$

Present age of neighborhood

$$\text{Boy and the family} = 15 \times 5 = 75$$

Age of neighborhood

$$\text{Boy} = 75 - 68$$

7 years

10. (d) :  $x^2 + \frac{1}{x^2} - 2 = 16$

$$\frac{\square}{\square}x - \frac{1}{x} \frac{\square}{\square} = (4)2$$

$$\frac{\square}{\square}x - \frac{1}{x} \frac{\square}{\square} = (4)3$$

$$64 = x^3 - \frac{1}{x^3} - 3 \frac{\square}{\square}x - \frac{1}{x} \frac{\square}{\square}$$

$$x^3 - \frac{1}{x^3} = 76$$

11. (c) : Total work =  $20 \times 18 = 360$

20 men works for 11 days = 220

Work left =  $360 - 220 = 140$

Total finish 140 work in 5 days the total worker needed = 28

Worker added =  $28 - 20 = 8$

12. (a) : Let  $p = 4$ ,  $r = 3$  and  $q = 4$

$$p + q + r = 11$$

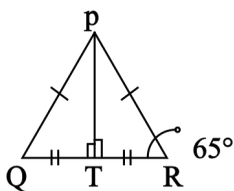
$$= 4 + 4 + 3 = 11$$

$$11 = 11$$

$$(4)2 + (4)2 + (3)2$$

$$= 41$$

13. (d) :



$$\angle PRQ = \angle PQR = 65^\circ$$

(Because angle opposite to equal side)

$$\angle PRQ + \angle PQR + \angle QPR = 180^\circ$$

$$\angle QPR = 180 - 130 = 50^\circ$$

$$\angle QPT = 50/2 = 25^\circ$$

14. (c) : CP of bat be  $x$ .

$$\text{SP of bat} = \frac{85}{100}x$$

According to question,

$$= \frac{85}{100}x + 700 = \frac{120}{100}x$$

$$700 = \frac{35}{100}x$$

$$x = \text{Rs. } 2000$$

15. (a):  $\tan \theta = \frac{P}{B} = \frac{H}{\sqrt{3}H}$

$$\theta = 30$$

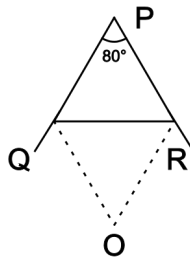
16. (a) : New area of rectangle = 576

$$576 = \frac{120}{100} \text{ breadth} \times \frac{85}{100} \text{ length}$$

$$\frac{576 \times 100}{17 \times 6} = \text{Area of old rectangle}$$

$$= 564.7 \text{ m}^2$$

17. (c) :



$$\angle QOR = 90 - \frac{1}{2} \times (\angle QPR)$$

18. (d) :  $\frac{p}{q} = \frac{6x}{11x}$

$$\frac{r}{s} = \frac{33x}{12x}$$

$$\frac{pr}{qs} = \frac{6x \times 12x}{11x \times 33x} = \frac{36}{121}$$

19.(b) : Quantity of water P = 42 lt/hr

$$R = 48 \text{ lt/hr}$$

Net water quantity in an hour

$$= 42 + 56 - 48 = 50 \text{ lt/hr}$$

$$\text{Total capacity} = 50 \times 16 = 800$$

20.(b) : Original  $\Rightarrow \frac{1}{5} : \frac{1}{3} : \frac{1}{4} = 12 : 15 : 20$

$$47x = 1457 \Rightarrow x = 31$$

$$16y + 17y + 14y = 1457$$

$$= 31$$

$$16y - 12x = 4 \times 31 = 124$$

21. (d) :

$$22. (b) : P1:P2:P3 = \frac{1}{100+2 \times 5} : \frac{1}{100+3 \times 5} : \frac{1}{100+4 \times 5}$$

$$= 552 : 528 : 506$$

$$= 276 : 264 : 253 \quad P1 = 1932, P2$$

$$= 1848, P3 = 1771$$

23. (d) : First pay for car is

$$103823 = \frac{94}{100} \times \frac{94}{100} \times \frac{94}{100} x$$

$$x = 125000$$

24. (b) :

$$25. (c) : \text{Area of equilateral triangle} = \frac{\sqrt{3}}{2} a^2$$

$$\text{Area of triangle after side increased by } 12\% = \frac{\sqrt{3}}{2} (1.2a)^2$$

$$\text{Change in area} = \frac{\sqrt{3}}{2} (1.44a^2) - \frac{\sqrt{3}}{2} a^2 = 0.44a^2$$

26. (a) : Last year (Pulsar 3) : (Bullet 4)

$$\text{Present year } 3 \frac{5}{4} : \frac{3}{2}$$

Therefore present cost of bullet

$$= \frac{3.9}{39} \times 24 = 2.4 \text{ lakh}$$

Last year cost = 1.6 lakh

27. (b) :  $\angle PQR$  and  $\angle RSQ$

Are equal since drawn on same chord

$$\angle RSQ = 70^\circ$$

$\angle SQR = 90^\circ$  (because SR is diameter and angle drawn on diameter are always  $90^\circ$ )

$$\angle RSQ + \angle SQR + \angle QRS = 180^\circ$$

$$\angle QRS = \angle RQT$$

(alternate interior angle)

$$\angle RQT = 20^\circ$$

28. (c) :  $S_1 + S_2 = \frac{400}{10} = 40$

$$S_1 - S_2 = \frac{400}{50} = 8$$

$$S = 24 \text{ m/s}$$

$$1 = 16 \text{ m/s}$$

29. (a) :  $(x + 16) \times 90 = x \times 108 + 16 \times 0$

$$8x = 16 \times 90$$

$$x = 80 \text{ liter}$$

30. (d) :  $\frac{\text{LCM of } (60, 60, 60)}{\text{HCF of } (24, 36, 12)} \times \frac{60}{12} = 5 \text{ sec}$

31. (a) :  $\text{LCM } \frac{1}{2} \text{ and } \frac{2}{5}$

They flash together after every  $= 2/1 = 2$  second

$$\text{In a minutes they will flash} = \frac{60}{2} = 30 \text{ times}$$

32. (b) :

33.(c) : Total number of ways in which the digit at units

$$\text{place can be} = 10 \times 10 \times 10 \times 10$$

The digit at unit's place in x

Will be 1 or 3 or 7 or 9 only

When the unit's place is

1 or 3 or 7 or 9

$$n(E) = 4 \times 4 \times 4 \times 4$$

$$p(E) = \frac{4n}{10n} = \frac{16}{62.5}$$

34. (d) : Slant height of the cone =  $\sqrt{11^2 + 14^2} = 17.8$

$$\text{Total surface area of the tent} = 2 \times \pi \times 14 \times 2 + \pi \times 14 \times 17.8 = 959.2 \text{ m}^2$$

35.(c) : The sum is more than 11 when

Digits are 6, 5 or 5, 6 or 6, 6

$$n(E) = 3$$

$$n(S) = 36$$

$$PE = \frac{n(E)}{n(S)} = \frac{3}{36} = \frac{1}{12}$$

36. (c) : At least one red ball drawn = Only 1 red ball drawn + 2 red ball drawn + 3 red ball drawn

At least one red ball drawn = 1 – No red balls drawn

$$= \frac{({}^{12}C_1 \times 7_{C_1} + {}^{7}C_2 \times {}^{12}_{C_1} + 7_{C_3} + {}^{12}_{C_3})}{{}^{32}_{C_3}}$$

$$1 - \frac{969}{4960} = \frac{3991}{4960}$$

37. (c) :

38. (a) : By SAS similarity condition

$\Delta POQ \sim \Delta SOR$

$$\frac{1}{2} = \frac{12}{5R}$$

$$SR = 24 \text{ cm}$$

39. (d) : Volume of cube =  $(44 \text{ cm})^3$

$$\text{Volume of each bullet} = \frac{4}{3} \pi (2)^3$$

$$\text{Number of bullets} = \frac{(44)^3}{\frac{4}{3} \pi (2)^3}$$

40. (c) : % change in volume

$$= 20 + 10 - 5 + \frac{20 \times 10 + 20(-5) + 10(-5)}{100}$$

$$\frac{+(20)(10)(-5)}{104}$$

$$= 25.6$$

### Data Interpreters

1. (a):  $V_1 = \frac{50}{360} \times 7200 + \frac{55}{360} \times 7200$

$$= \frac{105}{360} \times 7200$$

$$\frac{\frac{65}{360} \times 7200}{360} \times 100$$

$$= 16154 \times 100$$

$$= 161.54\% - 100$$

=61.54% more

2. (b) : The difference between sales of T1 and T5 is

$$= \frac{144}{100} \times \frac{46}{360} \times 7200 - \frac{115}{100} \times \frac{65}{360} \times 7200 = 170$$

3. (d) : The new number of T5 deserts

$$\text{sold} = \frac{90}{100} \times \frac{55}{360} \times 7200 = 990$$

The sum of T5 and T4 = 990 + 1400

4. (d) : T4 is more than T2 by

$$= \frac{\frac{70}{360} \times 7200}{\frac{50}{360} \times 7200} \times 100$$

$$= 140 - 100 = 40 \text{ percent}$$

So, T4 is 140 percent of T2

5. (a) :  $L1 = \frac{46^\circ}{360^\circ} \times 7200 + \frac{74^\circ}{360^\circ} \times 7200 = 2400$

$$L2 = \frac{70^\circ}{360^\circ} \times 7200 + \frac{50^\circ}{360^\circ} \times 7200 = 2400$$

According to the question,

$$\frac{L1 - L2}{L2} \times 100 = 0\%$$

6. (c) :  $M + F + G = 60$

$$G = 15 + M, 2M = 60 - 35 - 15$$

$$\Rightarrow M = 5$$

7. (c) : According to the question both statements are needed to know A is the lightest

$$C > D > B > E > A$$

8. (a) : Since, Srijith sold maximum number of product, he is the best salesman

9. (d) : Both statements do not give the total number of student who qualified in the exam.

10. (d) : Since gender of Q is not known from both statements So neither I nor II together or alone gives the answer.

11. (a) : The male teacher from T2 =  $\frac{3}{5} \times 2800 = 1500$

Difference between male and female teacher

$$\frac{5}{9} \times 8181 = 909 \times 5 = 4545$$

$$\text{Ratio} = 1500/4545 = 100 : 303$$

12. (d) : Male teacher in T2 school =  $\frac{3}{5} \times 2500$

Male teacher in T3 school =  $\frac{5}{6} \times 6000$

Sum of male teacher of T2 and T3

Schools = 7000

13. (a) : New number of male teacher in T3

$$= \frac{80}{100} \times \frac{5}{6} \times 6600 = 4400$$

New number of female teacher in T1

$$= \frac{3}{7} \times 2800 \times \frac{120}{100} = 1440$$

The difference is  $4400 - 1440 = 2960$

14. (c) : The average number of teacher in a school is

$$\frac{\text{Total number of teacher}}{\text{Total number of school}}$$

$$\frac{24713}{5} = 4942.6$$

= 4943

15. (c) :  $J1 = 5500 + 2316 + 1818 = 9634$

$J2 = 6363 + 2316 = 8679$

$$\frac{9634 - 8679}{9634} \times 100$$

= 9.91%

16. (c) :  $L1 = \frac{800+2100+5800+10000}{4} = 4675$

$$L2 = \frac{2000+3000+4100+11000}{4} = 5025$$

$$L3 = \frac{1000+1250+2250+5800}{4} = 2575$$

$5025 - 4675 : 4675 - 2575$

$$\text{Ratio} = \frac{350}{2100} = \frac{1}{6}$$

17. (c) : C2 sold in shop S2 = 3000

C3 sold in shop S1 = 1000]

According to the question,

$$= \frac{2000}{1000} \times 100$$

= 200 percent more

18.(a) : The new number of calculator sold is  $5800/2 = 2900$

The calculator C1 of S2 shop = 2100

$$2900 + 2100 = 5000$$

19. (b) : The value of J1 =  $2250 + 1250 = 3500$

The value of J2 =  $3000 - 2000 = 1000$

$$J1 : J2 = 3500 : 1000 = 7 : 2$$

20.(a) : The sum of C4 of S2 and S4

$$\text{Shop} = 8000 + 5000 = 13000$$

C2 of S4 shop = 11000

According to the question,

$$= \frac{13000}{11000} \times 100$$

= 118.18%

21. (c) : L1 =  $2500 + 4000 = 6500$

$$L2 = 1750 + 2000 = 3750$$

$$\Rightarrow \frac{L1}{L2} = \frac{6500}{3750} = \frac{26}{15}$$

22.(a) : Sum of comic C1 of publisher P2 and comic C2 of publisher P1, L1 =  $3550 + 4000 = 7550$

Total C2 comic published = 6350

According to question,

$$= \frac{7550 - 6350}{6350} \times 100$$

$$= \frac{1200}{6350} \times 100$$

= 18.9%

23.(c) : Total money obtained after selling C4 of P1 =  $30 \times 2750 = \text{Rs. } 82500$

Total money obtained after selling C4 of P2 =  $20 \times 4250 = 85000$

Total money obtained after selling C4 =  $82500 + 85000 = 167500$

24.(a) : Average number of C2 and C4 of publisher P2 =  $\frac{2350+4250}{2} = 3300$

Average number of C3 and C4 sold of publisher P1 =  $\frac{1750+2750}{2} = 2250$

According to question,

$$= \frac{3300}{2250} \times 100$$

$$= 146.67\%$$

25. (c) : Net difference = Sum of number of comic sold of publisher P2 – Sum of number of comic sold of publisher P1  
= 450

26. (b) : Surface area of hemisphere =  $2\pi r^2$   
 $2\pi r^2 > r$

27. (c) : Arun sold the watch to Rohan at 10%

$$x \times \frac{110}{100} = 5500$$

Cost price of Arun  $x = 5000$

If cost price for Arun increases by 500. Then new CP =  $5000 + 500$ , which is equal to the cost price of Rohan.

28. (a): Rohan's saving =  $2 \times \frac{40000}{5} = 16000$

Rohan's expenditure on food = 15000

Rohan's saving > Rohan's expenditure on food

29. (b): Present sum of age of four people =  $4 \times (16 + 2) = 72$

New person's age is =  $18 \times 5 - 4 \times 18 = 18$

$20 > 18$

30. (a): LCM of 12, 15, 20 = 60

Total work is 60

$$P_1 + P_2 = \frac{60}{12} = 5$$

$P_1$  can fill tank in =  $\frac{60}{15} = 4$  hours

$$4 + P_1 = 5 \Rightarrow P_1 = 1$$

$P_1$  alone can fill tank in 60 hours

$$P + Q - \text{Leakage} = \frac{60}{20} = 3$$

$$4 + 1 - \text{Leakage} = 3$$

$$\text{Leakage} = 5 - 3 = 2$$

$$\text{Time taken} = \frac{60}{2} = 30 \text{ hours}$$

$t_2 < t_1$

31. (b) : According to question, the sum of number of students =  $960 + 200 + 360 + 350 = 1870$

32. (a) : The sum of male student from electrical and computer science =  $360 + 480 = 840$

According to the question the ratio is =  $\frac{840}{200} = 21:5$

33.(d) : Number of female students in mechanical and computer science stream =  $200 + 600 = 800$   
 Difference between male students of mechanical and electrical streams =  $960 - 360 = 600$

According to question,

$$= \frac{800 - 600}{600} = \frac{200}{600} \times 100$$

$$= 33.33\%$$

34.(d) : Total number students in electrical stream =  $360 + 350 = 710$   
 Total number of female students = 1600

According to question,

$$= \frac{710}{1600} \times 100$$

$$= 44.37\%$$

35. (d) :  $L1 = 600 - 480 = 120$   
 $L2 = 960 - 200 = 760$   
 $L1 : L2 = 120 : 760$   
 $= 120 : 760$   
 $= 3 : 19$

36.(a) : As given in the question, his total marks  $E + M + C = 120$ . From statement I, we get  $E + C = 90$ . From here his marks of Mathematics are known. Therefore, statement I alone is sufficient to answer the question. Statement II alone is not sufficient because from this  $C = 40$  which can't help us to know the marks of Mathematics

37.(b) : As given in the question, the salaries of Satish, Anoop and Sandeep are  $4x$ ,  $5x$ , and  $7x$ , respectively. From statement II, we get  $7x - 5x = 4000$  and  $x = 2000$ . Hence, Anoop's salary =  $5 \times 2000 = 10,000$ .

38.(c) : Because relation between P and K cannot be established with the help of statement I and II. Hence, even both the statements cannot answer the question.

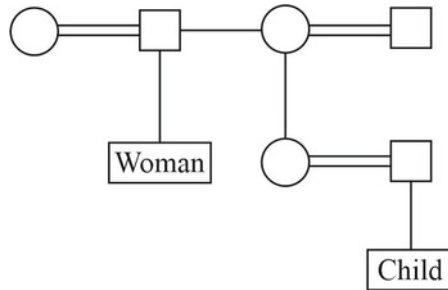
39.(b) : 146 = adopt good habits. From statement II, it is clear that 6 and habits are in common in question and statement II. Hence, 6 stands for habits.

40.(a) : From statement I alone, we find that Sunita is 38 years old. Statement II alone is not sufficient to answer the question.

### Logical Reasoning

1. (c) :  $2 \times 1 = 2$ ;  $3 \times 2 = 6$ ;  $5 \times 3 = 15$ ;  $7 \times 4 = 28$ ;  $11 \times 5 = 55$ ;  $13 \times 6 = 78$
2. (c) :  $123 - 12 = 1716$   
 $153 - 15 = 3360$
3. (a) : Glycogen is animal starch.
4. (d) : 18 is the age of voting for male in India.  
 21 is the age of marriage for male in India.
5. (b) :
6. (b) :  $289 = 172$

7. (c) : Tomato is a fruit, other are roots.  
 8. (a) : POTS if written backwards also forms a sensible word STOP.  
 9. (c) : The child is daughter of cousin of the woman.



10. (d) :  $P > Q > J > I/T > T/I > R$

11. (b) :

H	E	L	P
-2↓	-1↓	+1↓	+2↓
F	D	K	R

Similarly,

Q	U	E	N	C	H
-3↓	-2↓	-1↓	+1↓	+2↓	+3↓
N	S	D	O	E	K

12. (b):

J	O	G	G	E	R
+2↓	-2↓	+2↓	-2↓	+2↓	-2↓
L	M	I	E	G	P

and

P	R	I	C	K
+2↓	-2↓	+2↓	-2↓	+2↓
R	P	K	A	M

Similarly,

S	W	E	E	T
+2↓	-2↓	+2↓	-2↓	+2↓
U	U	G	C	V

13. (a) : (c) : (a) : (a) : (a) : The earth is planet, Sun is a star and moon is a

14. natural satellite. (c) : (b) : (d) :

15.

16.

17.

18.

19.

20.

L E M O N  
 $+3 \downarrow$   $-2 \downarrow$   $+3 \downarrow$   $-2 \downarrow$   $+3 \downarrow$   
 O C P M Q

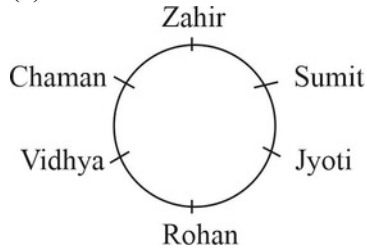
and

R U S T  
 $+3 \downarrow$   $-2 \downarrow$   $+3 \downarrow$   $-3 \downarrow$   
 U S V Q

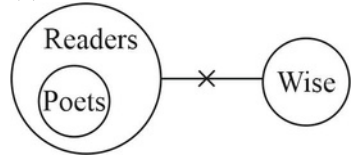
Similarly,

C O M P L I C A T I O N  
 $+3 \downarrow$   $-2 \downarrow$   $+3 \downarrow$   $+3 \downarrow$   $+3 \downarrow$   $-2 \downarrow$   $+3 \downarrow$   $-2 \downarrow$   $+3 \downarrow$   $-2 \downarrow$   $-2 \downarrow$   $+3 \downarrow$   
 F M P S O G F Y W G M Q

21. (b) : (c) : (c) : (b) : (b) : 72 - 2; 70 + 4; 74 - 6; 68
22. + 8; 76 - 10 (c) : D + 7 = K; K + 7 = R; R + 7 =
23. Y; Y + 7 = F
- 24.
- 25.
- 26.
27. (b) : The pattern is ppppppppppppppppppppppp
28. (c) : On the basis of information.

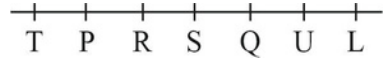


29. (a):

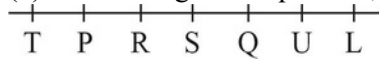


According to the question,  
 So, poets are not wise but all readers are not necessarily poets.

30. (d) : Option (d) is correct, as earthworm makes soil fertile, hence (A) is false but (R) is true.
31. (a) : Option (a) is correct because diamond is the hardest material and easily cut the glass. So, (A) and (R) are correct and (R) is correct explanation of (A).
32. (c) : Option (c) is correct because (A) is correct but (R) is false.
33. (a) : The code for following alphabets T = 8, R = %, O = #, E = @
34. (b) : Some students are scholarsbut book is unrelated.
35. (a) : According to the question,



36. (d) : According to the question,



37. (b) :  $12 \times 1 + 4 = 16$ ;  $16 \times 2 + 8 = 40$ ;  $40 \times 3 + 12 = 132$ ;  $132 \times 4 + 16 = 544$

38.(c) :  $BAG = 2 + 1 + 7 = 10$

$T = 20$

$KS = 11 + 19 = 3 \times 10 = 30$

$WGT = 23 + 7 + 20 = 50$

39.(b) :  $R \div M$  means R is father of M.

$M - P$  means M is sister of P.

So, M is daughter of R.

40.(c) : Mother of the girl is only daughter of his mother in law's husband means that mother of the girl is his wife. So Gopal is father of the girl.

### Indian and Global Environment

1.(d) : The Securities and Exchange Board of India (SEBI) has launched an information database including a repository of information pertaining to municipal bonds on its website.

2.(a) : The Union Minister Ashwini Vaishnaw, Ministry of Electronics and Information Technology (MeitY) launched the Stay Safe Online campaign and the Digital Innovation Alliance (DIA) program, the first-ever programs to be launched worldwide as a G20 (Group of Twenty) initiative.

3.(b) : Kerala Chief Minister (CM) Pinarayi Vijayan inaugurated the Palm leaf Manuscript Museum with modern audio-visual technology at the renovated Central Archives, Fort area in Thiruvananthapuram, Kerala.

4.(a) : The Indian Space Research Organisation (ISRO) and Microsoft India signed an MoU to support and promote the growth of space technology startups in India.

5.(c) : Amit Shah, Minister of Home Affairs, released a book titled "Revolutionaries- The Other Story of How India Won Its Freedom" authored by Economist Sanjeev Sanyal, member of the Economic Advisory Council to the Prime Minister(EAC-PM), at a function in New Delhi, Delhi.

6.(b) : Mohammad Shahabuddin Chuppu, a former judge and freedom fighter, has been declared the next President of Bangladesh by Bangladesh's Election Commission.

7.(c) : The 6th Annual Hollywood Critics Association (HCA) Film Awards 2023, held at the Beverly Wilshire in Los Angeles, United States (US), has acknowledged "RRR," directed by SS Rajamouli, on a global scale and honoured it with 5 awards.

8.(a) : The Australian women's national cricket team captained by Meg Lanning won the 8th edition of the International Cricket Council (ICC) Women's Twenty20 International (T20I) World Cup 2023 by defeating South Africa women's team captained by Sune Luus by 19 runs in the finals held in the Newlands Cricket Ground in Cape Town, South Africa.

9. (c) : The Reserve Bank of India (RBI) has amended the bank locker rules w.e.f. January 1, 2023. In this regard, all the existing locker depositors are required to furnish proof of eligibility for a renewed locker arrangement. They are required to sign a renewal agreement before the specified date.

10. (c) : The United Nations(UN)'s International Day of Happiness is annually observed across the globe on 20th March to recognise happiness, the fundamental goal of humans and to highlight its importance in the lives of people around the world.

11. (c) : Both the statements are correct.

12. (a) : According to 'Artificial Intelligence Index Report 2023', the 6th edition of the annual Artificial Intelligence(AI) index report published by Stanford University's Human-Centred Artificial Intelligence (HAI), India is ranked 5th in terms of private investments received in 2022 by startups offering AI-based products and services with a total investment of US\$3.24 billion.

13. (a) : Simon Sebag Montefiore, a British historian, discussed his recent book "The World: A Family History" in an interview with an Indian historian Manu S. Pillai.

14. (c) : Finland became the 31st member of the North Atlantic Treaty Organization (NATO) on April 4, 2023, when it presented its instrument of accession to the 'North Atlantic Treaty' (Washington Treaty) with the United States (US) at NATO Headquarters in Brussels, Belgium.

15. (b) : A UPI LITE wallet allows a user to do instant transactions of up to ₹200. A maximum of ₹2,000 can be added twice in a day to UPI LITE, making the cumulative daily usage up to ₹4,000.

16. (b) : The world's first 200-meter-long Bamboo Crash Barrier, named "Bahu Balli," has been installed on the Vani-Warora Highway in Vidarbha, Maharashtra.

17. (c) : The Arunachal Pradesh Protection of Drinking Water Catchment Areas Bill, 2023 was recently passed via voice vote by the state assembly.

18. (a) : The Cabinet has been approved a newly central sponsored scheme called PM SHRI on 7 September, 2022. These schools will showcase the implementation of the National Education Policy 2020 and emerge as exemplar schools over a period of time, and also offer leadership to other schools in the neighbourhood.

19. (d) : Edelweiss General Insurance has rebranded itself as Zuno General Insurance Limited (Zuno GI), a new-age digital insurer with the ambition to reimagine and redefine insurance to make it easy, friendly, and transparent.

20. (a) : The Government of Jammu and Kashmir (J&K) has initiated a programme "alternate agriculture system for sustainability project" to boost organic food production and increase economic returns for farmers in the Union Territory (UT).

21. (b) : "The Paradise of Food" authored by noted Urdu writer Khalid Jawed, and translated by Baran Farooqi from Urdu to English won the 5th JCB Prize for Literature 2022.

22.(c) : The Indian Space Research Organisation (ISRO) has conducted its 200th consecutively successful launch of the Rohini “RH-200” sounding rocket from its lead facility, the Vikram Sarabhai Space Centre (VSSC) in Thiruvananthapuram, Kerala.

23.(b) : On 24th December 2022 Ladakh, Jammu & Kashmir (J&K) celebrated the Losar Festival to mark the Ladakhi New Year, a major socio-religious festival of Ladakh celebrated in winter. Losar is a 15-day long festival that falls during the winters, any time between 8th and 30th December.

24.(a) : Nirmala Sitharaman announced the 'Dekho Apna Desh' scheme. In this new plan, the finance minister said that a total of 50 destinations in the country will be selected to be developed as a whole package in tourism with a challenging mode.

25.(c) : Itanagar, March 30 (Uni) The centuries-old monastic dances specially the dance of deities Palden Lhamo and Gonpo or Mahakala were introduced for the first time in Palpung Zangdok Palri Monastery, Jang in Tawang district of Arunachal Pradesh on Thursday.

26.(b) : On 15th March 2023, Ujjivan Small Finance Bank Limited was honoured with the ‘Innovation in Consumer Tech’ award at the 13th Aegis Graham Bell Awards (AGBA) for its Hello Ujjivan app, India’s 1st visual-voice-vernacular banking app.

27.(a) : The government of Sri Lanka’s proposed Anti-Terrorism Act would empower the authorities to systematically violate fundamental human rights, Human Rights Watch said.

28.(d) : According to the estimates released by consulting firm EY (Ernst & Young) in its report ‘India@100: Realising the potential of a \$26 trillion economy’, India’s economy will reach USD 26 trillion by 2047.

29.(c) : On April, 9, 2023, the Prime Minister Narendra Modi inaugurated the program ‘Commemoration of 50 years of Project Tiger’ at Mysuru University in Mysuru, Karnataka, the first of its kind in India, organised to mark 50 years of Project Tiger.

30.(b) : Padma Shri Awardee Prabhaben Sobhaghchand Shah, Social Worker from Union Territory (UT) of Dadra and Nagar Haveli, Daman, and Diu passed away in Daman at the age of 92.

31.(a) : The Appointments Committee of the Cabinet (ACC), headed by Prime Minister Narendra Modi, has approved the reappointment of Michael Debabrata Patra as the Deputy Governor of the Reserve Bank of India (RBI) for a further period of one year with effect from the 15th January 2023.

32.(c) : MSF provides a safety valve against unanticipated liquidity shocks to the banking system. The MSF rate is placed at 25 basis points above the policy repo rate.

33.(a) : Indo-Gangetic-Brahmaputra Plain is the largest alluvial tract of the world. It stretches for about 3,200 km from the mouth of the Indus to the mouth of the Ganga. Indian sector of the plain accounts for 2,400 km.

34.(a) : On April 14, 2023, the Union Minister Parshottam Rupala, Ministry for Fisheries, Animal Husbandry and Dairying (MoFAHD), launched project, ‘Animal Health System Support for One

Health' (AHSSOH) funded by World Bank, under the aegis of National One Health Mission to improve India's preparedness and response to potential animal pandemics.

35. (c) : Indian Mutiny, also called Sepoy Mutiny or First War of Independence, widespread but unsuccessful rebellion against British rule in India in 1857–59.

36. (d) : R'Bonney Gabriel of the United State of America (USA) was crowned 71st Miss Universe 2022 during the Miss Universe 2022 pageant held in New Orleans, Louisiana.

37. (a) : IDFC Mutual Fund (MF) has rebranded itself as Bandhan Mutual Fund w.e.f. March 13, 2023. In this regard, its each scheme will be renamed to replace the word 'IDFC' with the word 'Bandhan'.

38. (b) : World Rotaract Day is annually observed across the globe on March 13 to recognise and appreciate the services provided by Rotaractors, and members of Rotaract Clubs ('Rotaract' stands for 'Rotary in Action').

39. (d) : G. V. Mavlankar was not one of the members of the Drafting Committee of the Constituent Assembly.

40. (c) : The Government of Gujarat has achieved 100% household tap water supply in rural areas under the 'Jal Jeevan Mission' (JJM).

### **Language Comprehension**

1. (b) : Temper means one's characteristics and attitude. Here, as per the context of the sentence temper makes more sense. Dialect is used in sense of terminology.

2. (d) : Late is the positive adjective degree. The sentence demands positive degree of adjective only in the first blank. Pursue means to seek something. No other option fits meaningfully in the second blank.

3. (a) : Sophisticated means made or done with great care or with much detail. As the sentence is talking about human technology and navigation, sophisticated makes sense in the first blank. Sail means to travel on water.

4. (d) : Circulating means to move or make something move round continuously. With the substance like blood, circulating is the term used in the medical science.

5. (a) : Go bananas means to get angry or to go mad.

6. (c) : Engine room means the main source of talent, power, or ability in a team or group, likened to the room that houses a ship's engine.  
Sarah is our engine room, so with her injured, I'm not sure how we'll be able to win on Saturday.

7. (b) : Preposition 'on' will be used with the location. Depends on is the correct prepositional phrase.

8.(d) : No correction is required in the given sentence as the verb usage is correct. Moreover, article 'a' before massive is correctly placed.

9.(a) : At first means at the beginning, with the context like this preposition 'at' is used with the term first

10.(b) : The use of that in the second option is redundant. Moreover, pronoun that is not used when talking about a human entity.

11.(c) : Had instead of has will be used with reacted. As the sentence is given in the past tense. Past form of verbs will be used.

12.(b) : Gloomy means causing or marked by an atmosphere lacking in cheer. Dark is one of the synonyms of gloomy. Hence, form a synonym pair.

13.(c) : Grown means covered with a thick healthy natural growth whereas impoverished means producing inferior or only a small amount of vegetation. Impoverished is the direct antonym of grown.

14.(d) : Desolate means causing or marked by an atmosphere lacking in cheer. Morose means the same as desolate. Blithe and mirthful are antonyms of desolate.

15.(a) : Agglomeration means an unorganized collection or mixture of various things. Clutter is the only word which means the same.

16.(a) : Prune means to make (something) shorter or smaller with the use of a cutting instrument. Extend means longer.

17.(d) : Omni is a root word which means all and potent means potential or power. So, the correct answer must be omnipotent.

18.(c) : Pyro is the woot word which means fire. Mania means a serious mental illness that may cause somebody to be very excited or violent. Hence, the correct answer must be pyromania.

19.(b) : P starts the topic sentence. Q and S can never start the paragraph. S concludes the given idea. Hence, PRQS is the only logical sequence here.

20.(c) : However is used for adding a comment to what you have just said, that means P can never start the paragraph. Q introduces the topic of level of education. RS is a link. Hence, QPRS is a logical sequence here.

21.(c) : The first two lines of the paragraph mention the reason. It clearly says- "Here are to be found remains of aboriginal settlements".

22.(d) : All the options are mentioned in the given passage except the last one. The last few lines refer to the huts.

23.(d) : Stereotype means a set idea that people have about what someone or something is like.

24.(a) : At various instances, the passage mentions how people were trapping fish. It also discusses the technology they employed to do the same thing.

25.(b) : On the hills

26.(c) : The passage mainly talks about the harmful effects of air pollution on environment. At various instances, it talks about climate change and diseases caused by it.

27.(c) : When we are talking about an area of livelihood we mainly talk about its surroundings. Here, rich means area filled with lush greenery and clean environment.

28.(d) : It is stated in the passage that air pollution affects both circulatory and respiratory system. Nothing has been talked about the digestive system.

29.(a) : The first line of the last paragraph mentions this fact.

30.(d) : Penetrating means to go or come in or into. Other than intruding all are antonyms of penetrating.

31.(b) : Following the flow of information given in the passage, the right order can be traced. II event started in 1960s, I started in 1980s and the last one started in 2001.

32.(c) : The fourth line of the paragraph clearly mentions that the cloud computing has evolved from the concepts of utility, grid and SaaS.

33.(d) : The last lines talk about SaaS and its application. And it clearly mentions that SaaS has raised the level of virtualization to the application mainly by the estimation of the application to supporters.

34.(c) : Devoured means to make complete use of. Depleted is one of its synonyms.

35.(b) : This could be traced in the last line of the passage – “In 2001, IBM began autonomic computing likewise called self-revision in which computers can naturally rectify themselves without human mediation.”

36.(a) : The passage mainly talks about the theory behind more men being born after war than women.

37.(d) : The given fact has been mentioned in the second paragraph of the passage.

38.(c) : Gellatly has mainly focused on the theory mentioned in the third option. He has again and again stated examples to support the same argument.

39.(a) : The given fact is given in the second paragraph of the passage.

40.(a) : Odds mean the degree to which something is likely to happen; the probability of something happening.