

# STAFF SELECTION COMMISSION

## CGL TIER-1 MODEL PAPER

No.of Questions: 100

Total Marks: 200

Time: 1 Hr.

### GENERAL INTELLIGENCE

**Directions (Q. 1 – 5):** In each of the following questions, select the related letter / word / figure / number from the given alternatives.

1. JLNP : OMKI :: SUWY : ?

- 1) FGHI                      2) MLKJ                      3) PLHD                      4) XVTR

2. Philatelist : Stamps :: Numismatist : ?

- 1) Coins                      2) Maps                      3) Jewels                      4) Samples

3. 3 : 11 :: 7 : ?

- 1) 22                      2) 29                      3) 18                      4) 51

4. Coins : Mint :: Bricks : ?

- 1) Cemetery                      2) Cement                      3) Foundry                      4) Kiln

5. PALE : LEAP :: POSH : ?

- 1) HSOP                      2) POHS                      3) SHOP                      4) POSH

**Directions (Q. 6 – 9):** Find the odd word / letter / number from the given alternatives.

6. 1) Himadri                      2) Sivalik                      3) Kandla                      4) Himachal

7. 1) Deuce                      2) Pitch                      3) Crease                      4) Stump

8. 1) 5788                      2) 5878                      3) 6482                      4) 9748

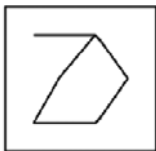
9. 1) Italy                      2) UK                      3) Germany                      4) France

10. If BEAT is written as YVZG, then how would MILD be written in the same code?

- 1) ONRW                      2) NOWR                      3) ONWR                      4) NROW

11. Find out the answer figure which contains question figure as its part?

**Question figure:**



**Answer figures:**

- 1)                       2)                       3)                       4) 

12. From the given options, select the appropriate option in which number in the given series is equivalent to the number series given in the options.

- 1) (46, 56, 66)                      2) (50, 59, 71)                      3) (60, 67, 72)                      4) (60, 69, 82)

13. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

\_ bba \_ ba \_ \_ aa \_ ab \_ a

- 1) bbaabb                      2) cababaa                      3) aabbbb                      4) babbab

14. If the seventh day of a month is three days earlier than Friday, what day will be on the 19<sup>th</sup> day of the month?

- 1) Sunday                      2) Monday                      3) Wednesday                      4) Friday

15. If  $10 \times 2 = 4$ ,  $14 \times 4 = 5$ , then  $24 \times 12$  is equal to

- 1) 10                      2) 11                      3) 18                      4) 6

**Directions (Q.16 – 17):** In the given series, some letter / number / digit is missing. Choose the appropriate option.

16. 114, 225, 336, 447, 558, .....

- 1) 569                      2) 780                      3) 779                      4) 669

17. AZ, GT, MN, ?, YB

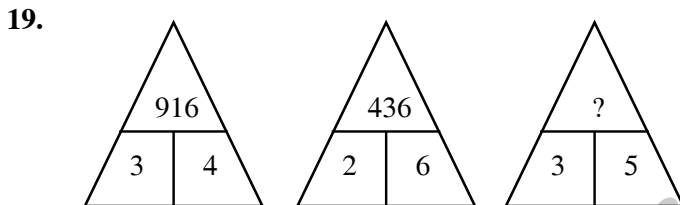
- 1) JH                      2) SH                      3) SK                      4) TS

**Directions (Q. 18 – 19):** From the given options choose the missing number.

18.

3	6	8
5	8	4
4	7	?

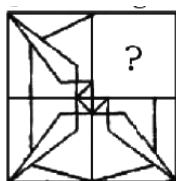
- 1) 6                      2) 7                      3) 8                      4) 9



- 1) 625                      2) 255                      3) 355                      4) 925

20. Identify the figure that completes the pattern of the question figure?

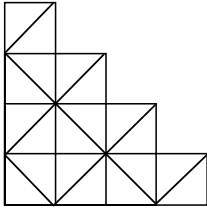
**Question figure:**



**Answer figures:**

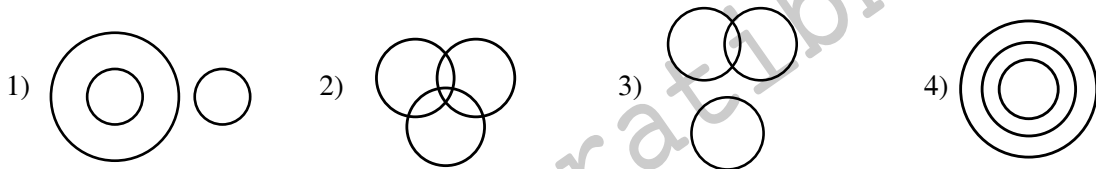
- 1)                      2)                      3)                      4)

21. Find the number of squares in the following figure.



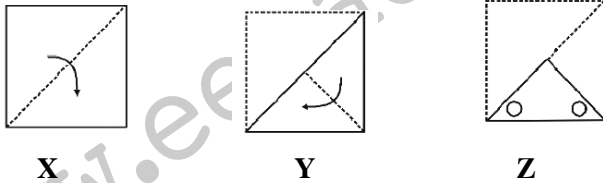
- 1) 14                      2) 13                      3) 12                      4) 11

22. Which one of the following diagrams represents the correct relationship among Teacher, Poet and Graduate?

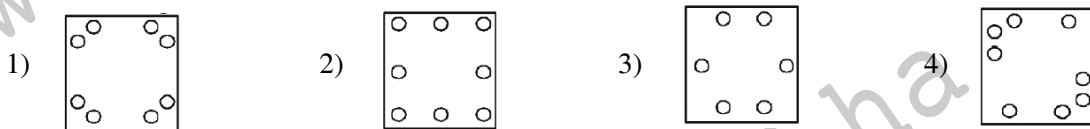


23. A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question figure:**



**Answer figures:**



24. The age of a father is twice that of the elder son. Ten years hence the age of the father will be three times that of the younger son. If the difference of ages of the two sons is 15 years, then the age of the father is?

- 1) 50 yrs                      2) 55 yrs                      3) 60 yrs                      4) 70 yrs

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of letters as in two matrices given below. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column. E.g., 'N' can be represented by 03, 11, 20 etc., and 'H' can be represented by 59, 65, 76 etc. Similarly, you have to identify the set for the word 'SORT'.

**Matrix-I**

	5	6	7	8	9
5	T	C	R	A	H
6	H	T	A	C	R
7	A	H	C	R	T
8	R	A	H	T	C
9	C	R	T	H	A

**Matrix-II**

	0	1	2	3	4
0	S	M	P	N	O
1	M	N	S	O	P
2	N	O	M	P	S
3	O	P	N	S	M
4	P	S	O	M	N

- 1) 24, 21, 96, 88                      2) 33, 30, 85, 67                      3) 00, 04, 58, 88                      4) 24, 30, 85, 56





44. Full employment is a situation where?  
1) there is no involuntary unemployment  
2) there is involuntary unemployment  
3) there is no voluntary unemployment  
4) there is voluntary unemployment
45. A fuse wire is made of  
1) an alloy of tin and copper  
2) an alloy of tin and lead  
3) an alloy of tin and aluminium  
4) an alloy of nickel and chromium
46. Of all micro-organisms, the most adaptable and versatile are  
1) Viruses                      2) Bacteria                      3) Algae                      4) Fungi
47. What are the signals that inform the operating system that some activity has taken place, called?  
1) Informers                      2) Interrupts                      3) Events                      4) Handlers
48. Which are the cities connected by "Sada-e-Sarhad" bus services?  
1) Aligarh : Amritsar                      2) Delhi : Lahore  
3) Suchetgarh : Sialkot                      4) Srinagar : Muzaffarabad
49. Who was the first Indian to become member of British Parliament?  
1) Bankim Chandra Chatterjee                      2) W.C. Bannerjee  
3) Dadabhai Naoroji                      4) None of the above
50. Alexander and the army of Porus camped on the opposite banks of which river?  
1) Ravi                      2) Jhelum                      3) Sutlej                      4) Chenab

### QUANTITATIVE APTITUDE

51. A and B together can do a work in 8 days. B and C together in 6 days, while C and A together in 10 days. If they all work together, the work will be completed in how many days?  
1)  $3\frac{3}{4}$  days                      2)  $3\frac{3}{7}$  days                      3)  $5\frac{5}{47}$  days                      2)  $4\frac{4}{9}$  days
52. If the height of a cylinder is increased by 15% and the radius of its base is decreased by 10%, then by what percent will its curved surface area change?  
1) 3.5% decrease                      2) 3.5% increase                      3) 5% increase                      4) 5% decrease
53. The price of an article is reduced by 25 percent but the daily sale of the article is increased by 30 percent. The net percentage effect on the daily sale is?  
1)  $2\frac{1}{2}$  % increase                      2)  $2\frac{1}{2}$  % decrease  
3) 2% increase                      4) 2% decrease
54. 10 women can complete a work in 7 days and 10 children take 14 days to complete the work. How many days will 5 women and 10 children take to complete the work?  
1) 5                      2) 7                      3) 3                      4) can't be determined

55. 50 gm of an alloy of gold and silver contains 80% gold. The quantity of gold, that is to be mixed up with this alloy, so that it may contain 95% gold, will be?  
1) 200 gm                      2) 150 gm                      3) 50 gm                      4) 10 gm
56. 6 years ago, mother's age was 18 years more than the son's age. If the sum of their present ages is 30, then what was the age of the mother 6 years back?  
1) 32 yrs                      2) 36 yrs                      3) 18 yrs                      4) 24 yrs
57. There is a leak in the bottom of a cistern. When the cistern is thoroughly repaired, it would be filled in  $3\frac{1}{2}$  hrs. Before getting repaired, it takes half an hour longer. If the cistern is full, how long would the leak take to empty the cistern?  
1) 24 hrs                      2) 28 hrs                      3) 32 hrs                      4) 36 hrs
58. A man engaged a servant on the condition that he would pay him Rs.90 and a turban after service of one year. He served only for nine months and received the turban and an amount of Rs.65. The price of turban is?  
1) Rs.25                      2) Rs.18.75                      3) Rs.10                      4) Rs.2.50
59. The average monthly salary of all the employees in an industry is Rs.12,000. The average salary of male employees is Rs.15,000 and that of female employees is Rs.8,000. What is the ratio of male employees to female employees?  
1) 5 : 2                      2) 3 : 4                      3) 4 : 3                      4) 2 : 5
60. Two persons A and B walk from P to Q, which are at a distance of 21 km, at 3 km/h and 4 km/h respectively, B reaches Q returns immediately and meets A at R. Find the distance from P to R.  
1) 12 km                      2) 16 km                      3) 28 km                      4) 18 km
61. If 10% of A's income = 15% of B's income = 20% of C's income. If sum of their income is Rs.7800, then B's income is?  
1) Rs.3600                      2) Rs.3000                      3) Rs.2400                      4) Rs.1800
62. In a flight of 600 kms, an aircraft was slowed down due to bad weather. Its average speed for the trip is reduced by 200 km/h and the time of flight increased by 30 min. Find the duration of the flight?  
1) 1 hr                      2) 2 hrs                      3) 3 hrs                      4) 4 hrs
63. What is the smallest number which leaves remainder 3 when divided by any of the numbers 5, 6 or 8 but leaves no remainder when it is divided by 9?  
1) 123                      2) 603                      3) 723                      4) 243
64. A man buys a scooter on making a cash down payment of Rs.16224 and promises to pay two more yearly installments of equal amount in next two years. If the rate of interest is 4% per annum, compounded yearly, the cash value of the scooter is?  
1) Rs. 40,000                      2) Rs. 46,824                      3) Rs. 46,000                      4) Rs. 50,000
65. G is centroid of the equilateral  $\Delta ABC$ . If  $AB = 10$  cm then length of AG is?  
1)  $\frac{5\sqrt{3}}{3}$  cm                      2)  $\frac{10\sqrt{3}}{3}$  cm                      3)  $5\sqrt{3}$  cm                      4)  $10\sqrt{3}$  cm
66. O and C are respectively the ortho centre and circumcentre of an acute-angled triangle PQR. The points P and O are joined and produced to meet the side QR at S. If  $\angle PQS = 60^\circ$  and  $\angle QCR = 130^\circ$ , then  $\angle RPS = ?$   
1)  $30^\circ$                       2)  $35^\circ$                       3)  $100^\circ$                       4)  $60^\circ$



67. The angle of elevation of the top of a tower from a point on the ground is  $30^\circ$  and moving 70 metres towards the tower it becomes  $60^\circ$ . The height of the tower is?

- 1) 10 m                      2)  $\frac{10}{\sqrt{3}}$  m                      3)  $10\sqrt{3}$  m                      4)  $35\sqrt{3}$  m

68. If  $x = \frac{a^2 - 25}{a^2 - 36}$  and,  $y = \frac{a + 5}{a + 6}$  then find the value of  $\frac{x}{y}$  is?

- 1)  $\frac{a + 5}{a + 6}$                       2)  $\frac{a - 5}{a - 6}$                       3)  $\frac{x - 5}{x + 6}$                       4)  $\frac{x + 5}{x - 6}$

69. If  $\cos \theta \operatorname{cosec} 23^\circ = 1$ , the value of  $\theta$  is?

- 1)  $23^\circ$                       2)  $37^\circ$                       3)  $63^\circ$                       4)  $67^\circ$

70. The value of  $(1001)^3$  is?

- 1) 1003003001                      2) 100303001                      3) 100300301                      4) 103003001

**Directions (Q. 71 – 75):** Study the bar diagram given below carefully and answer the following questions based on it.

71. The birth-rate in which country is 25% more than that in Germany ?

- 1) India                      2) China                      3) England                      4) New Zealand

72. The birth rate in India is what percent of the birth-rate in England?

- 1) 165%                      2) 155%                      3) 140%                      4) 100%

73. The birth-rate in China is how many times the birth-rate in Germany ?

- 1) 0.4                      2) 5.2                      3) 4.0                      4) 2.5

74. What is the ratio of birth-rate in India to that in Sweden ?

- 1) 5 : 11                      2) 11 : 5                      3) 2 : 1                      4) 1 : 2

75. By how much percent is the birth-rate in England less than the birth-rate in New Zealand ?

- 1) 30%                      2)  $33\frac{1}{3}\%$                       3) 45%                      4) 50%

### ENGLISH LANGUAGE

**Directions (Q. 76 – 77):** Some part of the sentences have errors and some are correct. Find out which part of a sentence has an error. If a sentence is free from error, your answer is (4).

76. At certain seasons, (1)/ some areas on Mars (2)/ is subject to strong winds. (3)/ No error (4)

77. Having deprived of their houses (1)/ in the recent earthquake (2)/ they had no other options but to take shelter in a school (3)/ No error (4)

**Directions (Q. 78 – 80):** Sentences given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four.

78. Sulochna and Saloni could not get admission in the college ..... they had already managed to get a passing score in the officially exam.

- 1) even though                      2) now that                      3) therefore                      4) whether

79. The criminal was totally taken ..... when the police arrested him after a long chase.

- 1) aback                      2) up                      3) for                      4) away



80. The more your action and thought are allied and ..... the happier you grow.

- 1) invincible                      2) divergent                      3) integrated                      4) unravelled

81. Out of the four alternatives, choose the one which best expresses the meaning of the given word.  
**Trimming**

- 1) Skimming                      2) Arranging                      3) Planning                      4) Cutting

**Directions (Q. 82 – 83):** Choose the word opposite in meaning to the given word.

82. **Stale**

- 1) Fresh                      2) Old                      3) Steal                      4) Stalk

83. **Vacate**

- 1) Evacuate                      2) Validate                      3) Occupy                      4) Empty

84. Four words are given in each question, out of which only one word is spelt correctly. Find the word spelt correct.

- 1) Humorous                      2) Humourous                      3) Humorus                      4) Humourus

**Directions (Q. 85 – 87):** Four alternative are given for the Idiom / Phrase. Choose the alternative which best expresses the meaning of the Idiom / Phrase.

85. It all happened in the twinkling of an eye.

- 1) Before one's own eyes  
2) When everyone had their eyes turned away  
3) Very quickly  
4) Magically

86. Never turn down the humble request of a poor man.

- 1) criticise                      2) reject                      3) laugh at                      4) discourage

87. To burn the candle at both ends

- 1) to spend cautiously                      2) to be stingy  
3) to be extravagant                      4) to survive difficulty

**Directions (Q. 88 – 89):** A sentence/ a part of the sentence is underlined. Below are given alternatives to the underlined part at (1), (2), (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed your answer is (4).

88. The firm buys frozen seafood in bulk, packs it into smaller pouches and then they sell them to the local grocery

- 1) it sells them                      2) sell them  
3) they sell the pouches                      4) No improvement

89. The disparity of the GDP between the rich and the poor has broadened in the last some decades.

- 1) have widened in the last some decades  
2) has widened in the last few decades  
3) have broadened in the last few decades  
4) No improvement

**Directions (Q. 90 – 92):** In the following question, out of the four alternatives, choose the one which can be substituted for the given sentence.

90. A light sailing boat built especially for racing

- 1) Dinghy                      2) Canoe                      3) Yacht                      4) Frigate

91. A political leader who tries to stir up people

- 1) Demagogue              2) Dictator                      3) Statesman                      4) Martinet

92. Easily tricked to be fooled

- 1) Innocent                      2) Impulsive                      3) Gullible                      4) Naive

**Directions (Q. 93 – 95):** You are provided with the first and the last part of a sentence. The remaining sentence is broken into four parts labelled (P), (Q), (R) and (S). You are required to arrange this parts so as to form a complete meaningful sentence and then choose the correct combination from (1), (2), (3) and (4).

93. It was true that

P : the pet dog

Q : would never sleep anywhere

R : we once had

S : except on the sofa

- 1) P Q S R                      2) P R Q S                      3) R P Q S                      4) S P Q R

94. A policeman

P : to abide

Q : if he has to do well,

R : by the strict letters of the law

S : cannot afford

- 1) P R Q S                      2) Q S P R                      3) R Q P S                      4) S P R Q

95. I have not come

P : even if it means some humiliation

Q : but the boy must learn

R : to complain, he said,

S : to be honest and admit he broke our window pane.

- 1) P R Q S                      2) Q S P R                      3) R Q S P                      4) S Q P R

**Directions (Q. 96 – 100):** Read the passage carefully and choose the best answer to each question out of the four alternatives.

### PASSAGE

Pidgins are languages that are not, acquired as mother tongues and that are used for a restricted set of communicative functions. They are formed from a mixture of languages and have a limited vocabulary and a simplified grammar. Pidgins serve as a means of communication between speakers of mutually unintelligible languages and may become essential, in multilingual areas. A creole develops from a pidgin when the pidgin becomes the mother tongue of the community. To cope with the consequent expansion of communicative functions of vocabulary is increased and the grammar becomes more complex. Where a creole and the standard variety of English coexist, as in the Caribbean, there is a continuum from the most extreme form of

creole to the form that is closest to the standard language. Linguists mark off the relative positions on the creole continuum as the 'basilect' (the furthest from the standard language), the 'mesolect', and the 'acrolect'. In such situations, most creole speakers can vary their speech along the continuum and many are also competent in the standard English of their country.

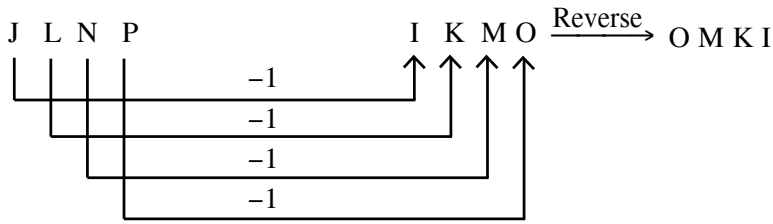
96. Find out a word in the passage which is opposite in meaning to the word- 'Simplified'
- 1) Complex                      2) Expansion                      3) Restricted                      4) Consequent
97. According to the passage 'basilect' means
- 1) an impure form of a creole  
2) a form of creole which is furthest from the standard language  
3) a form of creole which has an extended vocabulary  
4) a form of creole which is very close to the standard language
98. According to the given passage a pidgin becomes a creole when
- 1) it ceases to be a means of communication  
2) it becomes the mother tongue for a new generation of speakers  
3) its vocabulary undergoes some kind to change  
4) two or more languages are mixed with an existing pidgin
99. A pidgin develops in a situation when
- 1) different and mutually unintelligible languages exist side by side  
2) a creole becomes the mother tongue of a linguistic community  
3) a language with restricted vocabulary undergoes an expansion in grammar and vocabulary  
4) two similar language are mixed to create a new language
100. According to the passage, a creole continuum is
- 1) a linguistic term for the mixture of more than two languages  
2) a scale which measures the linguistic competence of the speaker  
3) a scale in which the proximity of the creole to the standard language is measured  
4) a record of the continuous history of a creole

**KEY**

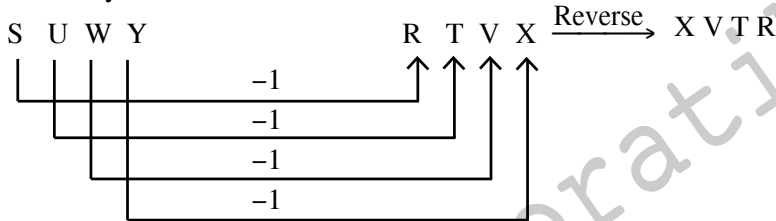
1-4; 2-1; 3-4; 4-4; 5-3; 6-3; 7-1; 8-3; 9-2; 10-4; 11-2; 12-4; 13-3; 14-1; 15-4; 16-4; 17-2; 18-1; 19-4; 20-3; 21-1; 22-2; 23-1; 24-1; 25-1; 26-1; 27-2; 28-1; 29-1; 30-3; 31-2; 32-1; 33-1; 34-3; 35-2; 36-3; 37-1; 38-1; 39-2; 40-3; 41-3; 42-2; 43-2; 44-2; 45-2; 46-1; 47-4; 48-2; 49-3; 50-2; 51-3; 52-2;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

HINTS & SOLUTIONS

1. As,



Similarly,



2. One who collects stamps is called philatelist. Similarly, one who collects coins is called numismatist.

3. Clearly,  $3^2 + 2 = 11$ ,

Now  $7^2 + 2 = 51$

So, if the first number is  $x$ , the second number is  $x^2 + 2$ .

4. Coins are cost and stamped in a mint. Similarly, bricks are baked in a kiln.

5. As,

1 2 3 4  
P A L E  
3 4 2 1  
L E A P

So,

1 2 3 4  
P O S H  
3 4 2 1  
S H O P

6. Except Kandla, all are ranges of Himalayas, while Kandla is a sea-port in Gujarat.

7. Except Deuce, all terms are associated with cricket.

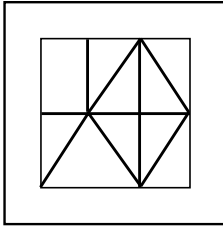
8. In all other numbers, the sum of the digits = 28.

9. Currency used in UK is sterling pound where as the rest three countries use Euro as their currency.

10. B, E, A, T are respectively the 2<sup>nd</sup>, 5<sup>th</sup>, 1<sup>st</sup>, 20<sup>th</sup> letters from the beginning of the English alphabet. The letters of the code Y, V, Z, G are respectively the 2<sup>nd</sup>, 5<sup>th</sup>, 1<sup>st</sup> and 20<sup>th</sup> letters from the end of the English alphabet.

Similarly, M, I, L, D are respectively 13<sup>th</sup>, 9<sup>th</sup>, 12<sup>th</sup>, 4<sup>th</sup> letters from the beginning of the English alphabet and the 13<sup>th</sup>, 9<sup>th</sup>, 12<sup>th</sup>, 4<sup>th</sup> letters from the end of the English alphabet are N, R, O, W respectively. So, the required code is NROW.

11.



12. In each set, 2<sup>nd</sup> number = (1<sup>st</sup> number + 9) and 3<sup>rd</sup> number = (2<sup>nd</sup> number + 13)

13. The correct sequence is

a b b/ a a b/ a a b/ a a b/ a b b/ a

14. As mentioned, the 7<sup>th</sup> day of the month is three day earlier than Friday, which is Tuesday. So, the 14<sup>th</sup> day is also Tuesday and thus the 19<sup>th</sup> day will be Sunday.

15.  $10 \times 2 \Rightarrow 10 - 2 = 8 \Rightarrow \frac{8}{2} = 4$

$14 \times 4 \Rightarrow 14 - 4 = 10 \Rightarrow \frac{10}{2} = 5$

$24 \times 12 \Rightarrow 24 - 12 = 12 \Rightarrow \frac{12}{2} = 6$

16. Each successive term exceeds by 111 over its previous term.

17. 1<sup>st</sup> letter,

A  $\xrightarrow{+6}$  G  $\xrightarrow{+6}$

M  $\xrightarrow{+6}$  S  $\xrightarrow{+6}$  Y

2<sup>nd</sup> letter,

Z  $\xrightarrow{-6}$  T  $\xrightarrow{-6}$

N  $\xrightarrow{-6}$  H  $\xrightarrow{-6}$  B

18. Clearly, sum of numbers in each row is 17. So, missing number =  $17 - (4 + 7) = 6$

19. As,

9      16

↓      ↓

(3)<sup>2</sup>    (4)<sup>2</sup>

4      36

↓      ↓

(2)<sup>2</sup>    (6)<sup>2</sup>

Similarly

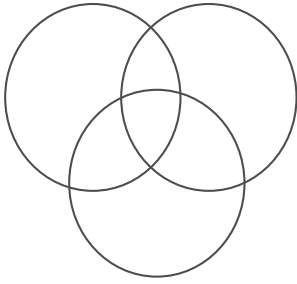
9	25
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↓      ↓

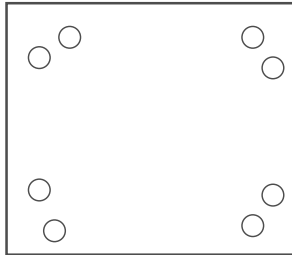
(3)<sup>2</sup>    (5)<sup>2</sup>

20. Answer figure (3) will complete the pattern of question figure.

22.



23.



24. Let the age of the elder son be  $x$  yrs.

Then, age of younger son =  $(x - 15)$  yrs;

Age of the father =  $2x$  yrs

So,  $2x + 10 = (3x - 15 + 10)$

$\Rightarrow 2x + 10 = 3x - 15 \Rightarrow x = 25$

$\therefore$  Father's age =  $2x = 50$  yrs

25. S  $\rightarrow$  00, 12, 24, 33, 41

O  $\rightarrow$  04, 13, 21, 30, 42

R  $\rightarrow$  57, 69, 78, 85, 96

T  $\rightarrow$  55, 66, 79, 88, 97

$\therefore$  SORT  $\rightarrow$  24, 21, 96, 88

51. 1 day's work of  $2(A + B + C)$

$$= \frac{1}{8} + \frac{1}{6} + \frac{1}{10} = \frac{15 + 20 + 12}{120} = \frac{47}{120} \text{ part}$$

$$A + B + C = 1 \text{ day's work} = \frac{1}{2} \times \frac{47}{120} \text{ part}$$

$$\text{No. of days} = \frac{120 \times 2}{47} = \frac{240}{47} = 5 \frac{5}{47} \text{ days}$$

52.  $H_1 = 100, H_2 = 115, R_1 = 100, R_2 = 90$

Curved surface area =  $2\pi rh$

$$2\pi R_1 H_1$$

$$\Rightarrow 100 \times 100$$

$$\Rightarrow 10,000$$

$$\Rightarrow 200$$

$$2\pi R_2 H_2$$

$$\Rightarrow 115 \times 90$$

$$\Rightarrow 10350$$

$$\Rightarrow 207$$

$$\text{Increase} = 207 - 200 = 7$$

$$\begin{aligned} \% \text{ increase} &= \frac{\text{increase}}{\text{original}} \times 100\% \\ &= \frac{7}{200} \times 100 = 3.5\% \end{aligned}$$

53. Price (Rs.)  $\times$  Qty. (kg) = expenses (Rs.)

$$\Rightarrow 10 (-25\%) \times 10 (+30\%)$$

$$= \text{Rs.}100 - \text{Rs.} 2.5$$

$$\Rightarrow 7.5 \times 13 = \text{Rs.} 97.5$$

$$\text{Reqd}\% = \frac{-2.5}{100} \times 100 = 2 \frac{1}{2} \% \text{ decrease}$$

54.  $10W \times 7D = 10C \times 14D$

$$1W = 2C$$

$$\therefore 5W + 10C = 20C$$

Since 10C takes 14 days to complete the work.

Hence 20C take 7 days.

55. **Gold**      **Silver**

80

20

$$\Rightarrow \text{diff.} = 300$$

80 20

95

$5 \times 4$

380 20

↓

80 + 20 i.e. to make silver equal

$$100 \text{ units} = 50\text{g}$$

$$\therefore 1 \text{ unit} = \frac{1}{2} \text{g}$$

Difference between 80 and 380 i.e. 300 units = 150 gm.

56. Let the present age of mother be  $x$  years.

$\therefore$  present age of son be  $(30 - x)$  years

6 years ago, mother's age =  $(x - 6)$  years

and son's age =  $30 - x - 6 = 24 - x$  years

According to the question,

$$(x - 6) - (24 - x) = 18$$

$$\Rightarrow x - 6 - 24 + x = 18$$

$$\Rightarrow 2x - 30 = 18$$

$$\Rightarrow 2x = 18 + 30$$

$$\Rightarrow 2x = 48 \Rightarrow x = 24$$

$\therefore$  6 years ago mother's age =  $24 - 6 = 18$  years.

57. Cistern is filled by inlet in  $3 \frac{1}{2}$  hrs =  $\frac{7}{2}$  hrs.



In 1 hr it filled  $\frac{2}{7}$  part

Cistern with leakage can be filled in 4 hrs

In 1 hr it filled  $\frac{1}{4}$  part

In 1 hr the leakage emptied

$$= \frac{2}{7} - \frac{1}{4} = \frac{8-7}{28} = \frac{1}{28} \text{ part}$$

Leakage will take 28 hrs.

**58.** 12 months' salary = Rs. 90 + turban

$$\therefore 9 \text{ months's salary} = (\text{Rs. } 90 + \text{turban}) \times \frac{9}{12}$$

$$= \text{Rs. } 90 \times \frac{3}{4} + \frac{3}{4} \text{ turban}$$

$$= \text{Rs. } \frac{135}{2} + \frac{3}{4} \text{ turban}$$

$$\therefore \text{Rs. } \frac{135}{2} + \frac{3}{4} \text{ turban}$$

$$= \text{Rs. } 65 + \text{turban}$$

$$\therefore \frac{1}{4} \text{ turban} = \frac{135}{2} - 65 = \text{Rs. } \frac{5}{2}$$

$$\therefore \text{Turban } \frac{5}{2} \times 4 = \text{Rs. } 10$$

**59.** Male employees = x

Female employees = y

$$\therefore (x + y) 12000 = x \times 15000 + y \times 8000$$

$$\Rightarrow (x + y) \times 12 = 15x + 8y$$

$$\Rightarrow 12x + 12y = 15x + 8y$$

$$\Rightarrow 3x = 4y$$

$$\Rightarrow \frac{x}{y} = \frac{4}{3}$$

$$\Rightarrow x : y = 4 : 3$$

**60.** Distance travelled by A

$$= 2 \times \text{distance between two points} \times \left( \frac{a}{a+b} \right)$$

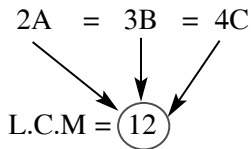
$$= 2 \times 21 \times \frac{3}{7} = 18 \text{ km}$$

**61.** Total income will be 7800

10% of A = 15% of B = 20% of C

If 5% = 1 then,

$$2A = 3B = 4C$$



L.C.M = 12

$$A : B : C = \frac{12}{2} : \frac{12}{3} : \frac{12}{4}$$

$$\Rightarrow A : B : C = 6 : 4 : 3 = \text{Total} = 13$$

$$\text{B's income} = \frac{4}{13} \times 7800 = \text{Rs. } 2400$$

62. Let the duration of flight be  $t$  hours.

$$S = \frac{D}{T}$$

$$S_1 - S_2 = 200 \text{ km/h}$$

$$\Rightarrow \frac{600}{t} - \frac{600}{t + \frac{1}{2}} = 200$$

$$\Rightarrow \frac{600}{t} - \frac{2 \times 600}{2t + 1} = 200$$

$$\Rightarrow (2t + 1) 600 - t \times 1200 = 200t (2t + 1)$$

$$\Rightarrow 3(2t + 1) - 6t = t (2t + 1)$$

$$\Rightarrow 6t + 3 - 6t = 2t^2 + t$$

$$\Rightarrow 2t^2 + t - 3 = 0$$

$$\Rightarrow 2t^2 + 3t - 2t - 3 = 0$$

$$\Rightarrow t (2t + 3) - 1(2t + 3) = 0$$

$$\Rightarrow (2t + 3) (t - 1) = 0$$

$$\Rightarrow t = 1 \text{ hr}$$

63. We find LCM of 5, 6 and 8

$$5 = 5, 6 = 3 \times 2, 8 = 2^3$$

$$= 2^3 \times 3 \times 5 = 8 \times 15 = 120$$

$$\text{Required number} = 120K + 3$$

$$\therefore \text{when } K = 2, 120 \times 2 + 3 = 243$$

Required number

It is completely divisible by 9

64. Let principal (present worth) for first year be  $P_1$  and that for 2<sup>nd</sup> year be  $P_2$ .

$$\therefore 16224 = P_1 \left( 1 + \frac{4}{100} \right)$$

$$\Rightarrow 16224 = P_1 \left( 1 + \frac{1}{25} \right) = \frac{26P_1}{25}$$

$$\Rightarrow P_1 = \frac{16224 \times 25}{26} = \text{Rs.}15600$$

Again,

$$\Rightarrow 16224 = P_2 \left(1 + \frac{4}{100}\right)^2$$

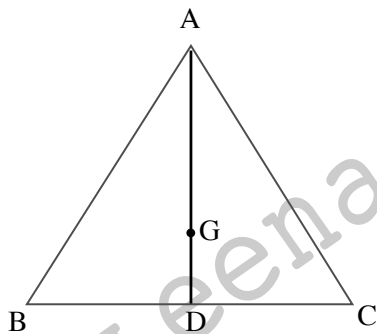
$$\Rightarrow 16224 = P_2 \left(\frac{26}{25}\right)^2 = \frac{676P_2}{625}$$

$$\Rightarrow P_2 = \frac{16224 \times 625}{676} = \text{Rs.}15000$$

$\therefore$  Cash value of the scooter

$$= \text{Rs.} (16224 + 15600 + 15000) = \text{Rs.} 46824$$

65.



$$AB = 10 \text{ cm, } BD = 5 \text{ cm}$$

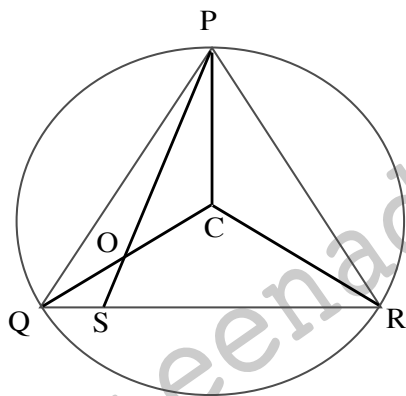
$$\angle ADB = 90^\circ$$

$$\therefore AD = \sqrt{AB^2 - BD^2} = \sqrt{10^2 - 5^2}$$

$$= \sqrt{100 - 25} = \sqrt{75} = 5\sqrt{3} \text{ cm}$$

$$\therefore AG = \frac{2}{3} AD = \frac{2}{3} \times 5\sqrt{3} = \frac{10\sqrt{3}}{3} \text{ cm}$$

66.



$$\angle PQS = 60^\circ$$

$$\angle QCR = 130^\circ$$

$$\therefore \angle QPR = \frac{1}{2} \times 130^\circ = 65^\circ$$

$$\angle QRP = 180^\circ - 60^\circ - 65^\circ = 55^\circ$$

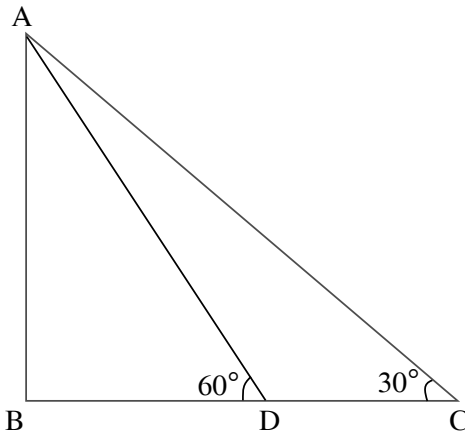
In  $\Delta RPS$

$$\angle PSR + \angle PRS + \angle RPS = 180^\circ$$

$$\Rightarrow 90^\circ + 55^\circ + \angle RPS = 180^\circ$$

$$\Rightarrow \angle RPS = 35^\circ.$$

67.



AB = Height of tower = h metre (let)

CD = 70 metre

BD = x metre let)

In  $\Delta ABC$ ,

$$\tan 30^\circ = \frac{AB}{BC} \Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{x + 70}$$

$$\Rightarrow \sqrt{3} h = x + 70$$

$$\Rightarrow x = \sqrt{3} h - 70 \dots\dots(i)$$

In  $\Delta ABD$ ,

$$\tan 60^\circ = \frac{h}{x} \Rightarrow \sqrt{3} h = \frac{h}{x}$$

$$\Rightarrow x = \frac{h}{\sqrt{3}} \dots\dots(ii)$$

From equations (i) and (ii),

$$\sqrt{3} h - 70 = \frac{h}{\sqrt{3}} \Rightarrow \sqrt{3} h - \frac{h}{\sqrt{3}} = 70$$

$$\Rightarrow \frac{3h - h}{\sqrt{3}} = 70 \Rightarrow 2h = 70\sqrt{3}$$

$$\Rightarrow h = \frac{70\sqrt{3}}{2} = 35\sqrt{3} \text{ metre}$$

68. 
$$\frac{x}{y} = \frac{\left(\frac{a^2 - 25}{a^2 - 36}\right)}{\left(\frac{a + 5}{a + b}\right)} = \frac{\left(\frac{(a + 5)(a - 5)}{(a + 6)(a - 6)}\right)}{\left(\frac{a + 5}{a + 6}\right)} = \frac{a - 5}{a - 6}$$

69. 
$$\cos \theta \cdot \operatorname{cosec} 23^\circ = 1$$
  

$$\Rightarrow \operatorname{cosec} 23^\circ = \frac{1}{\cos \theta} = \sec \theta$$

$$\Rightarrow \operatorname{cosec} 23^\circ = \operatorname{cosec} (90^\circ - \theta)$$

$$\Rightarrow 23^\circ = 90^\circ - \theta$$

$$\Rightarrow \theta = 90^\circ - 23^\circ = 67^\circ$$

70. Look at the pattern:

$$1001 \times 1001 = 1002001$$

$$1001 \times 1001 \times 1001 = 1003003001$$

71. Birth-rate of Germany = 16

Birth-rate of England = 20

$$\% \text{ Diff.} = \frac{20 - 16}{16} \times 100 = 25\%$$

It is 25% more than 16.

72. Birth-rate of India = 33

Birth-rate of England = 20

$$\therefore \text{Required percentage} = \frac{33}{20} \times 100 = 165\%$$

73. Birth-rate of China = 40

Birth-rate of Germany = 16

$$\therefore \text{Required answer} \frac{40}{16} = 2.5$$

74. Required ratio =  $\frac{33}{15} = \frac{11}{5} = 11:5$ .

75. Birth-rate of England = 20

Birth-rate of New Zealand = 30

Required percentage

$$= \frac{30 - 20}{30} \times 100 = \frac{100}{3} \% = 33 \frac{1}{3} \%$$

76. 'Subject to' is a phrasal verb often used in passive form. Thus, it should be as 'are subjected to strong wind'.

77. Change 'options' into 'option'. 'No other' takes singular noun.

88. As it appears 'The film' is a company or organisation, the pronoun should be 'it'.

89. 'Disparity' can only be widened not broadened.

*(This model questions prepared by subject experts of RACE Institute, Hyderabad.)*