

SSC CGL TIER-1

HELD ON 01-09-2016 (1st Shift)

GENERAL INTELLIGENCE

1. Select the related word from the given alternatives.

Psychology : Human Being :: Ornithology : ?

- (1) Birds
(2) Volcanoes
(3) Insects
(4) Reptiles

2. Select the related letters from the given alternatives.

EGIK : FHJL :: MOQS : ?

- (1) LNOQ (2) NPRT
(3) KMOQ (4) NRPT

3. Select the related number from the given alternatives.

147 : 741 :: 869 : ?

- (1) 896 (2) 968
(3) 689 (4) 986

4. Find the odd word from the given alternatives.

- (1) Herb (2) Flower
(3) Tree (4) Shrub

5. Find the odd letters from the given alternatives.

- (1) JKLM (2) NOPQ
(3) RSTU (4) VWXZ

6. Find the odd number pair from the given alternatives.

- (1) (85, 136) (2) (34, 85)
(3) (102, 153) (4) (63, 162)

7. Arrange the following words as per order in the dictionary

1. Organ
2. Origin
3. Orient
4. Organic
5. Organise

- (1) 1, 5, 3, 4, 2
(2) 1, 5, 4, 2, 3
(3) 1, 4, 5, 3, 2
(4) 1, 4, 5, 2, 3

8. Which one set of letters when sequentially placed at the gaps

in the given letter series shall complete it ?

_sr_tr_srs_r_srst_

- (1) ttssrr (2) tsrtsr
(3) strtrs (4) tssttr

9. Find the missing number in the following series :

43, 172, 86, 344, ?

- (1) 172 (2) 258
(3) 129 (4) 430

10. 'A' is the sister of 'B'. 'B' is married to 'D'. 'B' and 'D' have a daughter 'G'. How is 'G' related to 'A' ?

- (1) Sister
(2) Daughter
(3) Niece
(4) Cousin

11. Anil is as much younger to Vivek as he is older to Tarun. If the total of the ages of Vivek and Tarun is 48 years, how old is Anil ?

- (1) 26 (2) 33
(3) 24 (4) 18

12. From the given alternative words, select the word which cannot be formed using the letters of the given word :
CHRONOLOGICAL

- (1) CALL (2) LOGIC
(3) CALICO (4) ANALOGY

13. If HOUSE is written as FQ-SUC, then how can CHAIR be written in that code ?

- (1) DIEJS (2) SBJID
(3) SHBGD (4) AJYKP

14. If P denotes \div , Q denotes \times , R denotes $+$ and S denotes $-$ then what is the value of $18Q12P4R5S6$?

- (1) 64 (2) 53
(3) 81 (4) 24

15. If $4 + 3 = 25$ and $8 + 4 = 80$, then, $3 + 2 = ?$

- (1) 15 (2) 10
(3) 13 (4) 12

16. Select the missing numbers from the given alternatives

8	32	4
7	?	5
2	6	3

- (1) 30 (2) 35
(3) 20 (4) 25

17. Ramesh starts his journey by walking 2 kilometres towards North. Then he takes a right turn and walks 1 kilometre. Again takes a right turn and walks 2 kilometre. Now which direction is he facing ?

- (1) East (2) West
(3) South (4) North

18. One or two statements are given followed by two conclusions/assumptions, I and II. You have to consider the statement to be true, even if it seems to be at variance from commonly known facts. You are to decide which of the given conclusions/assumptions can definitely be drawn from the given statement. Indicate your answer.

Statements

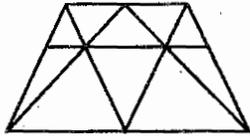
Irregularity is a cause for failure in exams. Some regular students fail in the examinations.

Conclusions

- I. All failed students are regular.
II. All successful students are not regular.

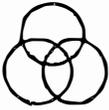
- (1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both Conclusion I and Conclusion II follow
(4) Neither Conclusion I nor Conclusion II follows

19. How many triangles are there in the given figure ?



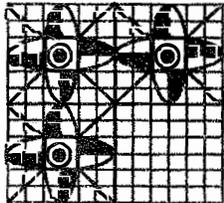
- (1) 18 (2) 19
 (3) 20 (4) 21

20. Which one of the following figures represents the relationship among :
 Birds, Parrots, Bats

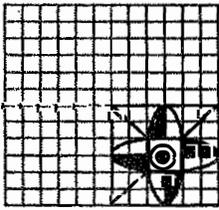
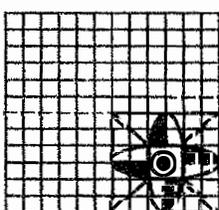
- (1) 
 (2) 
 (3) 
 (4) 

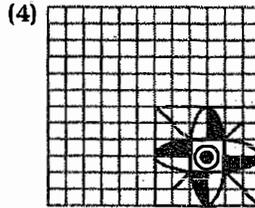
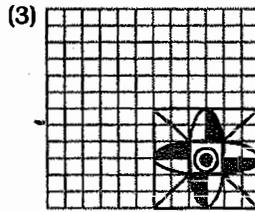
21. Which answer figure will complete the pattern in the question figure ?

Question Figure



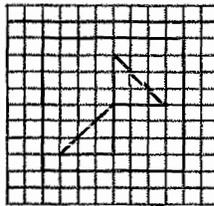
Answer Figures

- (1) 
 (2) 

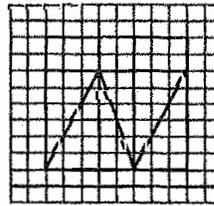
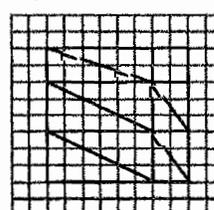
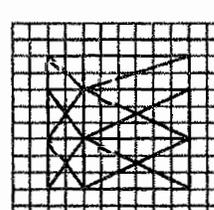


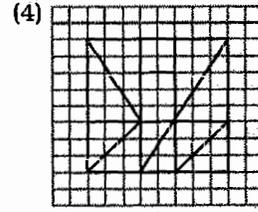
22. From the given answer figures, select the one in which the question figure is hidden/embedded

Question Figure



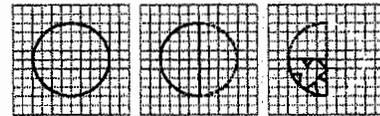
Answer Figures

- (1) 
 (2) 
 (3) 

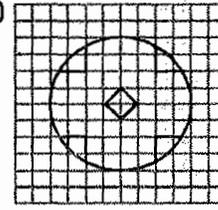
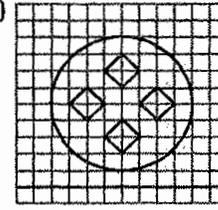
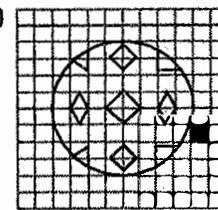
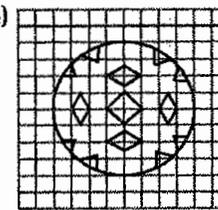


23. A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

Question Figure

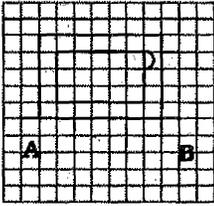


Answer Figure

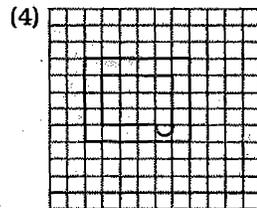
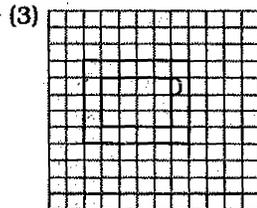
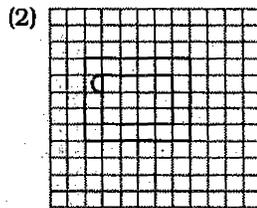
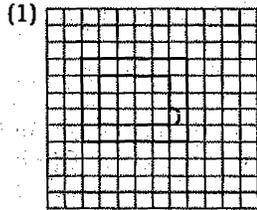
- (1) 
 (2) 
 (3) 
 (4) 

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

Question Figure



Answer Figures



25. In this question, 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 alphabet 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 ma-

trices can be represented first by its row and next by its column, e.g., 'B' can be represented by 00, 13 etc., and 'A' can be represented by 55, 69 etc. Similarly, you have to identify the set for the word 'GIRL'.

Matrix-I

	0	1	2	3	4
0	B	N	G	L	D
1	G	L	D	B	N
2	D	B	N	G	L
3	N	G	L	D	B
4	L	D	B	N	G

Matrix-II

	5	6	7	8	9
5	A	I	K	O	R
6	I	K	O	R	A
7	K	O	R	A	I
8	O	R	A	I	K
9	R	A	I	K	O

- (1) 02, 56, 97, 24
- (2) 31, 79, 68, 42
- (3) 23, 97, 77, 11
- (4) 11, 88, 95, 23

GENERAL AWARENESS

- 26. The minimum short-term natural hazard is
 - (1) blizzard (2) earthquake
 - (3) volcanic eruption
 - (4) bolt of lightning
- 27. DOTS is a treatment given to patients suffering from
 - (1) Polio (2) AIDS
 - (3) Hepatitis (4) Tuberculosis
- 28. Which dynasty was ruling in Vijaynagar empire at the time of the Battle of Talikota?
 - (1) Sangam (2) Aniridu
 - (3) Tuluva (4) Saluva
- 29. Which of the following Sultans died while playing Polo or Chaugan?
 - (1) Qutbuddin Aibak
 - (2) Balban
 - (3) Iltutmish
 - (4) Nasiruddin Muhammad

- 30. Molten rock below the surface of the earth is called
 - (1) Basalt (2) Laccolith
 - (3) Lava (4) Magma
- 31. Magnesium is a constituent metal of
 - (1) Chlorophyll molecule
 - (2) DNA
 - (3) Mitochondria
 - (4) Ribosomes
- 32. Which one among the following components is used as an amplifying device?
 - (1) Transformer
 - (2) Diode (3) Capacitor
 - (4) Transistor
- 33. A _____ is an agreement between the communicating parties on how communication is to proceed.
 - (1) Path (2) SLA
 - (3) Bond (4) Protocol
- 34. Name the gas used in preparation of bleaching powder
 - (1) Oxygen (2) Hydrogen
 - (3) Nitrogen (4) Chlorine
- 35. The depletion in Ozone layer is caused by _____.
 - (1) Nitrous oxide
 - (2) Carbon dioxide
 - (3) Chlorofluorocarbons
 - (4) Methane
- 36. Sariska and Ranthambore are the reserves for which of the following
 - (1) Lion (2) Deer
 - (3) Tiger (4) Bear
- 37. The prestigious 'Jawaharlal Nehru Award for International Understanding' is instituted by
 - (1) National Centre for Art and Culture
 - (2) Department of Youth and Sports
 - (3) Nehru Memorial Museum
 - (4) Indian Council for Cultural Relations
- 38. Phosphorus is kept in water because
 - (1) its ignition temperature is very high
 - (2) its ignition temperature is very low

- (3) its critical temperature is high
 (4) its critical temperature is low
39. The famous Dilwara temples of Mount Abu are a sacred pilgrimage place for the
 (1) Buddhists
 (2) Jains
 (3) Sikhs (4) Parsis
40. The unit of measurement of noise is
 (1) Decibel (2) Hertz
 (3) Amplifier (4) Acoustics
41. The commonly used coolant in refrigerators is
 (1) Ammonia (2) Nitrogen
 (3) Freon (4) Oxygen
42. The complete form of 'IC' in electronics is
 (1) Internal circuit
 (2) Independent circuit
 (3) Integrated circuit
 (4) Inbuilt circuit
43. Who among the following did Gandhiji regard as his political Guru?
 (1) Mahadev Desai
 (2) Dayanand Saraswati
 (3) Acharya Narendra Dev
 (4) Gopal Krishna Gokhale
44. Which of the following constitutional Amendment Act, deals with the Elementary Education as a Fundamental Right?
 (1) 84th Amendment Act
 (2) 85th Amendment Act
 (3) 86th Amendment Act
 (4) 87th Amendment Act
45. The World's largest island is
 (1) Greenland
 (2) Iceland (3) New Guinea
 (4) Madagascar
46. Sea water is saltier than rain water because
 (1) Sea animals are salt producing
 (2) The air around the sea is saltish
 (3) Rivers wash away salts from earth and pour them into the sea
 (4) Sea beds have salt producing mines

47. Pannalal Ghosh played which of the following musical instruments?
 (1) Flute (2) Sitar
 (3) Violin (4) Santoor
48. Rio Summit is associated with
 (1) Convention on Biological Diversity
 (2) Green house gases
 (3) Ozone depletion
 (4) Wet lands
49. Polyploidy arises due to change in the
 (1) number of chromatids
 (2) structure of genes
 (3) number of chromosomes
 (4) structure of chromosomes
50. Which South Korean author in May 2016 won the 2016 Man Booker International Prize for her novel 'The Vegetarian'?
 (1) Han Kang
 (2) Yiyun Li
 (3) Tami Hoag
 (4) Taya Zinkin

QUANTITATIVE APTITUDE

51. A and B together can finish a work in 30 days. They worked on it for 20 days and then B left the work. The remaining work was done by A alone in 20 days more. In how many days can A alone finish the work?
 (1) 48 days (2) 50 days
 (3) 54 days (4) 60 days
52. The centroid of an equilateral triangle ABC is G. If AB is 6 cms, the length of AG is
 (1) $\sqrt{3}$ cm (2) $2\sqrt{3}$ cm
 (3) $3\sqrt{2}$ cm (4) $2\sqrt{2}$ cm
53. A merchant changed his trade discount from 25% to 15%. This would increase selling price by
 (1) $3\frac{1}{3}\%$ (2) $6\frac{1}{6}\%$
 (3) $13\frac{1}{3}\%$ (4) $16\frac{1}{3}\%$
54. If 177 is divided into 3 parts in the ratio $\frac{1}{2} : \frac{2}{3} : \frac{4}{5}$, then the second part is
 (1) 75 (2) 45
 (3) 72 (4) 60
55. If percentage of profit made, when an article is sold for Rs.78, is twice as when it is sold for Rs.69, the cost price of the article is
 (1) Rs. 49 (2) Rs. 51
 (3) Rs. 57 (4) Rs. 60
56. The ratio between Ram's age and Rahim's age is 10:11. What is the age of Rahim in percentage of Ram's age?
 (1) $109\frac{1}{11}\%$ (2) 110%
 (3) $111\frac{1}{9}\%$ (4) 111%
57. Gautam travels 160 kms at 32 kmph and returns at 40 kmph. Then his average speed is
 (1) 72 kmph
 (2) 71.11 kmph
 (3) 36 kmph
 (4) 35.55 kmph
58. If $x = \frac{3}{2}$, then the value of $27x^3 - 54x^2 + 36x - 11$ is
 (1) $11\frac{3}{8}$ (2) $11\frac{5}{8}$
 (3) $12\frac{3}{8}$ (4) $12\frac{5}{8}$
59. If $a + b + c = 6$ and $ab + bc + ca = 11$, then the value of $bc(b + c) + ca(c + a) + ab(a + b) + 3abc$ is
 (1) 33 (2) 66
 (3) 55 (4) 23
60. If the angles of a triangle are in the ratio of 2 : 3 : 4, then the difference of the measure of greatest angle and smallest angle is
 (1) 20° (2) 30°
 (3) 40° (4) 50°
61. In $\triangle ABC$, $\angle A = 90^\circ$, $AD \perp BC$ and $AD = BD = 2$ cm. The length of CD is
 (1) 3 cm (2) 3.5 cm
 (3) 3.2 cm (4) 2 cm

62. If $\tan 45^\circ = \cot \theta$, then the value of θ , in radians is

(1) π (2) $\frac{\pi}{9}$

(3) $\frac{\pi}{2}$ (4) $\frac{\pi}{12}$

63. $(2^{51} + 2^{52} + 2^{53} + 2^{54} + 2^{55})$ is divisible by

(1) 23 (2) 58
(3) 124 (4) 127

64. The average of 12 numbers is 9. If each number is multiplied by 2 and added to 3, the average of the new set of numbers is

(1) 9 (2) 18
(3) 21 (4) 27

65. If $\left(a + \frac{1}{a}\right)^2 = 3$, then the value

of $a^6 - \frac{1}{a^6}$ will be

(1) 1 (2) 3
(3) 0 (4) 2

66. If $\frac{\sqrt{2+x} + \sqrt{2-x}}{\sqrt{2+x} - \sqrt{2-x}} = 2$, the value of x is

(1) $\frac{4}{5}$ (2) $\frac{3}{5}$

(3) $\frac{8}{5}$ (4) $\frac{1}{5}$

67. The perimeter of two similar triangles ABC and PQR are 36 cms and 24 cms respectively. If $PQ = 10$ cm then the length of AB is

(1) 18 cm (2) 12 cm
(3) 15 cm (4) 30 cm

68. In a triangle ABC, $AB = 8$ cm, $AC = 10$ cm and $\angle B = 90^\circ$, then the area of ΔABC is

(1) 49 sq. cm (2) 36 sq. cm
(3) 25 sq. cm (4) 24 sq. cm

69. ABC is a triangle. If

$\sin\left(\frac{A+B}{2}\right) = \frac{\sqrt{3}}{2}$, then the

value of $\sin \frac{C}{2}$ is

(1) $\frac{1}{\sqrt{2}}$ (2) 0

(3) $\frac{1}{2}$ (4) $\frac{\sqrt{3}}{2}$

70. The compound interest on Rs. 64,000 for 3 years, compounded annually at 7.5% p.a. is

(1) Rs. 14,400

(2) Rs. 15,705

(3) Rs. 15,507

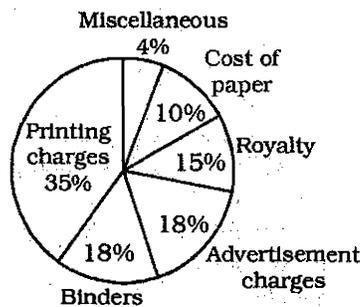
(4) Rs. 15,075

71. The angles of elevation of the top of a temple, from the foot and the top of a building 30 m high, are 60° and 30° respectively. Then, the height of the temple is

(1) 50 metre (2) 43 metre

(3) 40 metre (4) 45 metre

Directions (72-75): Study the pie chart given below and answer the following questions.



72. If the miscellaneous charges are Rs. 6000, then the advertisement charges are

(1) Rs. 12000

(2) Rs. 27000

(3) Rs. 90000

(4) Rs. 25000

73. The central angle of printing charge is x more than that of advertisement charges. Then the value of x is

(1) 72° (2) 61.2°

(3) 60° (4) 54.8°

74. What should be the central angle of the sector 'cost of paper'?

(1) 22.5° (2) 54.8°

(3) 36° (4) 16°

75. The ratio between royalty and binders' charges is

(1) 5 : 6 (2) 5 : 8

(3) 6 : 5 (4) 8 : 13

ENGLISH COMPREHENSION

76. In the following question, out of the four alternatives, choose the word which best expresses the meaning of the given word.

RECEPTACLE

(1) Compartment

(2) Hole

(3) Container

(4) Funnel

77. In the following question, out of the four alternatives, choose the word which is opposite in meaning to the given word.

VANITY

(1) Pride (2) Love

(3) Courage (4) Humility

78. Four words are given, out of which only one word is spelt correctly. Choose the correctly spelt word.

(1) Acquisision

(2) Acqiusition

(3) Acquisition

(4) Acquisetion

Directions (79-81): In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and choose the option corresponding to it. If the sentence is free from error, choose the "No error" option.

79. If you permit me to speak the truth (1)/ I shall state without hesitation (2)/ that you have done a mistake. (3)/ No Error (4)

80. I succeeded persuading him (1)/ to come with me (2)/ only after hours of argument. (3)/ No Error (4)

81. Vermin (1)/ does much harm (2)/ to crops. (3)/ No Error (4)

Directions (82-84): In the following questions, the sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative.

82. Light is _____ than sound.
 (1) faster (2) more faster
 (3) sounder (4) lighter
83. The man _____ for the purpose never did what was expected of him.
 (1) supplied (2) favoured
 (3) employed (4) cited
84. There was a serious _____ between the two brothers.
 (1) altercation
 (2) alteration
 (3) aberration
 (4) alteration

Directions (85-87) : In each of the following questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase.

85. **To give oneself airs**
 (1) Space to breathe
 (2) Time
 (3) Acting strange
 (4) Behaving arrogantly
86. **At a stone's throw**
 (1) At a short distance
 (2) At a place where quarrels take place
 (3) At a great distance
 (4) A quarry
87. **Bone of contention**
 (1) A delicious non-vegetarian item
 (2) An item which made them content
 (3) Cause for quarrel
 (4) A link between them

Directions (88-90) : In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentences.

88. A person who has lost the protection of the law
 (1) Outlaw (2) Immigrant
 (3) Outcast (4) Orphan
89. Falsification of documents etc.
 (1) Xeroxing
 (2) Forgery
 (3) Laminating
 (4) Copying
90. To make atonement for one's sins

- (1) Expiate (2) Renounce
 (3) Remonstrate
 (4) Recant

Directions (91-95) : In each of the following questions, a sentence/ a part of the sentence is given in bold. Four alternatives are given to the bold part which will improve the sentence. Choose the correct alternative corresponding to it. In case no improvement is needed, choose the alternative corresponding to "No improvement".

91. The boys **absented themselves** for two days.
 (1) were absented
 (2) absented
 (3) had absented
 (4) No improvement
92. My mother insists on setting **up** something everyday for charity.
 (1) on (2) in
 (3) aside
 (4) No improvement
93. He **began** on a new business venture.
 (1) embarked
 (2) begun
 (3) opened
 (4) No improvement
94. I have to **say** them the truth.
 (1) tell (2) state
 (3) speak
 (4) No improvement
95. The SSB will interview the candidate between **11 a.m. and 3.00 p.m.**
 (1) 11.00 am to 3 pm
 (2) 11.00 from 3 pm
 (3) 11 am by 3.00 pm
 (4) No improvement

Directions (96-100) : A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Settled life and cultivation gave man leisure; he had no longer to always think of getting food. During spare time he could make stone tools, hoes or pots and weave cloth.

Some people spared from producing their own food could even

devote themselves to other activities all the time. This resulted in a division of labour. The division of labour made it possible for various groups to specialize, that is, to acquire greater skill and learn better techniques in doing one kind of work.

The settled community life needed rules to regulate the behaviour of the members of the community. It is not possible to know exactly how regulations were established. It appears that the decisions regarding the community were taken by the people as a whole, or by a council of elders, as is in the practice in tribal societies. There were perhaps no kings or any organized government. Most likely, there were chiefs elected by the community for their qualities of leadership. But, these chiefs could not pass their positions on to their sons and they enjoyed few special privileges. Archaeological excavations have not revealed anything which would indicate the prevalence of a higher status for some members of the community. This is also supported by the study of life in many tribes in modern times.

Thus, social inequalities do not seem to have emerged even in Neolithic times.

96. What did man do in his spare time?
 (1) Made stone tools
 (2) Made hoes or pots
 (3) Weave cloth
 (4) All of the above
97. In the passage, "division of labour" means
 (1) Specialization to acquire greater skills
 (2) Learning arithmetic
 (3) Working in groups
 (4) Working from home
98. To which period do the Neolithic times refer?
 (1) Later part of the Stone Age
 (2) Early part of the Stone Age
 (3) Later part of the Ice Age
 (4) Medieval times
99. Chiefs were elected by the community for their

- (1) age
 (2) qualities of leadership
 (3) responsibility and courage
 (4) trust and loyalty

100. The meaning of 'privilege' is

- (1) allowance
 (2) favour
 (3) benefit
 (4) interest

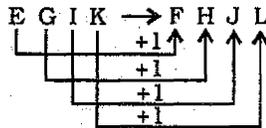
ANSWERS

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

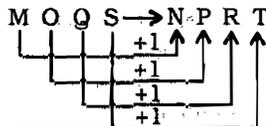
EXPLANATIONS

1. (1) Psychology is the study of the mind (of human beings) and how it functions. Similarly, ornithology is the study of birds.

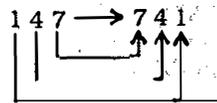
2. (4)



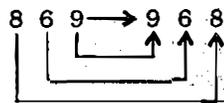
Similarly,



3. (2)



Similarly,



4. (2) Flower is a part of tree, herb and shrub.

5. (4)

J $\xrightarrow{+1}$ K $\xrightarrow{+1}$ L $\xrightarrow{+1}$ M

N $\xrightarrow{+1}$ O $\xrightarrow{+1}$ P $\xrightarrow{+1}$ Q

R $\xrightarrow{+1}$ S $\xrightarrow{+1}$ T $\xrightarrow{+1}$ U

But,

V $\xrightarrow{+1}$ W $\xrightarrow{+1}$ X $\xrightarrow{+2}$ Z

6. (4) Except (63, 162), in all others the difference between the two numbers is 51.

7. (3) Arrangement of words as per order in the dictionary :

1. Organ
- ↓
4. Organic
- ↓
5. Organise
- ↓
3. Orient
- ↓
2. Origin

8. (4)

t	sr	s	tr/	t	sr s	t	r/
t	sr st	r					

9. (1) $43 \times 4 = 172$

$$172 \div 2 = 86$$

$$86 \times 4 = 344$$

$$344 \div 2 = 172$$

10. (3) G is the daughter of B and D.

A is the sister of B.

Therefore, G is the niece of A.

11. (3) Suppose, Anil (A) is x years younger to Vivek (V).

Now,

$$A = V - x$$

$$A = T + x$$

$$A + A = V - x + T + x$$

$$\Rightarrow 2A = V + T = 48$$

$$\therefore A = \frac{48}{2} = 24 \text{ years}$$

12. (4) There is no 'Y' letter in the given word. Therefore, the word ANALOGY cannot be formed.

C	H R O N O	L	O G I C	A L
---	-----------	---	---------	-----

\Rightarrow CALL

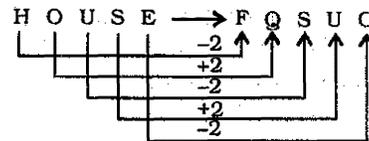
C H R O N O	L O G I C	A L
-------------	-----------	-----

\Rightarrow LOGIC

C	H R	O	N O L O G I C A L
---	-----	---	-------------------

\Rightarrow CALICO

13. (4)



Therefore,



14. (2)

P \Rightarrow +	Q \Rightarrow x
R \Rightarrow +	S \Rightarrow -

$$18 Q 12 P 4 R 5 S 6$$

$$\Rightarrow 18 \times 12 \div 4 + 5 - 6$$

$$\Rightarrow 18 \times 3 + 5 - 6$$

$$\Rightarrow 54 + 5 - 6 = 53$$

15. (3) $4 + 3 = 25$

$$\Rightarrow (4)^2 + (3)^2 = 25$$

$$\Rightarrow 16 + 9 = 25$$

$$8 + 4 = 80$$

$$\Rightarrow (8)^2 + (4)^2 = 80$$

$$\Rightarrow 64 + 16 = 80$$

Therefore,

$$3 + 2$$

$$\Rightarrow (3)^2 + (2)^2$$

$$\Rightarrow 9 + 4 = 13$$

16. (2) First Row

$$8 \times 4 = 32$$

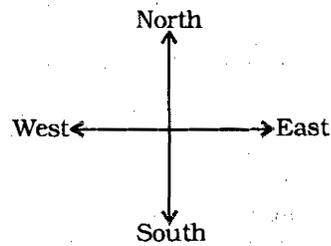
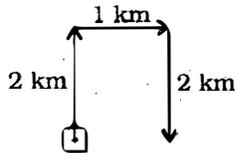
Second Row

$$7 \times 5 = 35$$

Third Row

$$2 \times 3 = 6$$

17. (3)



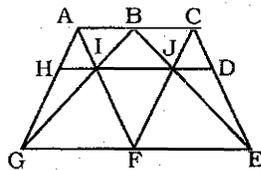
Now, Ramesh is facing South.

18. (4) Irregularity is a cause for failure in exams.

There may be some other causes for failure in exams.

Therefore, neither Conclusion I nor Conclusion II follows.

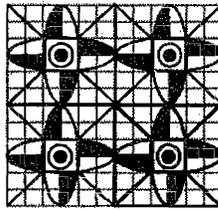
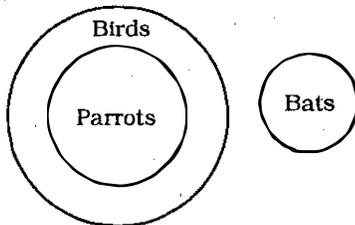
19. (1)



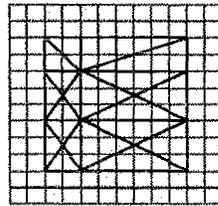
The triangles are :

ΔAHI ; ΔAIB ; ΔBIJ ; ΔBJC ;
 ΔCJD ; ΔHIG ; ΔIGF ; ΔFIJ ;
 ΔJFE ; ΔJDE ; ΔAGF ; ΔAIH ;
 ΔHGI ; ΔFAC ; ΔBGE ; ΔCFE ;
 ΔECB ; ΔJCE ;

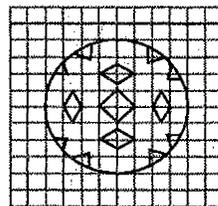
20. (3) Parrots come under the class Birds. But Bat is mammal.



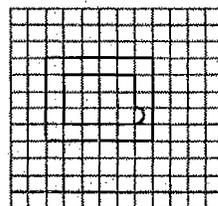
21. (2)



22. (3)



23. (4)



24. (1)

25. (3) $G \Rightarrow 02, 10, 23, 31, 44$

$I \Rightarrow 56, 65, 79, 88, 97$

$R \Rightarrow 59, 68, 77, 86, 95$

$L \Rightarrow 03, 11, 24, 32, 40$

Option	G	I	R	L
(1)	02	56	97	24
(2)	31	79	68	42
(3)	23	97	77	11
(4)	11	88	95	23

26. (4) Volcanic eruptions, earthquakes, flash floods, landslides, severe thunderstorms, lightening, and wildfires are all examples of sudden natural hazards which develop with little warning and strike rapidly. However, bolt of lightning is the minimum short term hazard of all which lasts few seconds. Lighting is one of the most spectacular results of a thunderstorm.

27. (4) DOTS (Directly Observed Treatment, Short Course), also known as TB-DOTS, is the

name given to the tuberculosis control strategy recommended by the World Health Organization. It is the best curative method for treatment of tuberculosis because of its highly efficient and cost-effective strategy.

28. (3) The Battle of Talikota was a watershed battle fought between the Vijayanagara Empire and the Deccan sultanates. Sadasiva Raya of Tuluva dynasty was the ruler of Vijayanagara then. Sadasiva Raya was a puppet ruler; the real power was exercised by his minister Rama Raya. The battle ended in the defeat of Vijayanagara, resulting in its subsequent weakening.

29. (1) Qutb-ud-din Aibak died in 1210 due to a fall from a horse whilst playing Polo and was buried at Lahore. He was the first ruler of the Delhi Sultanate and also the founder of the Slave (Mamluk) dynasty in India. He was succeeded by his son-in-law and able general Shamsuddin Iltutmish.

30. (4) Magma is a mixture of molten or semi-molten rock, volatiles and solids that is found beneath the surface of the Earth. When magma erupts from a volcano or other vent, the molten rock is referred to as lava. When lava cools on the Earth's surface and forms a solid structure, it is called igneous rock.

31. (1) The basic structure of chlorophyll consists of a porphyrin ring, coordinated to a central atom. This is very similar in structure to the heme group found in hemoglobin, except that in heme the central atom is iron, whereas in chlorophyll it is magnesium. This was discovered in 1906 and was the first time that magnesium had been detected in living tissue.

32. (4) An amplifier is an electronic device that increases the voltage, current, or power of a signal. Generally transistors

- are active devices that can be used with discrete components to amplify voltage, power or both depending upon the configuration.
33. (4) In information technology, a protocol is an agreement between the communicating parties on how communication is to proceed. Violating the protocol makes communication more difficult, if not impossible. A protocol is the specialist set of rules that end points in a telecommunication connection.
34. (4) Bleaching powder (CaOCl_2) is manufactured by passing chlorine gas over dry slaked lime. Bleaching powder is also called calcium chlorohypochlorite because it is considered as a mixed salt of hydrochloric acid and hypochlorous acid.
35. (3) Chlorofluorocarbons (CFCs), also known as Freon, cause the breakdown of the ozone layer that protects the earth from the sun's ultraviolet (UV) radiation. In the upper atmosphere, the UV-induced breakdown of CFCs releases free, highly reactive chlorine and bromine atoms that lead to the breakdown of the stratospheric ozone layer. Owing to ozone depletion in the upper atmosphere, CFCs have been phased out under the Montreal Protocol of 1987.
36. (3) Ranthambore National Park near Sawai Madhopur in Rajasthan is a former royal hunting ground and home to tigers. Similarly, Sariska Tiger Reserve is an Indian national park in the Alwar district of Rajasthan that is known for the Bengal tiger.
37. (4) The Jawaharlal Nehru Award for International Understanding was established in 1965 and is administered by the Indian Council for Cultural Relations (ICCR). It is awarded to people for their outstanding contribution to the promotion of international understanding, goodwill and friendship among people of the world. It was established in honour of Jawaharlal Nehru.
38. (2) The allotropic form of Phosphorus (white phosphorus) is less stable and therefore highly reactive because of angular strain in P_4 molecule where the angles are only 60° . Having very low ignition temperature, it readily catches fire in air to give dense white fumes of P_4O_{10} . So it is kept in water to avoid oxidation by the oxygen present in air.
39. (2) Dilwara temples of Mount Abu, Rajasthan, are famous for their Jain temples. These Jain temples were built by Tejpal, a Jain layman between the 11th and 13th centuries AD. The five legendary marble temples of Dilwara are a sacred pilgrimage place of the Jains. The Dilwara Jain temples are world famous for their stunning use of marble.
40. (1) The decibel (dB) is the unit used to measure the intensity of sound or noise level. It is given in terms of a logarithmic function of a ratio of power intensities. One decibel is one tenth of one bel, named in honor of Alexander Graham Bell who was the inventor of the telephone and phonograph.
41. (3) Modern refrigerators usually use a refrigerant called HFC-134a (1,1,1,2-Tetrafluoroethane), which does not deplete the ozone layer, instead of Freon. Freon used to be the most common refrigerant till the 1980s; however, its use has declined since the 1990s because it comes under Chlorofluorocarbon (CFC). Ammonia was also used as a common refrigerant in old refrigerators. However, Freon still remains the most commonly used refrigerant. Hydrochlorofluorocarbon (HCFC), is a type of refrigerator coolant used in newer refrigerator models. The types used today include HFC-134a, HCFC-142b and HCFC-22.
42. (3) IC stands for Integrated Circuit. It is a set of electronic circuits on one small plate ("chip") of semiconductor material, normally silicon. Also known as chip or microchip, ICs are the heart and brains of most circuits and are a keystone of modern electronics.
43. (4) Gandhi referred to Gopal Krishna Gokhale as his political Guru. He often referred to Gokhale as "Mahatma". Gokhale was a senior leader of the Indian National Congress and founder of the Servants of India Society who campaigned for Indian self-rule and social reform.
44. (3) The 86th Constitutional Amendment Act 2002 inserted Article 21A in the Indian constitution, making right to elementary education a fundamental right. According to this amendment act, the State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine.
45. (1) Greenland is the world's largest island covering 2,130,800 square kilometers. It is located between the Arctic Ocean and the North Atlantic Ocean, northeast of Canada and northwest of Iceland. An island, Greenland has no land boundaries and 44,087 km of coastline; it possesses the world's second largest ice sheet.
46. (3) Seawater is salty because rainwater dissolves the salt minerals found in soil and rocks as it travels through rivers and streams en route to the sea. The rain that falls on the land contains some dissolved carbon dioxide from the surrounding air. This causes the rainwater to be slightly acidic.

due to carbonic acid. The rain physically erodes the rock and the acids chemically break down the rocks and carries salts and minerals along in a dissolved state as ions. The ions in the runoff are carried to the streams and rivers and then to the ocean which makes them salty.

47. (1) Pannalal Ghosh, also known as Amal Jyoti Ghosh, was an Indian flute player. He was a disciple of Alauddin Khan and is credited with popularizing the flute as a concert instrument in Hindustani classical music. He was the first to introduce the seven-hole flute.

48. (1) The United Nations Conference on Environment and Development (UNCED), otherwise known as the Earth Summit or Rio Summit, was held in Rio de Janeiro, Brazil, in June 1992. An important achievement of the summit was an agreement on the Climate Change Convention. Besides, the Convention on Biological Diversity was opened for signature at the Rio Summit on 5 June 1992 and entered into force on 29 December 1993.

49. (3) An organism having more than two sets of homologous chromosomes is known as polyploid and the phenomenon polyploidy. Polyploidy refers to a numerical change in a whole set of chromosomes. Polyploidy may occur due to abnormal cell division, either during mitosis, or commonly during metaphase I in meiosis.

50. (1) South Korean author, Han Kang, on 16 May 2016 won the 2016 Man Booker International Prize for her novel "The Vegetarian". It is a novel about a woman who "wants to reject human brutality" and gives up eating meat. The novel was translated by Deborah Smith and was published by Portobello Books.

51. (4) $(A + B)$'s 1 day's work = $\frac{1}{30}$

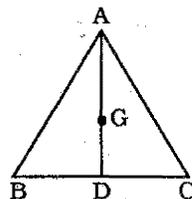
$\therefore (A + B)$'s 20 days' work
 $= \frac{20}{30} = \frac{2}{3}$

Remaining work = $1 - \frac{2}{3} = \frac{1}{3}$

Time taken by A in doing $\frac{1}{3}$ of work = 20 days

\therefore Time taken by A in doing whole work = $3 \times 20 = 60$ days

52. (2)



$AB = 6$ cm.; $AD \perp BC$

$\therefore BD = DC = 3$ cm.

In $\triangle ABD$,

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

$$= \sqrt{6^2 - 3^2} = \sqrt{36 - 9}$$

$$= \sqrt{27} = 3\sqrt{3} \text{ cm.}$$

$$\therefore AG = \frac{2}{3}AD = \frac{2}{3} \times 3\sqrt{3}$$

$$= 2\sqrt{3} \text{ cm.}$$

53. (3) Let marked price of article be Rs. x .

\therefore S.P. at 25% discount

$$= \text{Rs. } \frac{75x}{100} = \text{Rs. } \frac{3x}{4}$$

S.P. at 15% discount

$$= \text{Rs. } \frac{85x}{100} = \text{Rs. } \frac{17x}{20}$$

$$\text{Increase} = \text{Rs. } \left(\frac{17x}{20} - \frac{3x}{4} \right)$$

$$= \text{Rs. } \left(\frac{17x - 15x}{20} \right) = \text{Rs. } \frac{x}{10}$$

\therefore Percentage increase

$$= \frac{\frac{x}{10}}{\frac{3x}{4}} \times 100$$

$$= \frac{x}{10} \times \frac{4}{3x} \times 100$$

$$= \frac{40}{3} = 13\frac{1}{3}\%$$

54. (4) Ratio of division

$$= \frac{1}{2} : \frac{2}{3} : \frac{4}{5}$$

$$= \frac{1}{2} \times 30 : \frac{2}{3} \times 30 : \frac{4}{5} \times 30$$

[LCM of 2, 3 and 5 = 30]

$$= 15 : 20 : 24$$

\therefore Sum of the terms of ratio

$$= 15 + 20 + 24 = 59$$

\therefore Second part

$$= \text{Rs. } \left(\frac{20}{59} \times 177 \right) = \text{Rs. } 60$$

55. (4) Initial profit on article

$$= \text{Rs. } (78 - 69) = \text{Rs. } 9$$

\therefore C.P. of article

$$= \text{Rs. } (69 - 9) = \text{Rs. } 60$$

56. (2) Required per cent

$$= \frac{11}{10} \times 100 = 110\%$$

57. (4) Here, distances are equal.

\therefore Average speed

$$= \left(\frac{2xy}{x+y} \right) \text{ kmph.}$$

$$= \left(\frac{2 \times 32 \times 40}{32 + 40} \right) \text{ kmph.}$$

$$= \left(\frac{2 \times 32 \times 40}{72} \right) \text{ kmph.}$$

$$= \left(\frac{320}{9} \right) \text{ kmph.} = 35.55 \text{ kmph.}$$

58. (4) $x = \frac{3}{2}$ (Given)

$$\therefore 27x^3 - 54x^2 + 36x - 11$$

$$= (3x)^3 - 3 \times (3x)^2 \times 2 + 3 \times 3x$$

$$(2)^2 - (2)^3 - 3$$

$$= (3x - 2)^3 - 3$$

$$[\therefore (a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3]$$

$$= \left(\frac{3 \times 3}{2} - 2 \right)^3 - 3$$

$$= \left(\frac{9}{2} - 2 \right)^3 - 3$$

$$= \left(\frac{9-4}{2}\right)^3 - 3$$

$$= \left(\frac{5}{2}\right)^3 - 3 = \frac{125}{8} - 3$$

$$= \frac{125-24}{8} = \frac{101}{8} = 12\frac{5}{8}$$

59. (2) Given,

$$a + b + c = 6 \text{ and } ab + bc + ca = 11$$

$$\therefore bc(b+c) + ca(c+a) + ab(a+b) + 3abc$$

$$= bc(b+c) + abc + ca(c+a) + abc + ab(a+b) + abc$$

$$= bc(a+b+c) + ca(a+b+c) + ab(a+b+c)$$

$$= (a+b+c)(bc+ca+ab)$$

$$= 6 \times 11 = 66$$

60. (3) Sum of three angles of a triangle = 180°

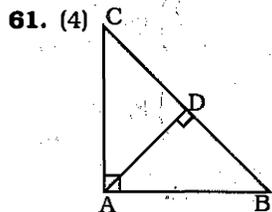
$$A : B : C = 2 : 3 : 4$$

$$\text{Sum of the terms of ratio} = 2 + 3 + 4 = 9$$

Required difference

$$= \left(\frac{4}{9} - \frac{2}{9}\right) \times 180^\circ$$

$$= \frac{2}{9} \times 180^\circ = 40^\circ$$



In $\triangle ABD$,

$$AD = BD = 2 \text{ cm.}$$

$$\therefore AB = \sqrt{2^2 + 2^2} = \sqrt{8}$$

$$= 2\sqrt{2} \text{ cm.}$$

$\triangle ABD \sim \triangle BCA$

$$\therefore \frac{AB}{BC} = \frac{BD}{AB}$$

$$\Rightarrow AB^2 = BC \times BD$$

$$\Rightarrow (2\sqrt{2})^2 = BC \times 2$$

$$\Rightarrow 8 = BC \times 2$$

$$\Rightarrow BC = \frac{8}{2} = 4 \text{ cm.}$$

$$\therefore CD = BC - BD$$

$$= (4 - 2) \text{ cm.} = 2 \text{ cm.}$$

62. (3) $\tan 45^\circ = \cot \theta$

$$\Rightarrow \tan 45^\circ = \tan (90^\circ - \theta)$$

$$\Rightarrow 45^\circ = 90^\circ - \theta$$

$$\Rightarrow \theta = 90^\circ - 45^\circ = 45^\circ$$

$$\therefore 180^\circ = \pi \text{ radian}$$

$$\therefore 45^\circ = \frac{\pi}{180} \times 45^\circ$$

$$= \frac{\pi}{4} \text{ radian}$$

63. (3) $2^{51} + 2^{52} + 2^{53} + 2^{54} + 2^{55}$

$$= 2^{51} (1 + 2 + 2^2 + 2^3 + 2^4)$$

$$= 2^{51} (1 + 2 + 4 + 8 + 16)$$

$$= 2^{51} \times 31$$

$$= 2^{49} \times 4 \times 31$$

$$= 2^{49} \times 124$$

64. (3) If each number of a set be multiplied by x , the average gets multiplied by x .

If each number of a set be increased by y , the average gets increased by y .

\therefore Required average

$$= 2 \times 9 + 3 = 21$$

65. (3) $\left(a + \frac{1}{a}\right)^2 = 3$

$$\Rightarrow a + \frac{1}{a} = \sqrt{3}$$

On cubing both sides,

$$\left(a + \frac{1}{a}\right)^3 = (\sqrt{3})^3$$

$$\Rightarrow a^3 + \frac{1}{a^3} + 3\left(a + \frac{1}{a}\right) = 3\sqrt{3}$$

$$\Rightarrow a^3 + \frac{1}{a^3} + 3\sqrt{3} = 3\sqrt{3}$$

$$\Rightarrow a^3 + \frac{1}{a^3} = 3\sqrt{3} - 3\sqrt{3} = 0$$

$$\therefore a^6 - \frac{1}{a^6}$$

$$= \left(a^3 + \frac{1}{a^3}\right) \left(a^3 - \frac{1}{a^3}\right) = 0$$

66. (3) $\frac{\sqrt{2+x} + \sqrt{2-x}}{\sqrt{2+x} - \sqrt{2-x}} = \frac{2}{1}$

By componendo and dividendo,

$$\frac{\sqrt{2+x} + \sqrt{2-x} + \sqrt{2+x} - \sqrt{2-x}}{\sqrt{2+x} + \sqrt{2-x} - \sqrt{2+x} + \sqrt{2-x}}$$

$$= \frac{2+1}{2-1}$$

$$\Rightarrow \frac{2\sqrt{2+x}}{2\sqrt{2-x}} = 3$$

On squaring,

$$\frac{2+x}{2-x} = 9 \Rightarrow 2+x = 18-9x$$

$$\Rightarrow 10x = 18-2 \Rightarrow 10x = 16$$

$$\Rightarrow x = \frac{16}{10} = \frac{8}{5}$$

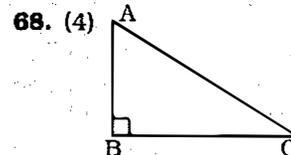
67. (3) $\triangle ABC \sim \triangle PQR$

$$\therefore \frac{AB}{PQ} = \frac{BC}{QR} = \frac{AC}{PR}$$

$$= \frac{AB + BC + AC}{PQ + QR + PR}$$

$$\Rightarrow \frac{AB}{PQ} = \frac{36}{24} \Rightarrow \frac{AB}{10} = \frac{3}{2}$$

$$\Rightarrow AB = \frac{3}{2} \times 10 = 15 \text{ cm.}$$



$AC = 10 \text{ cm.}$

$AB = 8 \text{ cm.}$

$$\therefore BC = \sqrt{AC^2 - AB^2}$$

$$= \sqrt{10^2 - 8^2} = \sqrt{100 - 64}$$

$$= \sqrt{36} = 6 \text{ cm.}$$

$$\therefore \text{Area of } \triangle ABC = \frac{1}{2} \times AB \times BC$$

$$= \frac{1}{2} \times 8 \times 6 = 24 \text{ sq. cm.}$$

69. (3) $\sin \frac{A+B}{2} = \frac{\sqrt{3}}{2} = \sin 60^\circ$

$$\Rightarrow \frac{A+B}{2} = 60^\circ$$

$$\Rightarrow A+B = 2 \times 60^\circ = 120^\circ$$

$$\therefore C = 180^\circ - 120^\circ = 60^\circ$$

$$\therefore \sin \frac{C}{2} = \sin 30^\circ = \frac{1}{2}$$

$$70. (3) A = P \left(1 + \frac{R}{100}\right)^T$$

$$= 64000 \left(1 + \frac{7.5}{100}\right)^3$$

$$= 64000 \left(1 + \frac{3}{40}\right)^3$$

$$= 64000 \left(\frac{43}{40}\right)^3$$

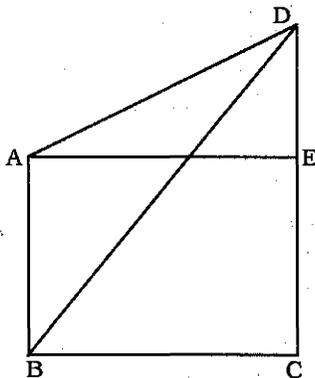
$$= \frac{64000 \times 43 \times 43 \times 43}{40 \times 40 \times 40}$$

$$= \text{Rs. } 79507$$

$$\therefore \text{C.I.} = \text{Rs. } (79507 - 64000)$$

$$= \text{Rs. } 15507$$

71. (4)



AB = Height of building
= 30 metre

CD = Height of temple
= h metre

AB = CE = 30 metre

\therefore DE = (h - 30) metre;

BC = AE = x metre

$\angle DAE = 30^\circ$; $\angle DBC = 60^\circ$

In $\triangle BCD$,

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

$$\Rightarrow h = \sqrt{3}x \text{ metre} \quad \dots (i)$$

In $\triangle ADE$,

$$\tan 30^\circ = \frac{DE}{AE}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{h - 30}{x}$$

$$\Rightarrow x = \sqrt{3}h - 30\sqrt{3} \quad \dots (ii)$$

$$\therefore h = \sqrt{3}x$$

$$= 3h - 30 \times 3$$

$$\Rightarrow 3h - h = 90 \Rightarrow 2h = 90$$

$$\Rightarrow h = \frac{90}{2} = 45 \text{ metre}$$

72. (2) Percentage of miscellaneous charges = 4%

Percentage of advertisement charges = 18%

$$\therefore 4\% \equiv \text{Rs. } 6000$$

$$\therefore 18\% \equiv \frac{6000 \times 18}{4}$$

$$= \text{Rs. } 27000$$

73. (2) Difference of percentage charges on printing and advertisement = 35 - 18 = 17%

$$\therefore 100\% \equiv 360^\circ$$

$$\therefore 17\% \equiv \frac{360}{100} \times 17 = 61.2^\circ$$

74. (3) $\therefore 100\% \equiv 360^\circ$

$$\therefore 10\% \equiv \frac{360}{100} \times 10 = 36^\circ$$

75. (1) Required ratio = 15 : 18
= 5 : 6

76. (3) **Receptacle (Noun)** = a container for putting something in.

Look at the sentence :

The seas have been used as a receptacle for a range of industrial toxins.

77. (4) **Vanity (Noun)** = the quality of being unimportant; too much pride in your own appearance; abilities etc.

Humility (Noun) = the quality of not thinking that you are better than others; the quality of being humble.

Look at the sentences :

(i) She had no personal vanity.

(ii) Her first defeat was an early lesson in humility.

78. (3) **Acquisition (Noun)** = the act of getting something.

79. (3) **Make a mistake** = to err

Look at the sentence :

The waiter made a mistake in adding up the bill.

Hence, that you have made a mistake should be used here.

80. (1) Here, I succeeded in persuading him should be used.

Persuade = to make somebody do something.

81. (2) **Vermin (Plural)** = insects that live on the bodies of the animals and birds; wild animals or birds that destroy plants etc.

Hence, plural verb i.e., do much harm should be used.

82. (1) Here, comparative degree should be used.

83. (3) **Employ** = to give somebody a job to do for payment.

84. (1) **Altercation (Noun)** = a noisy argument or disagreement.

85. (4) **To give oneself airs** = to behave arrogantly.

Look at the sentence :

Stop giving yourself airs and act like the rest of us.

86. (1) **At a stone's throw** = a very short distance away.

Look at the sentence :

We live just a stone's throw from here.

87. (3) **A bone of contention** = a subject which causes disagreement and arguments between people.

Look at the sentence :

Kashmir is a bone of contention between India and Pakistan.

92. (3) **Set aside** = to save or keep money or time for a particular purpose.

Hence, **aside** should be used here.

93. (1) **Embark (on)** = to start to do something new or difficult. Hence, **embarked** should be used here.

94. (1) Say to = tell

Hence, **tell** should be used.

100. (3) **Privilege (Noun)** = a special right or advantage that a particular person or group of people has.