SSC CHSL (1O + 2) TIER-I CBE (EXAM)

SOLVED PAPER

GENERAL INTELLIGENCE

1. Select the related word from the given alternatives :
Pacific : Ocean :: Nile : ?
(1) Waterfall
(2) River
(3) Mountain
(4) Lake

2. Select the related letters from the given alternatives :
DEMONSTRATE : NOMEDSETART :: CORRUPT : ?
(1) ORCRUPT
(2) TPURROC
(3) ROCRTPU
(4) ROCRUPT

3. Select the related letters from the given alternatives :
MN : NM :: JK : ?
(1) RS
(2) SR
(3) QP
(4) PQ

4. Select the related number from the given alternatives :
85 : 58 :: 64 : ?
(1) 42
(2) 36
(3) 46
(4) 26

5. Find out the odd word from the given alternatives :
(1) Lithosphere
(2) Hydrosphere
(3) Biosphere
(4) Mantle

6. Find out the odd letters from the given alternatives :
(1) WT
(2) SR
(3) ED
(4) KJ

7. Find out the odd number from the given alternatives :
(1) 27
(2) 8
(3) 64
(4) 124

8. Find out the odd number from the given alternative :

(1) 5306
(2) 2147
(3) 4205
(4) 4308

9. A series is given with one term missing. Choose the correct alternatives from the given ones that will complete the series :
Inch, Decametre, Foot, ?
(1) Decimatere
(2) Millimetre
(3) Centimetre
(4) Metre

10. A series is given with one term missing. Choose the correct alternatives from the given ones that will complete the series :
5, 8, 12, 17, 23, ?
(1) 30
(2) 72
(3) 65
(4) 48

11. In the following question, two statements are given each 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 commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
Statements :
I. Some authors are teachers.
II. No teacher is a lady.
Conclusions :
I. Some teachers are not ladies.
II. Some ladies are not teachers.
(1) Conclusion I follows
(2) Conclusion II follows
(3) Neither I nor II follows
(4) Both I and II follow

12. A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series :
AN, EQ, IT, MW, ?
(1) QZ
(2) KX
(3) IV
(4) ZM

13. A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series :
PRQ, UWV, ZBA, ?, JLK
(1) FHG
(2) EGF
(3) DFE
(4) FGE

14. Chandan is 2 years older than Ankit but 1 year younger that Sumit. Ankit is twice as old as Khushboo. If Khushboo's age is 25 years, what is the age (in years) of Sumit ?
(1) 51
(2) 53
(3) 52
(4) 55

15. Arrange the given words in the sequence in which they occur in the dictionary.
i. Yielded
ii. Yelp
iii. Yeat
iv. Yogurt
(1) ii, iii, iv, i
(2) iii, ii, i, iv
(3) iv, i, ii, iii
(4) i, ii, iiii, iv

16. In a certain code language, "MATERIAL" is written as "RIALMATE". How is "REMEMBER" written in that code language?
(1) REMEREBM
(2) MBEREMER
(3) MBERREME
(4) MBERREEM

17. In the following question select the missing number form the given alternatives :

5	8	32
9	6	48
7	9	?

(1) 45
(2) 48
(3) 54
(4) 64

18. If "S" denotes "multiplied by" "P" denotes "subtracted from" "R"

denotes "added to" and "Q" denotes "divided by", then
1461 Q 121 P 100 S 2 R 100 = ?

(1) 48   (2) 21

(3) 61   (4) 31

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

_BC_Q_AB_P_R

(1) PARCQ   (2) APQRC

(3) APRCQ   (4) ACRPR

20. A man is facing towards the east. He turns towards north and walks for 5 km, and then turns 270 degrees anticlockwise and walks for 12 km more. What is the minimum distance between his initial and final position ?

(1) 17 km.   (2) 13 km.

(3) 11 km.   (4) 9 km.

21. 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 shown in the given two matrices. The columns and rows of Matrix – I are numbered from 0 to 4 and that of Matix II are numbered from 5 to **9.** A letter from these matrices can be represented first by its row and next by its column, for example, 'N' can be represented by 21, 67 etc. and 'R' can be represented by 66, 57 etc. Similarly, you have to identify the set for the word 'GOLF'.

Matrix-I

	0	1	2	3	4
0	Q	R	A	N	B
1	W	I	N	H	L
2	E	N	S	G	O
3	N	Y	G	O	M
4	L	T	O	F	A

Matrix-II

	5	6	7	8	9
5	Z	M	R	I	L
6	O	R	N	W	G
7	C	S	Y	E	U
8	S	N	T	G	S
9	G	B	E	R	U

(1) 95, 24, 59, 43   (2) 32, 65, 14, 79

(3) 88, 33, 40, 14   (4) 69, 43, 59, 20

22. Introducing a woman, a boy says, "She is the wife of my grandfather's son". How is the woman related to the boy ?

(1) Aunt

(2) Wife

(3) Mother

(4) Cannot be determined

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

Questions Figure :

Answer Figures :

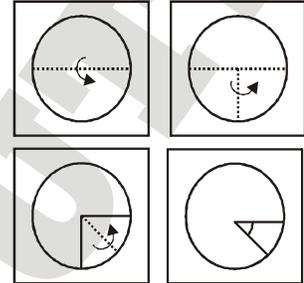**24.** Identify the diagram that best represents the relationship among the given classes.

World, India, Delhi

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

Questions Figures :

Answer Figures :

General Awareness

26. Raymond Samuel Tomilson is famous for developing which of the following ?

(1) E-Mail   (2) SMS

(3) Facebook   (4) Orkut

27. Sewing machine was invented by

(1) Alfred P. Southwick

(2) Issac Singer

(3) Murasaki Shikibu

(4) Hanaoka Seishu

28. Which is the second largest gland of Human body ?

(1) Liver

(2) Large Intestine

(3) Thorax

(4) Pancreas

29. Annona Squamosa is the scientific name of

(1) Custard Apple

(2) Papaya

(3) Babhul

(4) Drumstick

30. Binomial Nomenclature was founded by
(1) Charles Darwin
(2) Robert Nucleus
(3) Carl Linnaeus
(4) Lamarck

31. Which among the following is false about acids ?
(1) They give H+ions in aqueous solution
(2) Most acids contain hydrogen
(3) They turn blue litmus red
(4) They are bad conductor of electricity in aqueous solution

32. Which among the following is used in making liquors, medicines and as a fuel in aircrafts?
(1) Propyl alcohol
(2) Dimethyl alcohol
(3) Ethyl alcohol
(4) Methyl alcohol

33. The famous 'Hawa Mahal' is the which city of Rajasthan ?
(1) Ajmer   (2) Jodhpur
(3) Jaipur   (4) Kota

34. Where is Pushkar Fair held ?
(1) Bihar
(2) Uttar Pradesh
(3) Madhya Pradesh
(4) Rajasthan

35. If a person's income increases form Rs. 10 lakhs per year to Rs. 11 lakhs per year and tax increases from Rs. 80,000 to Rs. 92,500 the marginal tax rate is.
(1) 12.50%   (2) 8%
(3) 10%   (4) 15%

36. This tax is entirely borne by the entity it is levied upon and cannot be passed.
(1) Direct tax
(2) Indirect tax
(3) Straight tax
(4) Advance tax

37. Kaziranga National Park is the only natural habitat of the endangered.
(1) Snow Leopards
(2) One-Horned Rhinos
(3) Asiatic Lions
(4) Swamp Deer

38. Magnetite is an ore/mineral of
(1) Beryllium   (2) Chromium
(3) Iron   (4) Lead

39. Who directed the movie "The man who knew infinity"?
(1) Matthew Brown
(2) Christopher Nolan
(3) Martin Scorsese
(4) Alfred Hitchocok

40. Which among the following is not an inner planet ?
(1) Mercury   (2) Saturn
(3) Venus   (4) Earth

41. Earth is also known as _____.
(1) Orange planet
(2) Green planet
(3) Blue planet
(4) Yellow planet

42. Who was the last Mughal emperor?
(1) Babar
(2) Noor Jahan
(3) Akbar
(4) Bahadur Shah

43. Lal Bahadur Shastri was born in the year
(1) 1844   (2) 1864
(3) 1884   (4) 1904

44. First Indian to win an Individual Olympic medal ?
(1) Milkha Singh
(2) P.T. Usha
(3) Leander Paes
(4) K.D. Jadhav

45. Light travels fastest in
(1) Nitrogen   (2) Air
(3) Steel   (4) Vacuum

46. What is impulse equal to ?
(1) Change in momentum
(2) Change in force
(3) Change in velocity
(4) Change in acceleration

47. Which country's constitution is the world's longest ?

(1) United States of America
(2) China
(3) India
(4) Great Britain

48. Who among the following is addressed as the Chairman of Rajya Sabha ?
(1) Prime Minister
(2) Chief Justice
(3) Vice-President
(4) Attorney General

49. Ryder Cup is associated with which sport
(1) Horse Race   (2) Football
(3) Cycling   (4) Golf

50. Who wrote the book "Passage to India"?
(1) Anita Desai
(2) Khushwant Singh
(3) Mark Twain
(4) E.M. Foster

QUANTITATIVE APTITUDe

51. The ratio of present ages of Ramita and Satyajit is 9 : 7. After 9 years the ratio of their ages will be 5 : 4. What is Ramita's present age ?
(1) 81 years   (2) 63 years
(3) 56 years   (4) 80 years

52. $\dfrac{(\sec A - \tan A)}{(\operatorname{cosec} A + \cot A)}$ is equal to

(1) $\dfrac{(\sec A - \cot A)}{(\operatorname{cosec} A + \tan A)}$

(2) $\dfrac{(\sec A - \cos A)}{(\operatorname{cosec} A + \sin A)}$

(3) $\dfrac{(\operatorname{cosec} A - \cot A)}{(\sec A + \tan A)}$

(4) $\dfrac{(\sec A + \cos A)}{(\operatorname{cosec} A - \sin A)}$

53. ABCD is a kite where $m \angle$ A is $90°$ and $m \angle$ C is $60°$. If length of AB is 6 cm, what is the length of diagonal AC ?

(1) $6\left(\sqrt{2}+\sqrt{3}\right)$ cm.

(2) $2\left(\sqrt{3}+\sqrt{6}\right)$ cm.

(3) $2\left(\sqrt{2}+\sqrt{3}\right)$ cm.

(4) $3\left(\sqrt{2}+\sqrt{6}\right)$ cm.

54. A trader had 9 quintals of wheat. He sold a part of it at 10% profit and the rest at 20% profit, so that he made an overall profit of 14%. How much wheat did he sell at 20% profit ?
(1) 540 kg. (2) 360 kg.
(3) 180 kg. (4) 720 kg.

55. Find two consecutive natural numbers, sum of whose squares is 25.
(1) 2, 3 (2) 3, 4
(3) 4, 5 (4) 1, 4

56. A factory buys 7 machines. 2 Machine-A, 4 Machine-B and rest Machine-C. Prices of the machines are Rs. 56000, Rs. 45000 and Rs. 30000 respectively. Calculate the average cost of these machines.
(1) Rs. 46000
(2) Rs. 43666.66
(3) Rs. 41333.33
(4) Rs. 44500

57. Co-efficient of x^2 in $6x^3 + 4x^2 + 2x + 3$ is
(1) 4 (2) 6
(3) 3 (4) 2

58. Azhar is four times as good a workman as Balraj and therefore is able to finish a certain job in 45 days less than that by Balraj. Working together, they can do it in :
(1) 6 days (2) 18 days
(3) 24 days (4) 12 days

59. Find k, if the straight line $2x - 3y = 11$ is perpendicular to the line $3x + ky = -4$?
(1) -2 (2) 1
(3) -1 (4) 2

60. On dividing $8a^2b^2c^2$ by $4a^2$, we get

(1) $2b^2$ (2) $2c^2$
(3) $2b^2c^2$ (4) 2

61. The Point P (a, b) is first reflected in origin to P1 and P1 is reflected in y-axis to (4, -3). The co-ordinates of point P are
(1) (4, 3) (2) (–4, 3)
(3) (-3, 4) (4) (3, -4)

62. An engineering student has to secure 25% marks to pass. He gets 45 and fails by 45 marks. Find the maximum marks.
(1) 385 marks (2) 410 marks
(3) 435 marks (4) 360 marks

63. A man travels 430 kilometres, partly by train and partly by steamer. He spends 10 hours more time on steamer. If the velocity of the steamer is 25 km/hr and the velocity of train is 65 km/hr, how much distance does he cover by steamer?
(1) 360 km. (2) 300 km.
(3) 450 km. (4) 540 km.

64. The largest 5 digit number exactly divisible by 89 is :
(1) 99947 (2) 99940
(3) 999938 (4) 99939

65. $\dfrac{\sqrt{\left(1+\tan^2 A\right)}}{\tan A}$ is equal to
(1) secA (2) sinA
(3) cosecA (4) cosA

66. On a certain principal if the simple interest for two years is Rs. 2800 and compound interest for the two years is Rs. 2996, what is the rate of interest ? $\left(\text{Take } \pi = \dfrac{22}{7}\right)$
(1) 14 per cent
(2) 7 per cent
(3) 28 per cent
(4) 21 per cent

67. A rectangular swimming pool of length 20 metre and breadth 10 metre has a uniformly sloping floor. It is 1 metre in depth on one end of its length and 3 metre at the other. How much water is needed to completely fill this pool ?
(1) 800 cubic metre
(2) 300 cubic metre
(3) 480 cubic metre
(4) 400 cubic metre

68. What is the value of $\sec\dfrac{4\pi}{3}$?
(1) 2 (2) -2
(3) $\dfrac{2}{\sqrt{3}}$ (4) $\dfrac{-2}{\sqrt{3}}$

69. Find the radius of the circle if the area of its sector is 30.8 sq. cm whose corresponding central angle is 72°.
(1) 3.5 cm. (2) 7 cm.
(3) 14 cm. (4) 10.5 cm.

70. If $2x + 6y = 3xy$ and $10x - 3y = 4xy$, find x and y.
(1) 3, 2 (2) 2, 3
(3) 4, 6 (4) 6, 4

71. If a merchant offers a discount of 10% on the list price, she makes a loss of 25%. What % profit or % loss will she make if she sells at a discount of 20% of the list price ?
(1) 5 per cent profit
(2) 33.33 per cent loss
(3) 90 per cent profit
(4) 20 percent profit

72. Refer the following data table and answer the question.

	Boys	Girls
Medical	35	80
Engineering	90	30

What per cent of students who choose Engineering are girls ?
(1) 25 (2) 12.77
(3) 27.27 (4) 33.333

73. Refer the following data table and answer the question.

	Cumulative production
January	330
February	580
March	1210
April	1800
May	2330
June	2870

How many cars were manufactured in the months of April and May ?

(1) 1070   (2) 1120
(3) 1220   (4) 4130

74. Refer the following data table and answer the question

Day of the week	Distance jogged (in kms.)
Monday	4.5
Tuesday	0.5
Wednesday	1.5
Thursday	2.5
Friday	4
Saturday	4
Sunday	3.5

If 400 calories are burned by jogging 5 km, how many calories were burnt in the given week?

(1) 1690 calories
(2) 1590 calories
(3) 1540 calories
(4) 1640 calories

75. Refer the following data table and answer the question

Items	Yearly Expense in Rs. lakhs
Raw Materials	7
Labour	6
Rent	5
Interest	5
Taxes	3

Rent and Taxes are what per cent of total expenses ?

(1) 30.77 per cent
(2) 23.52 per cent
(3) 16.27 per cent
(4) 38.02 per cent

76. Improve the bracketed part of the sentence.
The teacher said, "It is time that your daughter **(has learned)** how to write."
(1) learned
(2) had learnt
(3) learnt
(4) no improvement

77. In the following question, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative our of the four.
For a moment I was _____ blinded by the camera's bright flash.
(1) heavily   (2) totally
(3) greatly   (4) powerfully

78. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If the sentence is free from error, select 'No Error'.
As it was his first date, (1)/ he dressed (2)/ himself in best suit. (3)/ No error (4)

79. In the following question, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternatives out of the four.
The vehicle involved in the accident were _____ the flow of traffic.
(1) obstructing   (2) stalling
(3) interfering   (4) delaying

80. Select the synonym of **gripe**.
(1) To grieve   (2) To grasp
(3) To flatter   (4) To hold

81. Select the antonym of **extravagance**.
(1) expensive   (2) thrift

(3) cheap   (4) absurd

82. Select the antonym of **virtuous**.
(1) vile   (2) chaste
(3) kosher   (4) celibate

83. Select the word with the correct spelling.
(1) scuries   (2) snached
(3) cavorted   (4) hispanic

84. Rearrange the parts of the sentence in correct order.
There was a second part
P. are ambivalent about
Q. many people
R. of her decidiosn which
(1) QRP   (2) QPR
(3) PRQ   (4) RQP

85. Select the synonym of **stumpy**.
(1) rangy   (2) pudgy
(3) lanky   (4) lofty

86. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
The policeman said, "I saw a knife here."
(1) The policeman exclaimed that he had seen a knife here.
(2) The policeman said that he had seen a knife there.
(3) The policeman said that he had seen a knife there.
(4) The policeman told he had seen a knife there.

87. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.
Rome was not built in a day
(1) It takes time to create great things
(2) You have to win many wars to built an empire
(3) A task done hurriedly fails completely
(4) Building anything worth while requires skill

88. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.

Work extremely hard or incessantly.

(1) job   (2) craft

(3) toil   (4) activity

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

The audience are (1)/ humbly requested to be (2)/ seated in their seats. (3)/ No error (4)

90. In the following question, a sentence has been given in Active/ Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

I shall have written the full thesis by December.

(1) By December I shall have wrote the full thesis.

(2) The full thesis will have been written by me by December.

(3) The full Thesis will be wrote by me by December.

(4) By December the full thesis must have been wrote by me.

91. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.

Express a proposition, theory, etc. in clear or definite terms.

(1) publish   (2) postulate

(3) proclaim   (4) enunciate

92. Rearrange the parts of the sentence in correct order.

He would often

P. Brahmacharya if his protests were not functioning the way

Q. he expected

R. critique his own life of

(1) RQP   (2) PQR

(3) RPQ   (4) QRP

93. Select the word with the correct spelling.

(1) genatics   (2) sterage

(3) grossest   (4) granaite

94. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

Rule of thumb

(1) A rough unit of measure for small lengths

(2) A broadly accurate guide based on practice

(3) To force someone to work against his which

(4) To use your power to ensure discipline

95. Improve the bracketed part of the sentence.

(Take off) your shoes before you enter the temple.

(1) Put away

(2) Extract

(3) Put off

(4) No improvement

Directions (96-100) : *In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.*

The "Global Nutrition Report 2016" once again **(96)** India's slow overall progress **(97)** addressing chronic malnutrition, manifest in stunting (low weight for age), wasting (low weight for height), micronutrient **(98)** and overweight. Our track **(99)** in reducing the proportion of undernourished children over the past decade has been modest at best, and **(100)** what other countries with comparable socioeconomic indicators have achieved.

96. (1) demonstrates

(2) demonstrated

(3) demonstrated that

(4) had demonstrated

97. (1) of   (2) for

(3) in   (4) into

98. (1) scarcities   (2) lack

(3) absence   (4) deficiencies

99. (1) progress   (2) record

(3) report   (4) result

100. (1) leads   (2) fails

(3) lags   (4) falters

EXPLANATIONS

1. (2) Pacific → Ocean
Nile → River

2. (3) $\underbrace{D\ E\ M\ O\ N}_{\text{Reverse}}\ S\ \underset{\downarrow}{}\ \underbrace{T\ R\ A\ T\ E}_{\text{Reverse}}$

N O M E D S E T A R T

Similarly

$\underbrace{C\ O\ R}_{\text{Reverse}}\ R\ \underset{\downarrow}{}\ \underbrace{U\ P\ T}_{\text{Reverse}}$

R O C R T P U

3. (3)

M → (K, L) ↓ ; N → (L, M) ↓
J , K

Similarly

N → (O,P) ↓ ; M → (N, O) ↓
Q , P

4. (3) 8 5 Similarly, 6 4
(cross)
5 8 4 6

5. (4)

6. (1) S ← R
E ← D
K ← J

but   W ←(U, U)— T

7. (4) Except the no. 124, all other numbers are perfect cubes.

8. (4) The product of the first and the fourth digit is equal to the number formed with the second and the third digit in all the numbers except 4308.

9. (4) Inch → Decemetre → Foot → Metre

10. (1) $5 + 3 = 8$
$8 + 4 = 12$
$12 + 5 = 17$
$17 + 6 = 23$
$23 + 7 = \boxed{30}$

11. (1) Conclusion I follows.

12. (1)

$A \xrightarrow{+4} E \xrightarrow{+4} I \xrightarrow{+4} M \xrightarrow{+4} \boxed{Q}$
$N \xrightarrow{+3} Q \xrightarrow{+3} T \xrightarrow{+3} W \xrightarrow{+3} \boxed{Z}$

13. (2)

$P \xrightarrow{+5} U \xrightarrow{+5} Z \xrightarrow{+5} \boxed{E} \xrightarrow{+5} J$
$R \xrightarrow{+5} W \xrightarrow{+5} B \xrightarrow{+5} \boxed{G} \xrightarrow{+5} L$
$Q \xrightarrow{+5} V \xrightarrow{+5} A \xrightarrow{+5} \boxed{F} \xrightarrow{+5} K$

14. (2) Age of Khushboo = 25 years
Age of Ankit = $2 \times 25 = 50$ years
Age of Chandan
$= 50 + 2 = 52$ years
Age of Sumit $= 52 + 1 = 53$ years

15. (2) Arrangement according to dictionary
yeast → yelp → yielded → yogurt

16. (3) M A T E   R I A L
(cross)
R I A L   M A T E

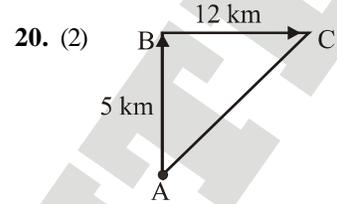Therefore

R E M E   M B E R
(cross)
M B E R   R E M E

17. (3) First row, $5 \times 8 - 8 = 32$
Second row,
$9 \times 6 - 6 = 48$
Third row,
$7 \times 9 - 9 = \boxed{54}$

18. (2)

S → ×	P → −
R → +	Q → ÷

14641 Q 121 P 100 S 2 R 100
$14641 \div 121 - 100 \times 2 + 100$
$121 - 200 + 100 = \boxed{21}$

19. (3) $\boxed{A}$ B C $\boxed{P}$ Q $\boxed{R}$ / A B $\boxed{C}$ P
$\boxed{Q}$ R

20. (2)

$AC = \sqrt{5^2 + 12^2} = 13\,\text{km}$

21. (1) G → 23, 32, 69, 88, 95
O → 24, 33, 42, 65
L → 14, 40, 59
F → 43

Option	G	O	L	F
(i)	95	24	59	43
(ii)	32	65	14	79̶
(iii)	88	33	40	1̶4̶
(iv)	69	4̶3̶	59	2̶0̶

22. (4) The son of boys grandfather (Paternal) means father or uncle of that boy. The wife of boy's father would be mother of that boy. The wife of boy's uncle would be aunt of that boy.

23. (3)

24. (3) Delhi is in India and in turn, India is in world.

25. (1)
26. (1) **27.** (2) **28.** (4) **29.** (1)
30. (3) **31.** (4) **32.** (3) **33.** (3)
34. (4) **35.** (1) **36.** (1) **37.** (2)
38. (3) **39.** (1) **40.** (2) **41.** (3)
42. (4) **43.** (4) **44.** (4) **45.** (4)
46. (1) **47.** (3) **48.** (3) **49.** (4)
50. (4)

51. (1) Let Ramita's present age
$= 9x$ years
Satyajit's present age $= 7x$ years
According to question
After 9 years,

7

$$\frac{9x+9}{7x+9}=\frac{5}{4}$$

$$x=9$$

$\therefore$ Ramita's present age $= 9x$

$= 9 \times 9 = 81$ years

52. (3) $\dfrac{\sec A - \tan A}{\csc A + \cot A} \times \dfrac{\sec A + \tan A}{\sec A + \tan A}$

$$\times \frac{(\csc A - \cot A)}{(\csc A - \cot A)}$$

$$= \frac{\left(\sec^2 A - \tan^2 A\right)(\csc A - \cot A)}{\left(\csc^2 A - \cot^2 A\right)(\sec A + \tan A)}$$

$$= \frac{\csc A - \cot A}{\sec A + \tan A}$$

53. (4) $\lfloor BAD = 90°$

$\lfloor ABD = \lfloor ADB = 45°$

$\lfloor BCD = 60°$

$\lfloor CBD = \lfloor CDB = 60°$

$AO \perp BD$

In $\triangle ABO$,

$$\sin 45° = \frac{OA}{AB} = \frac{OA}{6}$$

$OA = 3\sqrt{2}$ cm $= OB$

In $\triangle BOC$,

$$\tan 60° = \frac{OC}{OB} = \frac{OC}{3\sqrt{2}}$$

$OC = 3\left(\sqrt{2} \times \sqrt{3}\right) = 3\sqrt{6}$ cm

$\therefore AC = OA + OC$

$$= 3\sqrt{2} + 3\sqrt{6}$$

$$= 3\left(\sqrt{2} + \sqrt{6}\right) \text{cm}$$

54. (2) Quantity of wheat sold at 20% profit $= x$ quintals

$\therefore$ Quantity of wheat sold at 10% profit

$= (9 - x)$ quintals

C.P of wheat per quintal $=$ `1

According to question

55. (2) $25 = 9 + 16$

$5^2 = 3^2 + 4^2$

$\therefore$ Required number $= 3$ and 4

56. (1) Avg cost of 7 machines

$$= \frac{2 \times 56000 + 4 \times 45000 + 30000}{7} = ` 46000$$

57. (1) Coefficient in

$6x^3 + 4x^2 + 2x + 3$ is $6, 4, 2$

58. (4) Time taken by Azhar in doing 1 work $= x$ days

$\therefore$ Time taken by Balraj $= 4x$ days

According to question

$4x - x = 45$

$x = 15$ days

$\therefore$ Time taken by Balraj $= 60$ days

$\therefore$ (Azhar + Balraj)'s 1 days work

$$= \frac{1}{15} + \frac{1}{60} = \frac{1}{12}$$

$\therefore$ Required time $= 12$ days

59. (4) $2x - 3y = 11$

$3y = 2x + 11$

$$y = \frac{2}{3}x + 11$$

$$M_1 = \frac{2}{3}$$

and

$3x + ky = -4$

$ky = -3x - 4$

$$y = \frac{-3}{k}x - \frac{4}{k}$$

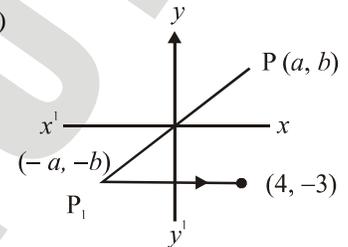$$M_2 = \frac{-3}{k}$$

According to question

$M_1 . M_2 = -1$

$$\frac{2}{3} \times -\frac{3}{k} = -1$$

$6 = 3k$

$k = 2$

60. (3) $\dfrac{8a^2 b^2 c^2}{4a^2} = 2b^2 c^2$

61. (1)

$\therefore$ co-ordinates of P are (4, 3)

62. (4) Let the maximum marks in the examination be x.

According to question

$$x \times \frac{25}{100} = 45 + 45$$

$$\boxed{x = 360}$$

63. (2) Let the distance covered by steamer be x km.

$\therefore$ Distance covered by train

$$= (430 - x) \text{ km}$$

According to question,

$$\text{Time} = \frac{\text{distance}}{\text{speed}}$$

$$\therefore \frac{x}{25} - \frac{430 - x}{65} = 10$$

$$\frac{13x - 2150 + 5x}{325} = 10$$

$x = 300$ km

64. (1) Largest 5-digit number $= 99999$

so,

89)99999(1123
  89

  109
   89

  209
  178

  319
  267

  52

$\therefore$ Required no. $99999 - 52$
$= 99947$

65. (3) $\dfrac{\sqrt{1+\tan^2 A}}{\tan A} = \dfrac{\sec A}{\tan A}$

$\dfrac{1}{\sin A} = \operatorname{cosec} A$

66. (1) $S.I = \dfrac{P \times R \times T}{100}$

$2800 = \dfrac{2PR}{100}$ ....(i)

Now

$C.I - S.I = \dfrac{PR^2}{10000}$

$2996 - 2800 = \dfrac{PR^2}{10000}$

$196 = \dfrac{PR^2}{10000}$ ....(ii)

solving eqn (i) and (ii)

$196 \times 10000 = \dfrac{100 \times 2800}{2} R$

$R = 14\%$ per annum

67. (4) Volume of water in the swimming pool

= length × breadth × ang depth

$= 20 \times 10 \times \left(\dfrac{1+3}{2}\right) = 400 \text{ m}^3$

68. (2) $\sec \dfrac{4\pi}{3}$

$= \sec\left(\pi + \dfrac{\pi}{3}\right)$

$= -\sec \dfrac{\pi}{3}$

$= -2$

69. (2) Area of sector $= \dfrac{\theta}{360} \times \pi r^2$

$\therefore 30.8 = \dfrac{72}{360} \times \dfrac{22}{7} \times r^2$

$r^2 = 49$

$r = 7$ cm

70. (1) $2x + 6y = 3x$ ....(i)

$10x - 3y = 4xy$ ....(ii) × 2

$20x - 6y = 8xy$ ....(iii)

eqn (i) + (iii)

$22x = 11xy$

$y = 2$

$\therefore x = 3$

71. (2) Let the C.P of article be Rs. 100 and its marked price be $\text{`}x$

According to the question,

$\dfrac{90x}{100} = 75$

$x = \text{`}\dfrac{250}{3}$

If the discount be 20% then

$S.P = \dfrac{250}{3} \times \dfrac{80}{100} = \dfrac{200}{3}$

$\therefore \text{Loss} = 100$

$-\dfrac{200}{3} = \dfrac{100}{3} = \text{`}33.33$

72. (1) Required percent

$= \dfrac{30}{120} \times 100 = 25\%$

73. (2) Required answer
$= (1800 - 1210) + (2330 - 1800)$
$= 590 + 530 = 1120$

74. (4) Total distance covered in the given week
$= 4.5 + 0.5 + 1.5 + 2.5 + 4 + 4 + 3.5$
$= 20.5 \text{ km}$

$\therefore$ Required consumption of calories

$= \dfrac{400}{5} \times 20.5 = 1640$

75. (1) Expenses on rent and taxes
= `8 lakhs
Total annual expenses
= `26 lakhs
$\therefore$ Required percent

$= \dfrac{8}{26} \times 100 \simeq 30.77$

76. (3)	**77.** (2)	**78.** (3)	**79.** (1)
80. (1)	**81.** (2)	**82.** (1)	**83.** (4)
84. (4)	**85.** (2)	**86.** (2)	**87.** (1)
88. (3)	**89.** (4)	**90.** (2)	**91.** (4)
92. (3)	**93.** (3)	**94.** (2)	**95.** (4)
96. (1)	**97.** (3)	**98.** (4)	**99.** (2)
100. (3)			

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