

I kekl; c)erk

1. Select the related word/letters number from the given alternatives.

Intelligent : Dumb :: Inflate : ?

- (1) Raise (2) Deflate
(3) Degrade (4) Aerated

2. Select the related word/letters number from the given alternatives.

FS : IT :: QT : ?

- (1) PR (2) TU
(3) SF (4) TQ

3. Select the related word/letters number from the given alternatives.

HI : 17 :: PQ : ?

- (1) 37 (2) 24
(3) 30 (4) 33

4. Select the related word/letters number from the given alternatives.

4 : 1024 :: 7 : ?

- (1) 343 (2) 2401
(3) 16807 (4) 196

5. Select the odd word/letters/number/number pair from the given alternatives.

- (1) Xenon (2) Hydrogen
(3) Argon (4) Helium

6. Select the odd word/letters/number/numbers pair from the given alternatives.

- (1) CLU (2) HQZ
(3) AJS (4) OXF

7. Select the odd word/letters/number/numbers pair from the given alternatives.

- (1) TSR (2) QPO
(3) NML (4) ABC

8. Select the odd numbers pair from the given alternatives.

- (1) 7642 (2) 4520
(3) 3927 (4) 5841

9. A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

Leaf, Caterpillar, Frog ?

- (1) Grasshopper
(2) Snake
(3) Cow
(4) Deer

10. A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

CD, FA, IX, LU, ?

- (1) TU (2) RS
(3) OP (4) OR

11. A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

RT, ?, ZB, DF

- (1) WX (2) VX
(3) VY (4) UV

12. A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

0, 4, 18, 48, 100, 180, ?

- (1) 294 (2) 211
(3) 186 (4) 222

13. 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 conclusion, if any, fol-

lows from the given statements.

Statements :

- (i) All young girls are modern.
(ii) No modern men are superstitious.

Conclusion :

- (i) No girls are superstitious.
(ii) No young men are superstitious.

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

14. If the age of Rahul is 5 years more than his friend Ajay's age the age of Rahul's wife is 6 years less than Rahul, and Ajay's wife is 1 year older than Rahul's wife, then which of the following statements is true?

- (1) Rahul's age and Ajay's wife's age is same.
(2) Ajay's wife's age and Ajay's age is same.
(3) Rahul and Ajay are of the same age.
(4) Rahul and Ajays's age difference is 3 years.

15. Arrange the given words in the sequence in which they occur in the dictionary.

- i. Forbes ii. Forest
iii. Forensic iv. Formation
(1) iii, ii, iv, i (2) iv, iii, ii, i
(3) i, ii, iii, iv (4) i, iii, ii, iv

16. In a certain code language, "STATION" is written as "5313462" and "RED" is written as "789". How is "TRAIN" written in that code language ?

- (1) 73241 (2) 37421
(3) 37142 (4) 37412

17. In the following question, select

the missing number from the given series.

6	16	?
7	23	17
8	9	30

- (1) 27 (2) 25
(3) 12 (4) 14

18. If “S” denotes “Multiplied by”, “V” denotes “subtracted from”, “M” denotes “added to” and “L” denotes “divided by”, then $72L24S3V7M2=?$
(1) 4 (2) 6
(3) 8 (4) 10

19. In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
 $a_d_bd_ab_dd$

- (1) badd (2) ddba
(3) bcda (4) dbac

20. Mohan is chasing a bike which is moving in the southwest direction. In which direction is Mohan moving?
(1) North (2) East
(3) Northeast (4) Southwest

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 alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, ‘K’ can be represented by 22, 04 etc. and ‘P’ can be represented by 77, 98 etc. Similarly, you have to identify the set for the word ‘STRAIN’.

Matrix-I

	0	1	2	3	4
0	L	D	S	G	K
1	L	R	S	I	F
2	L	I	K	R	F
3	I	K	S	Z	R
4	C	K	Y	R	Y

Matrix-II

	5	6	7	8	9
5	A	N	X	X	K
6	Q	T	T	T	K
7	U	A	P	N	A
8	U	V	A	T	N
9	U	V	W	P	A

- (1) 12, 88, 43, 76, 21, 78
(2) 87, 66, 11, 79, 13, 33
(3) 32, 68, 43, 85, 97, 54
(4) 02, 65, 97, 34, 79, 44

22. Abhishek is Byomkesh’s brother and Vimal is Jackie’s father. Ella is Byomkesh’s mother. Abhishek and Jackie are brothers. How is Ella related to Vimal?
(1) Wife (2) Daughter
(3) Mother (4) Sister

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

Question figure :



Answer figures :

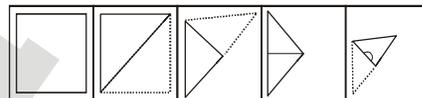
- (1) (2)
(3) (4)

24. Identify the diagram the best represents the relationship among the given classes, Sweets, Laddo, Jalebi

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

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

Question figures :



Answer figures :

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

GENERAL KNOWLEDGE

26. Which of these railway stations is a World Heritage Site?
(1) Kharagpur Railway Station
(2) Howrah Station
(3) Chhatrapati Shivaji Terminus
(4) Kanpur Central
27. Name the first female Nobel Prize winner from India.
(1) Indira Gandhi
(2) Mother Teresa
(3) Kavitha Krishnan
(4) Sarojini Naidu
28. Intestinal bacteria synthesizes which of the following in the human body?
(1) Vitamin K (2) Proteins
(3) Fats (4) Vitamin D
29. is the study of the physical form and external structure of plants.
(1) Physiology
(2) Anatomy

- (3) Phytomorphology
(4) Cytology
30. Which of the following is a structural and functional unit of kidneys ?
(1) Renette Cells
(2) Flame Cells
(3) Nephrites
(4) Nephrons
31. The Chemical formula of Acetic acid is.....
(1) CH_3COH
(2) CH_3COOH
(3) CH_3COCH_3
32. The common name of sodium tetraborate decahydrate is
(1) Epsom salt (2) gypsum
(3) Borax (4) galena
33. ASP in computer science stands for ?
(1) Abstract Service Provider
(2) Application Service Porovider
(3) Application Signal Provider
(4) Abstract Syntax Provider
34. Giddha is a folk dance of which state ?
(1) Rajasthan
(2) Uttar Pradesh
(3) Punjab
(4) Bihar
35. A manufacturer faces price elasticity of demand of a 1.25 for its product. If it lowers its price by 6.4%, the increase in quantity sold will be
(1) 5.15 percent (2) 7.65 percent
(3) 8 percent (4) 5.12 percent
36. If money supply growth is faster than real GDP growth, it results in
(1) Inflation
(2) deflation
(3) budget surplus
(4) budget deficit
37. Algae belongs to which of the following levels of the ecosystem ?
(1) Decomposers
(2) Destructors
(3) Producers
(4) Consumers
38. Which park also shares its boundaries with Bangladesh ?
(1) Sundarbans National Park
(2) Kaziranga National Park
(3) Kanchendzonga National Park
(4) Panna National Park
39. ATM stands for
(1) Any time Money
(2) Auto Technology Money
(3) Automated Teller Machine
(4) Automatic Transaction Machinery
40. In terms of size, Neptune ranks no. in our Solar System.
(1) 1 (2) 2
(3) 3 (4) 4
41. Abu Dhabi is the Capital City of
(1) United Arab Emirates
(2) Netherlands
(3) South Korea
(4) Italy
42. In Akbar's regime, was the military head.
(1) Sultan Ahmed Fawad
(2) Suri Moja
(3) Mir Khaas
(4) Mir Bakshi
43. Who pioneered the guerrilla warfare methods ?
(1) Babur
(2) Akbar
(3) Shivaji
(4) Bajirao Peshwa
44. Who Invented Universal Standard Time ?
(1) Enrico Fermi
(2) Adolf Gaston Eugen Fick
(3) Sandford Fleming
(4) Benoit Fourneyron
45. states that the total current entering a junction is equal to the total current leaving the junction.
(1) Lenz's Law
(2) Hooke's Law
(3) Ohm's Law
(4) Kirchhoff's First Law
46. Acceleration due to gravity on a planet decreases with
(1) decrease in radius of the planet
(2) increase in mass of the planet
(3) decrease in mass of the body
(4) increase in altitude from surface of the planet
47. Who is the Chairman of NITI Aayog ?
(1) President
(2) RBI Governor
(3) Finance Secretary
(4) Prime Minister
48. Who is the Chairman of the Rajya Sabha ?
(1) President of India
(2) Prime Minister of India
(3) Vice President of India
(4) Speaker of Lok Sabha
49. Shiva Thapa is related to
(1) Badminton (2) Lawn tennis
(3) Boxing (4) Cricket
50. Who is the author of the book "My Truth".
(1) Khuswant Singh
(2) Kiran Bedi
(3) Narendra Modi
(4) Indira Gandhi

QUANTITATIVE APTITUDE

51. P and Q can do project in 12 and 12 days respectively. In how many days can they complete 50% of the project if they work together?
(1) 6 days (2) 3 days
(3) 18 days (4) 1.5 days
52. If $4(x+5) - 3 > 6 - 4x \geq x - 5$; then the value of x is
(1) 2 (2) 1
(3) 3 (4) 4
53. The point R (a, b) is first reflected in origin to R1 and R1 is reflected in x-axis to ($4, 2$). The co-ordinates

of point R are

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

54. For triangle PQR, find equation of altitude PS if coordinates of P, Q and R are $(1, 2)$, $(2, 1)$ and $(0, 5)$ respectively ?

- (1) $x - 3y = -7$ (2) $x + 3y = -5$
 (3) $x - 3y = -5$ (4) $x + 3y = -7$

55. If $\sec 300^\circ = x$, find the value of x is

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

56. To cover a distance of 225 km in 2.5 hours what should be the average speed of the car in meters/second?

- (1) 90 m/s (2) 45 m/s
 (3) 50 m/s (4) 25 m/s

57. An angle is greater than its complementary angle by 30° . Find the measure of the angle ?

- (1) 30° (2) 90°
 (3) 60° (4) 120°

58. A rice trader buys 8 quintals of rice for Rs. 3,600. 10% rice is lost in transportation. At what rate should he sell to earn 15% profit ?

- (1) Rs. 352.1 per quintal
 (2) Rs. 517.5 per quintal
 (3) Rs. 575 per quintal
 (4) Rs. 582.3 per quintal

59. What is the value of $\left(\frac{3}{5} + \frac{7}{9}\right)$?

- (1) $\frac{62}{45}$ (2) $\frac{31}{28}$
 (3) $\frac{5}{7}$ (4) $\frac{1}{7}$

60. Marked price of an item is Rs. 200. On purchase of 1 item discount is 5%, on purchase of 2 items discount is 14%. Rajeshri buys 3 items, what is the effective discount?

- (1) 37 percent
 (2) 26.25 percent
 (3) 11 percent
 (4) 30.2 percent

61. If the radius of a circle is increased by 16%, its area increases by

- (1) 34.56 percent
 (2) 32 percent
 (3) 16 percent
 (4) 17.28 percent

62. Expand and simplify $(x-4)^2 + (x-2)^2$

- (1) $2(x^2 + 2x + 10)$
 (2) $2(x^2 + 2x - 10)$
 (3) $2(x^2 - 2x + 10)$
 (4) $2(x^2 - 2x - 10)$

63. A cone is hollowed out of a solid wooden cube of side 6 cm. The diameter and height of the cone is same as the side of the cube. What is the volume of the remaining cube.

- (1) 159.43 cubic cms
 (2) 323.15 cubic cms
 (3) 106.33 cubic cms
 (4) 210.66 cubic cms

64. In $\triangle ABC$, the median AD is 7 cm and CB is 14 cm, measure of $\angle CAB$ is

- (1) 30° (2) 60°
 (3) 90° (4) 120°

65. Among three numbers, the first is twice the second and thrice the third. If the average of three numbers is 198, then what is the difference between the first and the third number?

- (1) 216 (2) 297
 (3) 661 (4) 431

66. If $\frac{\sec A}{\sqrt{(\sec^2 A - 1)}} = x$, then value of

- x is
 (1) $\tan A$ (2) $\operatorname{cosec} A$
 (3) $\sin A$ (4) $\cos A$

67. If Gangadhar's salary is $\frac{3}{11}$ times

of Hari's and Shambhu's is $\frac{3}{4}$ times

of Hari's, what is the ratio of Gangadhar's salary to Shambhu's?

- (1) 44:9 (2) 4:11
 (3) 9:44 (4) 11:4

68. If $a + b = 8$ and $ab = 15$, then $(a^3 + b^3)$ is

- (1) 224 (2) 244
 (3) 152 (4) 128

69. What is the value of

$$(1 + \cot A)^2 + (1 - \cot A)^2 ?$$

- (1) $2\operatorname{cosec}^2 A$
 (2) $2\sec^2 A$
 (3) $1 - 2\operatorname{cosec}^2 A$
 (4) $1 - 2\sec^2 A$

70. The sum of twice a number and

thrice its reciprocal is $\frac{25}{2}$. What

is the number ?

- (1) 7 (2) 6
 (3) 5 (4) 4

71. A sum fetched a total simple interest of Rs. 7728 at the rate of 7% per year in 8 years. What is the sum?

- (1) Rs. 13800 (2) Rs. 16560
 (3) Rs. 11040 (4) Rs. 8280

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

	Number of employees	Annual salary (in lakhs)	Bonus as percent of annual salary
Manager	3	60	30%
Executive	6	12	30%
Trainee	4	4	20%

What is the average bonus (in rupees)?

- (1) 606154 (2) 7880002
 (3) 253333 (4) 224000

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

	2011	2012	2013	2014	2015
Company A	3000	3000	1000	2000	2000
Company	000	4000	2000	3000	4000
Company	000	5000	3000	40000	5000

For which of the following pairs of years the total exports from the three Companies together are equal?

- (1) 2011 and 2013
- (2) 2013 and 2015
- (3) 2011 and 2015
- (4) 2014 and 2015

74. Refer the below data table and answer the following question.

Year	Profit of (–Loss) in Rs. Crore
2011	5
2012	15
2013	–20
2014	–15
2015	–5

What was the total Profit or loss of the company in last 5 years ?

- (1) Profit of Rs. 20 crores
- (2) Loss of Rs. 30 crores
- (3) Loss of Rs. 20 crores
- (4) Profit of Rs. 30 crores

75. Refer the below data table and answer the following question.

India's exports in 2015	Value in million US\$
Jewellery	550
Software	700
Cotton	875
Steel	775
Electronics	550

Software was what percent of total exports ?

- (1) 20.29 percent
- (2) 22.79 percent
- (3) 25.29 percent
- (4) 17.79 percent

ENGLISH COMPREHENSION

76. Select the synonym of **pal**.

- (1) buddy
- (2) lad
- (3) foe
- (4) dude

77. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase. **having a sensation of whirling and a tendency to fall or stagger.**

- (1) volatile
- (2) wild
- (3) reckless
- (4) giddy

78. Improve the bracketed part of the sentence.

(It is no good to cry) over past failures.

- (1) It is of no good crying
- (2) It is of no good to cry
- (3) It is no good crying
- (4) No improvement

79. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option.

If a sentence is free from error, select 'No Error'.

Sairat is one of the latest (1)/ in the list of contemporary Marathi movies (2)/ which appeared in recent times. (3)/ No error (4)

80. In the following question, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

A month before he was scheduled to be hanged from the _____, the president granted him clemency.

- (1) gallows
- (2) balcony
- (3) stands
- (4) frame

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

If you can't beat 'em, join' em.

- (1) Many time those who fight eventually become best of friends.
- (2) If one has to give up fighting

with some group because one can't win, band together with them.

- (3) Not to hurt others. Instead, be friends with them.
- (4) To fight till you get acceptance to a group which does not initially accept you as member.

82. Select the antonym of **bequeath**.

- (1) receive
- (2) impart
- (3) bestow
- (4) entrust

83. Choose the antonym of **stun**.

- (1) petrify
- (2) calm
- (3) flabbergast
- (4) stupefy

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

Preeti ran the race in record time.

- (1) In record time Preeti ran the race.
- (2) The race was run by Preeti in record time.
- (3) The race was being run by Preeti in record time.
- (4) The race has been ran by Preeti in record time.

85. Improve the bracketed part of the sentence.

I went to sleep last night, (**almost as soon as**) my head hit the pillow.

- (1) no sooner then
- (2) as quickly as
- (3) almost as quickly as
- (4) No improvement

86. Select the word with the correct spelling.

- (1) applauds
- (2) neonaetes
- (3) bestiary
- (4) pinioned

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

All good things must come to an end.

- (1) Even enjoyable experiences

cannot last for ever.

- (2) A good story should always have a happy ending.
- (3) The world will be destroyed one day.
- (4) Only bad things can continue forever. Life of good things feel short.

88. Select the synonym of **to defile.**'

- (1) to esteem (2) to besmirch
- (3) to elevate (4) to sanctify

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 a sentence is free from error, select 'No Error'.

I am better (1)/ adapted to the (2)/ climate than you. (3)/ No error (4)

Directions (90 – 91) : Rearrange the parts of the sentences in correct order.

90. It is high time

- P. about the cost and
- Q. the government started thinking
- R. quality of power supply
- (1) RPQ (2) QRP
- (3) QPR (4) PRQ

91. For India, therefore.

- P. a priority along with nuclear safety
- Q. nuclear security is not a new objective,
- R. but has always been
- (1) RQP (2) RPQ
- (3) PRQ (4) QRP

92. Select the word with the correct spelling.

- (1) frackture (2) thiners

- (3) approved (4) divining

93. In the following question, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

The researchers are _____ into the mode of life of diabetes patients as diabetes is a lifestyle ailment.

- (1) inspecting
- (2) investigating
- (3) observing
- (4) seeing

94. 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.

Puneet said, "I have been reading a story book.

- (1) Puneet said he has been reading a story book.
- (2) Puneet said that he had been reading a story book.
- (3) Puneet said that he has been reading a story book.
- (4) Puneet said that he had read a story book.

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

A person who is not accepted by a social group, especially because he or she is not liked, respected, or trusted.

- (1) fugitive (2) vagrant
- (3) pariah (4) tramp

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 new claim that (96) out of misplaced confidence that all that is in education can be (97) is that the 'per unit cost of outcome' is lower in private schools. Meaning that even (98) the learning outcomes of private schools are not better (99) the public schools, the cost (100) running private schools is much lower.

- 96.** (1) emerging
(2) emerge
(3) was emerged
(4) emerged

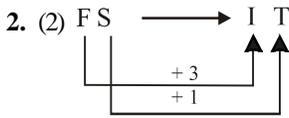
- 97.** (1) quantified (2) counted
(3) totalled (4) scored

- 98.** (1) if (2) when
(3) whereas (4) as

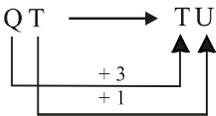
- 99.** (1) then (2) then
(3) to (4) as

- 100.** (1) for (2) about
(3) of (4) with

1. (2) As intelligent is opposite to dumb, similarly deflate is opposite of inflate.



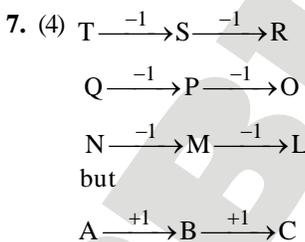
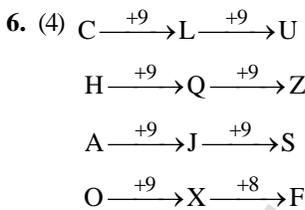
Similarly



3. (4) As $H=8$
 $I=9$
 $\Rightarrow 8+9=17$
 and $P=16$
 $Q=17$
 $\Rightarrow 16+17=33$

4. (3) $4 \rightarrow 4 \times 4 \times 4 \times 4 \times 4 = (4)^5 = 1024$
 similarly
 $7 \rightarrow 7 \times 7 \times 7 \times 7 \times 7 = (7)^5 = 16807$

5. (2) Except Hydrogen, remaining all other are inert gases.

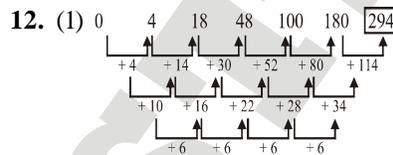
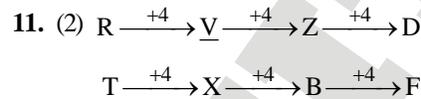
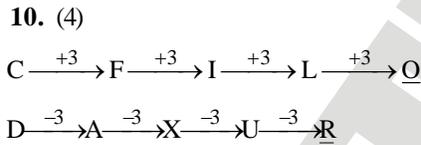


8. (4) In all the numbers except 5841, the product of first two digits is equal to the remaining digits of the number.
 $7642 \Rightarrow 7 \times 6 = 42$

$4520 \Rightarrow 4 \times 5 = 20$
 $3927 \Rightarrow 3 \times 9 = 27$
 but
 $5841 \Rightarrow 5 \times 8 = 40 \neq 41$

9. (2) The following series is based on the food chain

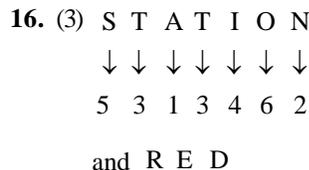
Leaf \rightarrow Caterpillar \rightarrow Frog \rightarrow Snake



13. (3) None of the given conclusions follows.

14. (2) Let Ajay's age be x years
 then Rahul's age = $(x + 5)$ years
 \Rightarrow Rahul's wife age
 $= x + 5 - 6 = x - 1$ years
 and Ajay's wife's age
 $= x - 1 + 1 = x$ years
 Hence Ajay's and his wife's age is same.

15. (4) (i) Forbes \rightarrow (iii) forensic \rightarrow (ii) forest \rightarrow (iv) formation



so $T \ R \ A \ I \ N$
 $\downarrow \downarrow \downarrow \downarrow \downarrow$
 $3 \ 7 \ 1 \ 4 \ 2$

17. (2) Sum of the numbers in each column is 47 IInd column

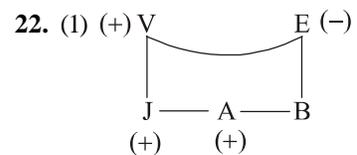
$7 + 23 + 17 = 47$
 IIIrd column
 $8 + 9 + 30 = 47$
 Column I
 $6 + 16 + ? = 47$
 $\Rightarrow ? = 47 - 22 = 25$

18. (1) $72L24S3V7M2$
 $\Rightarrow 72 \div 24 \times 3 - 7 + 2$
 $= 3 \times 3 - 7 + 2$
 $= 9 - 7 + 2 = 4$

19. (1) $abd / abdd / abddd$

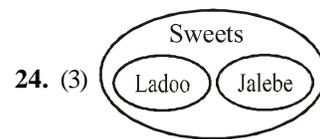
20. (4) It is obvious that Mohan is also moving in the same direction, that of the bike, ie south-west.

21. (1) $S \Rightarrow 02, 12, 32$
 $T \Rightarrow 66, 67, 68, 88$
 $R \Rightarrow 11, 23, 34, 43$
 $A \Rightarrow 55, 76, 79, 87, 99$
 $N \Rightarrow 56, 78, 89$



Hence Ella is wife of Vimal.

23. (3)



25. (3)
 26. (3) 27. (2) 28. (1) 29. (3)
 30. (4) 31. (2) 32. (3) 33. (2)
 34. (3) 35. (3) 36. (1) 37. (3)
 38. (1) 39. (3) 40. (4) 41. (1)

42. (4) 43. (3) 44. (3) 45. (4)
 46. (4) 47. (4) 48. (3) 49. (3)
 50. (4)

51. (2) Let the total work be 12 units
 work done by P in 1 day = 1 unit
 work done by Q in 1 day = 1 unit
 work done by P and Q in 1 day = 2 unit

$$50\% \text{ of the work} = \frac{12}{2} = 6 \text{ units}$$

Required number of days

$$= \frac{6}{2} = 3 \text{ days}$$

52. (2) $4(x+5) - 3 > 6 - 4x$

$$\Rightarrow 4x + 20 - 3 > 6 - 4x$$

$$\Rightarrow 4x + 17 > 6 - 4x$$

$$\Rightarrow 8x > -11$$

$$\Rightarrow x > -\frac{11}{8}$$

also

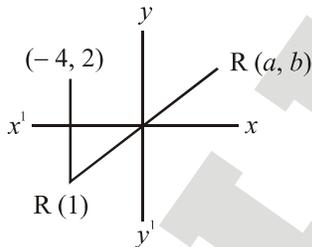
$$6 - 4x \geq x - 5$$

$$\Rightarrow 6 + 5 \geq 5x$$

$$\Rightarrow x \leq \frac{11}{5}$$

$$\therefore -\frac{11}{8} < x \leq \frac{11}{5}$$

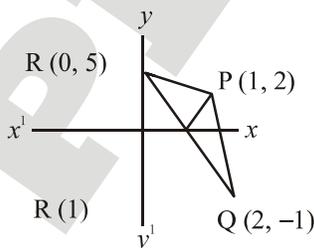
53. (3)



Clearly R (a, b) is in first quadrant.

\therefore Point of R = (4, 2)

54. (2)



$$\text{Slope of QR} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-1 - 5}{2 - 0} = \frac{-6}{2} = -3$$

PS \perp RQ

$$\therefore \text{Slope of PS} = \frac{1}{3}$$

$$m_1 m_2 = -1$$

The line passes through x_1, y_1
 = 1, 2

$$\therefore y - y_1 = m(x - x_1)$$

$$\Rightarrow y - 2 = \frac{1}{3}(x - 1)$$

$$\Rightarrow 3y - 6 = x - 1$$

$$\Rightarrow x - 3y = -6 + 1$$

$$\Rightarrow x - 3y = -5$$

55. (3) $\Rightarrow x = \sec 300^\circ$

$$\Rightarrow \sec(360^\circ - 60^\circ)$$

$$= \sec 60^\circ = 2$$

56. (4) Required speed of the car

$$= \frac{225}{2.5} = 90 \text{ km/hr} = 25 \text{ m/s}$$

57. (3) Let the angle be x
 then the complementary angle
 = $90^\circ - x^\circ$

According to the question

$$\Rightarrow x - (90^\circ - x) = 30^\circ$$

$$\Rightarrow 2x - 90^\circ = 30^\circ$$

$$\Rightarrow 2x = 120^\circ$$

$$\Rightarrow x = 60^\circ$$

58. (3) Desired selling price after 15% profit%

$$= 3600 + 15\% \text{ of } 3600$$

$$= 3600 + 5400 = 4140$$

Rice left after loss in transportation

$$= 8 - 10\% \text{ of } 8 = 7.2 \text{ quintals}$$

Required S.P per quintal

$$= \frac{4140}{7.2} = 575$$

$$59. (1) \frac{3}{5} + \frac{7}{9} = \frac{27 + 35}{45} = \frac{62}{45}$$

60. (3) Price for 2 items
 = $200 - 14\% \text{ of } 200 = 172$
 Price for 1 item = $200 - 5\% \text{ of } 200$
 = 190

Prices for all 3 items

$$= 172 \times 2 + 190 = 534$$

Effective discount

$$= \frac{600 - 534}{600} \times 100 = 11\%$$

61. (1) New radius = $1.16r$

$$\text{New Area} = \pi(r)^2$$

$$= \pi(1.16r)^2$$

$$= 1.3456\pi r^2$$

New increase = 34.56%

62. (1) Expression

$$(x+4)^2 + (x-2)^2$$

$$\Rightarrow x^2 + 16 + 8x + x^2 + 4 - 4x$$

$$\Rightarrow 2x^2 + 20 + 4x$$

$$\Rightarrow 2(x^2 + 10 + 2x)$$

63. (1) Volume of cube = l^3
 = $6 \times 6 \times 6 = 216 \text{ cm}^3$

$$\text{Volume of cone} = \frac{1}{3}\pi r^2 h$$

here $r = 1.5 \text{ cm}$

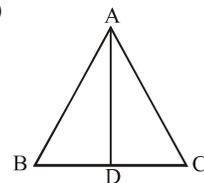
$$h = 3 \text{ cm}$$

$$= \frac{1}{3} \times \frac{22}{7} \times 3 \times 3 \times 6 = 56.5 \text{ cm}^3$$

Remaining cube

$$= (216 - 56.57) 159.43 \text{ cm}^3$$

64. (3)



Clearly

$$BD = DC = AD = 7 \text{ cm}$$

$$AD^2 = BD \times CD$$

$$\therefore \angle CAB = 90^\circ$$

65. (1) Let the third number be x
 First number = $3x$
 Second number = $\frac{3x}{2}$
 According to the question

$$\frac{3x + \frac{3x}{2} + x}{3} = 198$$

$$\Rightarrow 3x + \frac{3x}{2} + x = 594$$

$$\Rightarrow \frac{11}{2}x = 594$$

$$\Rightarrow x = 108$$
 First number = $3 \times 108 = 324$
 Required difference = 216

66. (2)
$$\frac{\sec A}{\sqrt{\sec^2 A - 1}} = \frac{\sec A}{\sqrt{\tan^2 A}}$$

$$(\because \sec^2 A - \tan^2 A = 1)$$

$$= \frac{\sec A}{\tan A} = \frac{\frac{1}{\cos A}}{\frac{\sin A}{\cos A}}$$

$$= \frac{1}{\cos A} \times \frac{\cos A}{\sin A}$$

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

67. (2) Let Hari's salary be x
 Gangadhar's salary = $\frac{3}{11}x$
 Shambhu's salary = $\frac{3}{4}x$
 Required ratio

$$= \frac{\frac{3}{11}}{\frac{3}{4}} = \frac{3}{11} \times \frac{4}{3} = 4:11$$

68. (3) $a^3 + b^3 = (a+b)^3 - 3ab(a+b)$

$$\Rightarrow (8)^3 - 3 \times 15 \times 8$$

$$= 512 - 360 = 152$$

69. (1) $(1 + \cot A)^2 + (1 - \cot A)^2$

$$= 2(1 + \cot^2 A)$$

$$[\because (a+b)^2 + (a-b)^2 = 2(a^2 + b^2)]$$

$$= 2 \operatorname{cosec}^2 A$$

$$[\because \operatorname{cosec}^2 A - \cot^2 A = 1]$$

70. (2) Let the number be x

$$\Rightarrow 2x + \frac{3}{x} = \frac{25}{2}$$

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

$$\Rightarrow 4x^2 + 6 = 25x$$

$$\Rightarrow 4x^2 - 25x + 6 = 0$$

$$\Rightarrow 4x(x-6) - 1(x-6) = 0$$

$$\Rightarrow (x-6) - (4x-1) = 0$$

$$\Rightarrow x = 6, \frac{1}{4}$$

71. (2) Principal = $\frac{S.I \times 100}{T \times R}$

$$= \frac{7728 \times 100}{8 \times 7} = 13800$$

72. (1) Bonus salary of manager

$$= \frac{30}{100} \times 60 = 18 \text{ lakhs}$$
 Bonus salary of Executive

$$= \frac{3.0}{100} \times 12 = 3.6 \text{ lakhs}$$
 Bonus salary fo Trainee

$$= \frac{20}{100} \times 4 = 0.8 \text{ lakhs.}$$
 Required average

$$= \frac{(3 \times 18) + (6 \times 3.6) + (4 \times 0.8)}{3 + 6 + 4}$$

$$= \frac{54 + 21.6 + 3.2}{13}$$

$$= \frac{78.8}{13} = 606154$$

73. (3) Total exports of all 3 companies in 2011
 $= 3000 + 5000 + 3000 = 11000$
 Total exports of all 3 companies in 2015
 $= 2000 + 4000 + 5000 = 11000$

74. (3) Total profit/loss
 $= 5 + 15 - 20 - 15 - 5 = -20$
 $= 20 \text{ crore loss}$

75. (1) Total export = $550 + 700 + 875 + 775 + 550 = 3450$
 Required percentage

$$= \frac{700}{3450} \times 100 = 20.29\%$$

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