

# RRB SOLVED PAPER - 2016

## BASED ON MEMORY

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### GENERAL KNOWLEDGE

1. Male is the Capital of which of the following Country ?  
(A) Tunisia (B) Maldives  
(C) Ethiopia (D) Mali
2. Who among the following is the first Indian person to go to space ?  
(A) Sunita Williams (B) Kalpana chawla  
(C) Rakesh Sharma (D) All of these
3. Who among the following is the First Indian Women Boxer to won Gold in Asian Games?  
(A) Laishram Sarita Devi (B) Aruna Mishra  
(C) Pooja Rani (D) Mary kom
4. Equal nights and day all over the planet is generally termed as ?  
(A) Equinox (B) Eridan  
(C) Russel (D) Seraphin
5. What is Indira point ?  
(A) Northernmost point of Indian's territory  
(B) Southernmost point of Indian's territory  
(C) Westernmost point of Indian's territory  
(D) Easternmost point of Indian's territory
6. Which of the following planet rotate rotates clockwise ?  
(A) Jupiter and Saturn (B) Mars and Neptune  
(C) Venus and Mars (D) Venus and Uranus
7. Who among the following is regarded as the "Father of All India Services" ?  
(A) B.R Ambedkar (B) Sardar Patel  
(C) Lord Macaulay (D) Lord Cornwalli
8. Hub is popularly used in which of the following network ?  
(A) LAN (B) WAN  
(C) MAN (D) WLAN

9. INS Vikrant was decommissioned in which year ?  
(A) 1995 (B) 1996  
(C) 1997 (D) 1998
10. What was the name of the operation that led to the capture and death of Osama Bin Laden ?  
(A) Operation Saturn Spear (B) Operation Ortsac  
(C) Operation Swift Strike II (D) Operation Neptune Spear
11. Arrange the states in ascending order in terms of population (Maharashtra, Gujarat, Kerala, Bihar) ?  
(A) Maharashtra, Kerala, Gujarat, Bihar, (B) Gujarat, Kerala, Bihar, Maharashtra  
(C) Kerala, Gujarat, Bihar, Maharashtra (D) Bihar, Kerala, Gujarat, Maharashtra
12. Which Constitution Amendment was enacted by Indira Gandhi during the Emergency ?  
(A) 42nd Amendment (B) 43rd Amendment  
(C) 44th Amendment (D) 45th Amendment
13. Who among the following holds the record for the Fastest Test Hundred ?  
(A) Chris Gayle (B) Brendon McCullum  
(C) Adam Gilchrist (D) Virat Kohli
14. Name the first animal domesticated by Neolithic people ?  
(A) Cow (B) Goat  
(C) Dog (D) Sheep
15. The President signed a proclamation under which article for imposing President's Rule in Arunachal Pradesh ?  
(A) 356(1) (B) 356(2)  
(C) 356(3) (D) 356(4)
16. For how much duration Rajya Sabha can delay the passing of a money bill ?  
(A) 12 days (B) 14 days  
(C) 16 days (D) 20 days
17. Who among the following was the governor when Indian National Congress was established ?  
(A) Lord Dalhousie (B) Warren Hasting  
(C) Lord Dufferin (D) Lord Auckland
18. Where is Yerwada Jail ?  
(A) Mumbai, Maharashtra (B) Tiruvallur, Chennai  
(C) Ahmedabad, Gujarat (D) Pune, Maharashtra

19. Indira Gandhi National Centre for The Arts is located in ?  
(A) New Delhi (B) Mumbai  
(C) Gandhinagar (D) Kolkata
20. Which of the following Bollywood Actress died in December 2015 ?  
(A) Suchitra sen (B) Sadhana  
(C) Zohra Sehgal (D) Sudha Shivpuri

### GENERAL SCIENCE

21. What is speed of light in vacuum ?  
(A)  $3 \times 10^8$  m/sec (B)  $8 \times 10^{10}$  m/sec  
(C)  $3 \times 10^8$  m/sec (D)  $10 \times 10^8$  m/sec
22. What is industrial alcohol ?  
(A) Denatured Alcohol (B) Isopropyl Alcohol  
(C) Ethanol (D) Rubbing Alcohol
23. What is the chemical name for Gold ?  
(A) Argentum(Ag) (B) Gadolinium (Gd)  
(C) Aurum (Au) (D) Gallium (Ga)
24. Sound travels fastest in which of the following medium ?  
(A) Gases (B) Solid  
(C) Liquid (D) All of these
25. Who among the following invented the Atomic mass table ?  
(A) Alfred Nobel (B) Louis Pasteur  
(C) Robert Boyle (D) Dmitri Mendeleev
26. Which of the following gas is filled in balloons ?  
(A) Neon (B) Krypton  
(C) Argon (D) Helium
27. Which of the following elements of platelets help to coagulate blood ?  
(A) Albumin (B) Fibrin  
(C) Globulin (D) Thrombin
28. Study of Liver is known as-  
(A) Hepatology (B) Hematology  
(C) Limnology (D) Lymphology

29. Radish is a  
(A) Stem (B) Fruit  
(C) Root (D) None of these
30. Vertebra is a part of which of the following organ ?  
(A) Hand (B) Skull  
(C) Leg (D) Spine
31. pH value of blood is –  
(A) less than 7 (B) more than 7  
(C) equal to 7 (D) none of these
32. Who among the following invented the light bulb ?  
(A) Thomas Young (B) Benjamin Franklin  
(C) Thomas Edison (D) William Herschel
33. The element used in nuclear fission to absorb neutrons ?  
(A) Uranium (B) Plutonium  
(C) Radium (D) Cadmium
34. Which of the following is the unit of resistance ?  
(A) coulomb (B) ohm  
(C) volt (D) farad
35. Duodenum is part of –  
(A) large intestine (B) pancreas  
(C) small intestine (D) liver
36. Which gas is used for filling potato chips packets ?  
(A) Oxygen (B) Hydrogen  
(C) Nitrogen (D) Argon
37. What is the chemical name of Vitamin –A ?  
(A) Tocopherol (B) Retinol  
(C) Thiamine (D) Riboflavin
38. What is the Full form of MRI ?  
(A) Magnetic Repulsive Imaging (B) Magnet Resonance Image  
(C) Magnetic Resonance Impulse (D) Magnetic Resonance Imaging
39. Which of the following is the main material mostly used in glass ?  
(A) Silica (B) Selenium  
(C) Cobalt (D) Dolomite

40. Methane is a –  
(A) Colorless, tasteless (B) colorless, odorless  
(C) Odorless, tasteless (D) Colorless, odorless, tasteless
41. What is the freezing point of water ?  
(A)  $1^{\circ}\text{C}$  (B)  $-1^{\circ}\text{C}$   
(C)  $0^{\circ}\text{C}$  (D)  $-2^{\circ}\text{C}$
42. Which of the following compounds is used for cooling in fridges ?  
(A) Hydrofluorocarbons (B) Chlorofluorocarbons  
(C) Dichlorodifluoromethane (D) Chlorodifluoromethane
43. Which of the following gas was leaked in Bhopal gas tragedy ?  
(A) Methyl isocyanate (B) mono methylamine  
(C) Hydrogen cyanide (D) methane
44. What is chalk made out of?  
(A) lead sulphide (B) calcium phosphate  
(C) Calcium carbonate (D) calcium chloride
45. Chemical formula of Ozone is –  
(A)  $\text{Oz}_3$  (B)  $\text{O}_4$   
(C)  $\text{O}_3$  (D)  $\text{O}_2$
46. Which of the following bacteria turns milk into curd ?  
(A) Streptococcus (B) Lactobacillus  
(C) Bifidobacterium (D) Enterococcus
47. Nitrogen Fixing Bacteria are –  
(A) Unicellular organism (B) multicellular organism  
(C) Microorganism (D) None of these
48. Name the process of heating the glass and then cooling it slowly.  
(A) Normalizing (B) Austenitizing  
(C) Abrasion (D) Annealing
49. Which instrument is used to measure atmospheric pressure ?  
(A) Anemometer (B) Manometer  
(C) Barometer (D) Hygrometer
50. Vinegar contains which of the following acids –  
(A) Ascorbic acid (B) Acetic acid  
(C) Pyruvic acid (D) Aspartic acid

**GENERAL INTELLIGENCE AND REASONING**

51. In a certain code 'PET' is coded as 64, MET is coded as 52, then SET is coded as –  
(A) 70 (B) 73  
(C) 76 (D) none
52. BCA : FGE : ? : NOM  
(A) JKL (B) JKI  
(C) JIK (D) IJK
53. A is C, B is D, C is E then find the value of Z ?  
(A) A (B) C  
(C) B (D) X
54. If M=14, TANK=61 then STARDOM = ?  
(A) 99 (B) 98  
(C) 78 (D) 89
55. If 'TIRE' is written as 209185, 'SNOW' is written as 19141523, then 'RAIN' will be written as –  
(A) 181419 (B) 181914  
(C) 184119 (D) 189114
56. What comes in place of question mark ?  
DABC, HEFG, ? , PMNO, TQRS  
(A) IJKL (B) IJLK  
(C) LJIK (D) LIJK
57. Raju's Mother is the only daughter of Kapil's mother. How is Raju related to Kapil?  
(A) Nephew (B) Niece  
(C) Uncle (D) Father

**Directions (Q. 58-60):** In each question below are given two or three statements followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance with commonly known facts and then decide which of the given conclusions logically follows from the given statements, disregarding commonly known facts. Give answer

- A) if only conclusion I follows.  
B) if only conclusion II follows.  
C) if either conclusion I or II follows.  
D) if neither conclusion I nor II follows.  
E) if both conclusions I and II follow.

58. **Statements:** All rubbers are tubes.  
All dolls are rubbers.

No tyres is a tubes.

**Conclusions:** I. Some rubbers being tyres is a possibility.  
II. At least some tubes are dolls.

59. **Conclusions:** I. No tubes is a dolls.  
II. All rubbers being dolls is a possibility.

60. **Statements:** Some water are pure.  
All pure are blue.

**Conclusions:** I. All water being blue is a possibility.  
II. Some pure can never be water.

**Directions (61 – 65).** Eight friends A, B, C, D, E, F, G and H are sitting around a circle, facing the centre, but not necessarily in the same order. B is second to the left of G, who is fourth to the right of C. H is opposite A, who is second to the right of E. A is not an immediate neighbour of B or G. D is an immediate neighbour of C.

61. Who among the following is opposite E ?  
(A) C (B) D  
(C) B (D) F
62. Which of the following is true, with respect to the given seating arrangement ?  
(A) A sits on the immediate right of E.  
(B) G sits exactly between H and B.  
(C) E sits second to the right of H.  
(D) C is an immediate neighbour of B.
63. Who among the following sits third to the left of G ?  
(A) A (B) F  
(C) C (D) D
64. Which of the following pairs are the immediate neighbours of F ?  
(A) A, E (B) C, B  
(C) E, H (D) D, A
65. If the places of A and H are interchanged, who is third to the right of C ?  
(A) H (B) A  
(C) E (D) F
66. Pick the first, second, fourth, fifth and sixth letters of the word REASONING, from yet another word and then write the first and the second last letters of the word formed.  
(A) OR (B) NE  
(C) SE (D) SR

67. If 'orange' is called 'butter', 'butter' is called 'soap', 'soap' is called 'ink', 'ink' is called 'honey' and 'honey' is called 'orange', which of the following is used for washing clothes ?
- (A) Honey (B) Butter  
(C) Orange (D) Soap

68. In a certain code language 'ja na da' means 'what you want', 'na pa ka' means 'they want food', and 'ka ho ni' means 'food and water'. What does 'da' mean in that code language ?
- (A) What (B) you  
(C) what or you (D) Data inadequate

**Directions (69- 73):** There are ten friends sitting in two parallel rows numbered I and II. In each row, there are five persons and there is an equal distance between adjacent persons. Members in row I are facing the members of row II.

H, J, K, L and M are sitting in row I, facing south. V, W, X, Y and Z are sitting in row II, facing north. All of them are not necessarily sitting in the same order. K is facing X. J and M are not facing Y. H sits at one of the ends. Z is fourth to the right of V and is facing M. W sits between X and V.

69. Who is facing W ?
- (A) H (B) L  
(C) Either H or L (D) J
70. Which of the following pairs are sitting diagonally opposite ?
- (A) H, V (B) M, V  
(C) Z, M (D) J, Z
71. Which of the following pairs occupies the middle position of the row ?
- (A) J, Y (B) M, Z  
(C) X, K (D) L, W
72. Which of the following is Y's position ?
- (A) Between W and Z (B) Second to the right of V  
(C) Facing J (D) On the immediate left of T
73. Which of the following gives the sitting order of persons sitting in row I from your right to left?
- (A) J, L, K, H, M (B) H, J, K, L, M  
(C) M, L, K, J, H (D) M, K, J, L, H

**Direction 74. :** Find the missing character from among the given alternatives.

F	I	O
A	J	K
E	M	?

74.



- (A) P (B) R  
(C) S (D) V

75. Neeta is fourteenth from the right end in a row of 40 girls. What is his position from the left end?  
(A) 26th (B) 28th  
(C) 25th (D) 27th

### Quantitative Aptitude

76.  $123 : 36 :: 221 : ?$   
(A) 25 (B) 52  
(C) 69 (D) 72
77.  $\sec A + \tan A = 1/3$  then find the value of  $\sec A - \tan A$  ?  
(A) 0 (B) 1  
(C) 2 (D) 3
78. If a train is running at speed of 72 km/h then how much distance (in meters) will be covered by a train in 15 seconds ?  
(A) 150 m (B) 200 m  
(C) 300 m (D) 400 m
79. How much is 100 million dollars in Indian rupees ?  
(A) 66, 94, 00,000 INR (B) 6,69,40,00,000 INR  
(C) 66,94,00,00,000 INR (D) 6,69,40,00,00,000 INR
80. A covers a half distance at 3 km/h and another half at doubled speed then how much distance is covered in 6 hrs. ?  
(A) 20 km (B) 22 km  
(C) 24 km (D) 26 km
81. If 100 trees will be planted on each side of a square then total how many trees are required ?  
(A) 396 (B) 398  
(C) 400 (D) 402
82. Complete the following series 1, 1, 4, 8, 9, 27, ?  
(A) 36 (B) 32  
(C) 25 (D) 16
83. A person sell his radio in 1300 with 30% profit, then what will be the cost price ?  
(A) ₹5000 (B) ₹3000  
(C) ₹1000 (D) ₹2000
84. One selling an article for ₹ 270 there is a gain of 12.5%. What is its cost price ?

- (A) ₹220 (B) ₹240  
(C) ₹260 (D) ₹280

85.  $x = 2y$ ,  $x + y = 25$  what is the value of  $x$  ?

- (A)  $\frac{55}{3}$  (B)  $\frac{50}{7}$   
(C)  $\frac{50}{3}$  (D)  $\frac{55}{7}$

86. The Price of 107 cars is ₹14, 44,500 then what is the price of 1 car ?

- (A) ₹17500 (B) ₹16500  
(C) ₹14500 (D) ₹13500

87. In a mixture a ratio of milk and water is 5:3, if an amount of milk is 25 liters then how much water is there in a mixture ?

- (A) 15 L (B) 20 L  
(C) 25 L (D) 30 L

88. The Perimeter of the rectangle is 48 m and length is double of breadth then find the area of the rectangle ?

- (A) 124 (B) 128  
(C) 138 (D) 148

89. What is the value of  $\sec^2 Q + 2(\tan Q)(\cot Q) - \tan^2 Q$  ?

- (A) 0 (B) 1  
(C) 2 (D) 3

90.  $\cot a =$  then  $(\sin a + \cos a) \operatorname{Cosec} a =$  ?

- (A)  $\frac{13}{5}$  (B)  $\frac{19}{5}$   
(C)  $\frac{17}{5}$  (D)  $\frac{16}{5}$

91. Find the missing number: 3, 4, 6, 9, \_ , 18.

- (A) 13 (B) 14  
(C) 15 (D) 16

92. A man purchases 2 dozen pen at ₹480 and sells the pack of 4 pens of ₹100 then Find the Profit % ?

- (A) 20% (B) 25%  
(C) 30% (D) 50%

93. How many 5 will occur between 1 to 100 ?  
(A) 10 (B) 15  
(C) 20 (D) 25
94. Find the value of  $(s+2)^3 = ?$   
(A)  $s^4 + 6s^3 + 12s^2 + 8$  (B)  $s^3 + 6s^2 + 12s + 8$   
(C)  $s^3 + 5s^2 + 12s + 8$  (D)  $s^3 + 6s^2 + 15s + 8$
95. A works double of B and takes 30 days less than B then how many days they both will take to complete the work ?  
(A) 10 days (B) 20 days  
(C) 30 days (D) 40 days
96. A covers 40 km by 60 km/h and 60 km by 40 km/h, find the average speed ?  
(A) 35.15 (B) 45.15  
(C) 55.15 (D) 45.25
97. Cost price of a phone is 11000 and selling price is 13500, find the profit % ?  
(A) 440% (B) 20.73%  
(C) 21.73% (D) 22.73%
98. Find the factors of  $x^2 - x - 132$  ?  
(A)  $x = -10, x = 11$  (B)  $x = -13, x = 14$   
(C)  $x = -11, x = 12$  (D)  $x = -11, x = 14$
99. The value of  $\tan 1125^\circ$  ?  
(A) 0 (B) 1  
(C) 2 (D) 3
100. A sum of ₹12,500 amounts to ₹15,500 in 4 years at the rate of simple interest. What is the rate of interest ?  
(A) 3% (B) 4%  
(C) 5% (D) 6%

## Answer Key

### RAILWAY GENERAL KNOWLEDGE

1	2	3	4	5	6	7	8	9	10
B	C	D	A	B	D	B	A	C	D
11	12	13	14	15	16	17	18	19	20
C	A	B	C	A	B	C	D	A	B

### GENERAL SCIENCE

21	22	23	24	25	26	27	28	29	30
C	A	C	B	D	D	B	A	C	D
31	32	33	34	35	36	37	38	39	40
B	C	D	B	C	C	B	D	A	B
41	42	43	44	45	46	47	48	49	50
C	B	A	C	C	B	C	D	C	B

### GENERAL INTELLIGENCE AND REASONING

51	52	53	54	55	56	57	58	59	60
C	B	C	B	B	D	A	B	B	A
61	62	63	64	65	66	67	68	69	70
B	C	D	A	B	D	E	C	D	B
71	72	73	74	75					
C	D	C	B	D					

### Quantitative Aptitude

76	77	78	79	80	81	82	83	84	85
A	D	C	B	C	A	D	C	B	C
86	87	88	89	90	91	92	93	94	95
D	A	B	D	C	A	B	C	B	B
96	97	98	99	100					
B	D	C	B	D					

## Solutions

### GENERAL INTELLIGENCE AND REASONING

51. (C)

**PET** is coded as

P = 16, E = 5, T = 20

Now, firstly divide T from E i.e.  $= \frac{20}{5} = 4$

And then multiplying P by 4 i.e.  $P \times 4 = 16 \times 4 = 64$

Similarly, **MET** is coded as,

M = 13, E = 5, T = 20

Therefore,  $13 \times 4 = 52$

Similarly, **SET** is coded as,

S = 19, E = 5, T = 20

Therefore,  $19 \times 4 = 76$

52. (B)

Here,

ABC → BCA

(leaving D) EFG → FGE

(leaving H) IJK → **JKI**

(leaving L) MNO → NOM

53. (C)

A (+2) = C

B (+2) = D

C (+2) = E

Z (+2) = **B**

54. (B)

Counting from back M = 14 (Given)

Therefore,

T from back → 7

A from back → 26

N from back → 13

K from back → 16

Sum of word 'TANK' =  $7 + 26 + 13 + 16 = 62$

Subtracting 1 from total we get ;  $62 - 1 = 61$

Similarly,

S from back → 8

T from back → 7

A from back → 26

R from back → 9

D from back → 23

O from back  $\rightarrow 12$

M from back  $\rightarrow 14$

Sum of word 'STARDOM' =  $8 + 7 + 26 + 9 + 23 + 12 + 14 = 99$

Subtracting 1 from total we get;

$$99 - 1 = 98$$

55. (B)

R = 18

A = 1

I = 9

N = 14

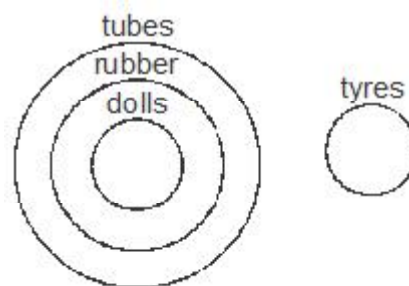
Therefore, combining all alphabetical positions of word 'RAIN' we get 181914.

56. (D)

57. (A)

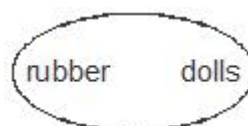
Raju's mother is only daughter of Kapil's mother means Kapil is the brother of Raju's mother, therefore Raju is nephew of Kapil.

Answers: (58 - 60)



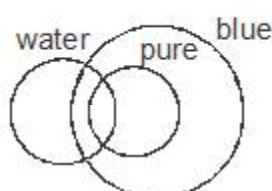
58. (B) Only conclusion II follows.

59. (B) A possible venn diagram is



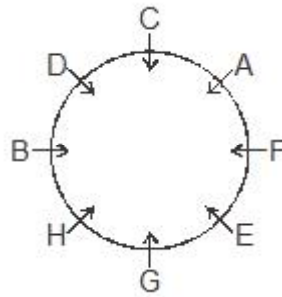
Only conclusion II follows.

60. (A) Possible venn diagram is



Thus, only conclusion I follows.

Answers: (61 – 65)



61. (B)  
 62. (C)  
 63. (D)  
 64. (A)  
 65. (B)  
 66. (D) The first, second, fourth, fifth and sixth letters of the word

R	E	A	S	O	N	I	N	G
1	2	3	4	5	6	7	8	9

are R, E, S, O and N respectively.

The only meaningful word obtained from these letters = 'S N O R E'  
 = 1 2 3 5 6

So, the first and the second last letters of the word

S	N	O	R	E
1	2	3	4	5

= S & R

67. (E) Clearly, 'soap' is used for washing the clothes. But 'soap' is called 'ink'. So, 'ink' is used for washing the clothes.  
 68. (C) The pattern of coding is as follows:

Code		Word	
ja na da	=	What you want	...(i)
na pa ka	=	they want food	...(ii)
ka ho ni	=	food and water	...(iii)

From (i) & (ii)

Common word = 'want'

Common code = 'na'

So, 'Want'  $\xrightarrow{\text{Code}}$  'na' .....(iv)

Using (iv) in (i), we get

What you code  $\xrightarrow{\text{Code}}$  ja da .....(v)

So, word for code 'da' - either 'What' or 'you'.

**Answers: (69-73)**

Row I :	H	J	K	L	M
Row II :	V	W	X	Y	Z

69. (D)

70. (B)

71. (C)

72. (D)

73. (C)

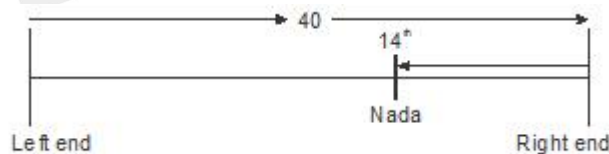
74. (B) Putting  $A = 1, B = 2, C = 3, \dots, M = 13, \dots, X = 24, Y = 25, Z = 26$ , we have :

In the first row,  $F + I = 6 + 9 = 15 = O$ .

In the second row,  $A + J = 1 + 10 = 11 = K$ .

So, in the third row, missing letter =  $E + M = 5 + 13 = 18 = R$ .

75. (D) Neeta's rank from the right end = 14th



So, Neeta's rank from the left end =  $(40 - 14) + 1$   
 $= 26 + 1 = 27$ .

### Quantitative Aptitude

76. (A)

Here, 123 can be written as

$$1 + 2 + 3 = 6$$

Now on squaring we get:

$$6^2 = 36$$

Similarly, 221 can be written as

$$2 + 2 + 1 = 5$$

Now on squaring we get:

$$5^2 = 25$$

77. (D)  $1 + \tan^2 A = \sec^2 A = 1$

$$\Rightarrow \sec^2 A - \tan^2 A = 1$$

$$\Rightarrow (\sec A + \tan A)(\sec A - \tan A) = 1$$

$$\Rightarrow \left(\frac{1}{3}\right)(\sec A - \tan A) = 1$$



$$\Rightarrow (\sec A - \tan A) = 1 \left( \frac{3}{1} \right) = 3$$

78. (C) First Converting 72 km/h into m/s we get,

$$72 \times \frac{5}{18} = 20 \text{ m/s} \because \left( \frac{\text{km}}{\text{h}} = \frac{1000}{3600} = \frac{5}{18} \right)$$

Therefore speed of train = 20 m/s

Now distance covered by train in 15 sec =  $20 \times 15 = 300 \text{ m}$

79. (B) Firstly, 1 USD = 66.94 INR  
 Now, 1 million = 10 lakh = 10, 00,000  
 Therefore, 100 million =  $100 \times 10 \text{ lakh}$   
 $= 100 \times 10, 00,000$   
 $= 10, 00, 00,000$

Now converting 100 million dollar in rupees we get,

As 1 USD = 66.94 INR

$$\therefore 66.94 \times 10, 00, 00,000 = 6,69,40,00,000 \text{ INR}$$

80. (C)

Let Distance be =  $2d$

Speed (a) while covering half distance ( $d$ ) = 3 km/h

Speed (b) while covering next half distance ( $d$ ) = 3 km/h 2 km/h = 6 km/h (i.e. speed doubles)

Now, when A travels half distance with speed 'a' and another half distance with speed 'b' then average speed will be

$$\text{Average speed} = \frac{2ab}{(a+b)}$$

$$\text{Average Speed} = \frac{2(3)(6)}{(3+6)} = 4 \text{ km/h}$$

Distance = Speed  $\times$  Time

$$\text{Distance} = 4 \times 6 = 24 \text{ Km}$$

81. (A) 100 trees planted in each side of square,  
 Then trees planted at four corners of square = 4  
 Now trees planted at each side of square (excluding corners) =  $98 + 98 + 98 + 98$   
 (trees planted at corners are counted once only)  
 Therefore total number =  $98 + 98 + 98 + 98 + 4 = 396$

82. (D)

The following series consists of squares and cubes of consecutive natural numbers i.e.

$$1^2, 1^3, 2^2, 2^3, 3^2, 3^3, 4^2, 4^3$$

So, missing term =  $4^2 = 16$

83. (C) Let S.P = Selling price and C.P = Cost price

$$\text{S.P} = \text{C.P} + \frac{30}{100} \text{ C.P}$$

Given S.P = 1300,

$$1300 = \frac{100 \text{ C.P} + 30 \text{ C.P}}{100}$$

$$1300 = \frac{130 \text{ C.P}}{100}$$

$$\text{C.P} = \frac{1300 \times 100}{130}$$

$$\text{C.P} = ₹1000$$

84. (B) Let S.P = Selling price and C.P = Cost price

$$\text{S.P} = \text{C.P} + \frac{12.5}{100} \text{C.P}$$

Given S.P = 1300,

$$1300 = \frac{100 \text{ C.P} + 12.5 \text{ C.P}}{100}$$

$$1300 = \frac{112.5 \text{ C.P}}{100}$$

$$\text{C.P} = \frac{270 \times 100}{112.5}$$

$$\text{C.P} = ₹240$$

85. (C) Given:

$$x + y = 25$$

$$x = 2y$$

$$\Rightarrow 2y + y = 25$$

$$\Rightarrow 3y = 25$$

$$\Rightarrow y \frac{25}{3} = \Rightarrow x = 2y = \frac{50}{3}$$

86. (D)

$$\text{Price of one car} = \frac{1444500}{107} = ₹13500$$

87. (A) M: W = 5:3

$$\text{So M} = \frac{5}{8} \text{ of total mixture}$$

$$\text{So Total mixture} = 25 \times \frac{8}{5} = 40$$

$$\text{So Water content is} = 40 - 25 = 15 \text{ L}$$

88. (B) Perimeter of the rectangle =  $2(l + b)$  units

$$\text{Perimeter} = 48\text{m}$$

Let the breadth be 'x'

$$\text{Length} = 2x$$

$$48 = 2(x+2x)$$

$$\Rightarrow x = 8$$

$$\text{Breadth} = 8$$

$$\text{Length} = 2 \times 8 = 16$$

$$\text{Area of rectangle} = l \times b \text{ sq. units.}$$

$$= 16 \times 8 = 128$$

89. (D) We know that,  $\tan Q \times \cot Q = 1$   
 Therefore, equation reduces to  $\sec^2 Q + 2 - \tan^2 Q$   
 Now we know  $\sec^2 Q - \tan^2 Q = 1$   
 So  $(\sec^2 Q - \tan^2 Q) + 2 = 3$

90. (C)  $(\sin a + \cos a) \operatorname{cosec} a$

$$= \frac{(\sin a + \cos a)}{\operatorname{cosec} a} \therefore \left( \operatorname{cosec} a \frac{1}{\sin a} \right)$$

$$= \frac{\sin a}{\sin a} + \frac{\cos a}{\sin a}$$

$$= 1 + \cot a$$

$$= 1 + \frac{12}{5}$$

$$= \frac{17}{5}$$

91. (A)  $3 + 1 = 4$   
 $4 + 2 = 6$   
 $6 + 3 = 9$   
 $9 + 4 = 13$   
 $13 + 5 = 18$

92. (B) Cost Price of One pen =  $\frac{480}{24}$  ₹20

$$\text{Selling Price of one Pen} = \frac{100}{4} \text{ ₹25}$$

$$\text{Profit \%} = \frac{(25 - 20)}{20} \times 100$$

$$\text{Profit \%} = 25\%$$

93. (C) 5, 15, 25..... 95 = 11 times (including 55)  
 50, 51, 52,.....55,....59 = 9 times (excluding 55)  
 Therefore total number of 5's between 1 to 100 =  $11 + 9 = 20$
94. (B) On the expansion of  $(s+2)^3 = s^3 + 3s^2(2) + 3s(2)^2 + 2^3$   
 $(s+2)^3 = s^3 + 6s^2 + 12s + 8$
95. (B) Let, days taken by A and B are x and 2x respectively.

Given:  $2x - x = x = 30$

....(i)

A's one day work =  $\frac{1}{x}$

B's one day work =  $\frac{1}{2x}$

(A+B)'s one day work =  $\frac{1}{x} + \frac{1}{2x} = \frac{3}{2x}$

Therefore, work will be completed in

.... (ii)

Putting the value x from eq. (i)  $x = 30$  in eq. (ii) we have

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

=  $\frac{2 \times 30}{3} = 20$  days

Therefore the work will be completed in 20 days working A and B both together.

96. (B)

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

for the first case time =  $\frac{40}{60} = \frac{2}{3}$

for the second case time =  $\frac{60}{40} = \frac{3}{2}$

Total distance =  $40 + 60 = 100$  km

Average speed =  $\frac{100}{\left(\frac{13}{6}\right)} = 45.15$

97. (D) Profit = S.P - C.P

Profit =  $13,500 - 11,000 = 2,500$

Profit % =  $\frac{2500}{11000} \times 100$

Profit % = 22.73%

98. (C)  $x^2 - x - 132 = 0$

Now, splitting the middle term we get,

$x^2 - 12x + 11x - 132 = 0$

$x(x - 12) + 11(x - 12) = 0$

$(x + 11)(x - 12) = 0$

$x = -11, x = 12$

99. (B)  $\tan (1125)$   
=  $\tan (1440 - 315)$   
=  $\tan (4 \times 360 - 315)$   
=  $-\tan (315)$   
=  $-\tan (360 - 45)$   
=  $\tan (45) = 1$

100. (D)

$$\text{Interest} = 15,500 - 12,500 = 3,000$$

$$\text{we know SI} = \frac{PRT}{100}$$

$$\text{SI} = 3000, P = 12,500, R = ?, T = 4$$

$$\text{Therefore, } R = \frac{3000 \times 100}{(4 \times 12500)}$$

$$R = 6\%$$