PRACTICE SET 19

Name:			QA	RE	TOTAL
RRB OFFICE ASSISTANT		Attended			
Date:	Time:	Correct			
Batch:		Wrong			
		Marks			

Time : 45 Min. **Max. Marks : 80**

NUMERICAL ABILITY

DIRECTIONS (Qs. 1-5): What will come in place of question mark (?) in the following questions?

1. $\left[\left(5\sqrt{7}+\sqrt{7}\right)\times\left(4\sqrt{7}+8\sqrt{7}\right)\right]-(19)^2=?$

(a) 143 (b) $72\sqrt{7}$
(c) 134 (d) $70\sqrt{7}$
(e) None of these

2. $\frac{0.23-0.023}{.0023\div 23}=?$

(a) 0.207 (b) 207
(c) 2070 (d) 0.0207
(e) None of these

3. $\sqrt{33124}\times\sqrt{2601}-(83)^2=(?)^2+(37)^2$

(a) 37 (b) 33
(c) 34 (d) 28
(e) None of these

4. $5\frac{17}{37}\times 4\frac{51}{52}\times 11\frac{1}{7}+2\frac{3}{4}=?$

(a) 303.75 (b) 305.75
(c) $303\frac{3}{4}$ (d) $308\frac{1}{4}$
(e) None of these

5. $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}=?$

(a) $\sqrt{2}$ (b) 2
(c) 4 (d) 8
(e) None of these

6. If the compound interest on a certain sum of money for 3 years at 10% p.a. be ₹ 993, what would be the simple interest ?

(a) ₹800 (b) ₹950
(c) ₹900 (d) ₹1000
(e) None of these

7. How much water must be added to 100 cc of 80% solution of boric acid to reduce it to a 50% solution ?

(a) 20 cc (b) 40 cc
(c) 80 cc (d) 60 cc
(e) None of these

8. Successive discounts of 20% and 15% are equivalent to a single discount of

(a) 35% (b) 32%
(c) 17.5% (d) 22.5%
(e) None of these

9. Two cars start together in the same direction from the same place. The first goes with a uniform speed of 10 km/h. The second goes at a speed of 8 km/h in the first hour and increases its speed by $\frac{1}{2}$ km with each succeeding hour. After how many hours will the second car overtake the first one, if both go non-stop?

(a) 9 hours (b) 5 hours
(c) 7 hours (d) 8 hours
(e) None of these

10. 24 men working 8 hours a day can finish a work in 10 days. Working at the rate of 10 hours a day, the number of men required to finish the same work in 6 days is
(a) 30 (b) 32
(c) 34 (d) 36
(e) None of these

11. Three cubes of a metal are of edges 3 cm, 4 cm and 5 cm. These are melted together and from the melted material, another cube is formed. The edge of this cube is :
(a) 8 cm (b) 10 cm
(c) 9 cm (d) 6 cm
(e) None of these

12. If $x : y = 1 : 3$, $y : z = 5 : k$, $z : t = 2 : 5$ and $t : x = 3 : 4$, then what is the value of k ?
(a) 1/2 (b) 1/3
(c) 2 (d) 3
(e) None of these

13. Two lots of onions with equal quantity, one costing ₹ 10 per kg and the other costing ₹15 per kg, are mixed together and whole lot is sold at ₹ 15 per kg. What is the profit or loss?
(a) 10% loss (b) 10% profit
(c) 20% profit (d) 20% loss
(e) None of these

14. Present ages of X and Y are in the ratio 5 : 6 respectively. Seven years hence this ratio will become 6 : 7 respectively. What is X's present age in years?
(a) 35 (b) 42
(c) 49 (d) Cannot be determined
(e) None of these

15. In how many ways can 21 books on English and 19 books on Hindi be placed in a row on a shelf so that two books on Hindi may not be together?
(a) 3990 (b) 1540
(c) 1995 (d) 3672
(e) None of these

DIRECTIONS (Qs. 16-20) : In each of the following questions a number series is given. A number in the series is expressed by letter 'N'. You have to find out the number in the place of 'N' and use the number to find out the value in the place of the question mark in the equation following the series.

16. 68 68.5 69.5 71 N 75.5 78.5
$N \times 121 + ? = 10000$
(a) 1160 (b) 1200
(c) 1150 (d) 1180
(e) None of these

17. 19 20 24 33 49 74 N 159
$N^2 \div 10000 = ?$
(a) 121.0 (b) 12.1
(c) 1.21 (d) 0.121
(e) None of these

18. 51 43 N 30 25 21 18
$N^2 - 2N = ?$
(a) 1155 (b) 1224
(c) 1295 (d) 1368
(e) None of these

19. 2 5 14 41 122 365 N
$N - 16\frac{2}{3}\%$ of $5670 - (?)^2 = 10^2$
(a) 7 (b) $\sqrt{149}$ (c) 49 (d) $\sqrt{7}$
(e) None of these

20. 510 254 N 62 30 14 6
$40\%\,N + ? = 9^2$
(a) 31.4 (b) 29.8 (c) 50.4 (d) 30.6
(e) None of these

DIRECTIONS (Qs. 21-25): Find out the *approximate* value which should replace the question mark (?) in the following questions. (You are not expected to find out the exact value).

21. $196.1 \times 196.1 \times 196.1 \times 4.01 \times 4.01 \times 4.001 \times 4.999 \times 4.999 = 196.1^3 \times 4 \times ?$
(a) 100 (b) 16 (c) 10 (d) 64
(e) 32

22. $\frac{2}{7} \times \frac{1}{8} + \frac{3}{7} \div \frac{6}{14} = ?$
(a) $\frac{2}{56}$ (b) $\frac{3}{56}$ (c) 1 (d) 2.5
(e) $\frac{50}{60}$

23. $10.1^{.201} + 2.9^{3.001} = ?$
(a) 130 (b) 160 (c) 115 (d) 147
(e) None of these

24. $\sqrt{1999.9997} = 4.76 \times ?$
(a) 11 (b) 45 (c) 49 (d) 6
(e) 9

25. 23% of $4011 + \frac{1}{7}$ of $5555 = ?$
(a) 7000 (b) 1900 (c) 9022 (d) 1700
(e) 1450

DIRECTIONS (Q. 26-30) : In the following number series only one number is wrong. Find out the wrong number.

26. 3 7 16 35 72 153 312
(a) 7 (b) 153
(c) 35 (d) 72
(e) 16

27. 18 20 23 32 48 73 109
(a) 20 (b) 23
(c) 32 (d) 48
(e) 73

28. 7 4 5 9 20 51 160.5
(a) 4 (b) 5
(c) 9 (d) 20
(e) 51

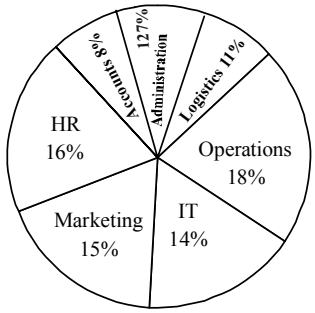
29. 6 10 14 34 66 130 258
(a) 10 (b) 14
(c) 34 (d) 66
(e) 130

30. 2 7 30 138 524 1557 3102
(a) 7 (b) 30
(c) 138 (d) 524
(e) 1557

DIRECTIONS (Qs. 31-35): Study the following information carefully to answer these questions.

Percentage of employees in various departments of an organization and these male-female ratio

Total No. of Employees = 2500



Ratio– Male : Female

Department	Male : Female
Administration	7 : 5
Accounts	2 : 3
HR	5 : 3
Marketing	7 : 8
IT	3 : 4
Operations	5 : 4
Logistics	6 : 5
Printing	2 : 1

31. What is the ratio of male employees in Administration to those in Printing Department?
(a) 7 : 4 (b) 4 : 7
(c) 3 : 4 (d) 7 : 3
(e) None of these

32. What is the difference between the total number of employees in IT and that in Operations Department?
(a) 75 (b) 150
(c) 100 (d) 50
(e) None of these

33. What is the ratio of the total number of males in HR and Marketing to the total number of females in these two departments?
(a) 13 : 15 (b) 15 : 13
(c) 13 : 17 (d) 17 : 14
(e) None of these

34. How many female employees are there in the HR Departments?
(a) 250 (b) 120
(c) 125 (d) 150
(e) None of these

35. What is the difference between the numbers of male and female employees in Logistics Department?
(a) 50 (b) 25
(c) 75 (d) 100
(e) None of these

DIRECTIONS (Qs. 36-40) : These questions are based on the table and information given below.

The amount of money invested (in rupees crore) in the core infrastructure areas of two districts, Chittoor and Khammam, in Andhra Pradesh, is as follows :

Chittoor District			Khammam District		
Core Area	2014	2015	Core Area	2014	2015
Electricity	815.2	1054.2	Electricity	2065.8	2365.1
Chemical	389.5	476.7	Chemical	745.3	986.4
Thermal	632.4	565.9	Thermal	1232.7	1026.3
Solar	468.1	589.6	Solar	1363.5	1792.1
Nuclear	617.9	803.1	Nuclear	1674.3	2182.1
Total	**2923.1**	**3489.5**	**Total**	**7081.6**	**8352**

36. By what percent was the total investment in the two districts more in 2015 as compared to that in 2014?
(a) 14% (b) 21%
(c) 24% (d) 18%
(e) None of these

37. Approximately how many times the total investment in Chittoor was the total investment in Khammam?
(a) 2.8 (b) 2.0
(c) 2.4 (d) 1.4
(e) None of these

38. The investment in Electricity and Thermal Energy in 2014 in these two districts formed what percent of the total investment made in that year ?
(a) 41% (b) 47%
(c) 52% (d) 55%
(e) None of these

39. In Khammam district, the investment in which area in 2014 showed the highest percent increase over the investment made in that area in 2014?
(a) Electricity (b) Chemical
(c) Solar (d) Nuclear
(e) None of these

40. If the total investment in Khammam shows the same rate of increase in 2016, as it had shown from 2014 to 2015, what approximately would be the total investment in Khammam in 2016 (in ₹ crore?)
(a) 9, 850 (b) 10, 020
(c) 9, 170 (d) 8, 540
(e) None of these

REASONING ABILITY

DIRECTIONS (Qs. 41-43) : Study the following information carefully to answer the questions that follow.

There are six persons A, B, C, D, E and F. C is the sister of F. B is the brother of E's husband. D is the father of A and grandfather of F. There are two fathers, three brothers and a mother in the group.

41. Who is the mother ?
(a) A (b) B
(c) D (d) E
(e) None of these

42. Who is E's husband ?
(a) B (b) C
(c) A (d) F
(e) None of these

43. How many male members are there in the group?
(a) One (b) Two
(c) Three (d) Four
(e) None of these

DIRECTIONS (Qs. 44-48) : In each question below are two/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 conclusion II follows.
(d) If neither conclusion I nor conclusion II follows.
(e) If both conclusion I and conclusion II follow.

44-45: Statements : All buildings are houses.
No house is an apartment.
All apartments are flats.

44. Conclusions : I. No flat is a house.
II. No building is an apartment.

45. Conclusions : I. All buildings being flats is a possibility.
II. All apartments being building is a possibility.

46-47 : Statements : Some oceans are seas.
All oceans are rivers.
No river is a canal.

46. Conclusions : I. All rivers can never be oceans.
II. All canals being oceans is a possibility.

47. Conclusions : I. No ocean is a canal.
II. At least some seas are rivers.

48-: Statements : No day is night.
All nights are noon.
No noon is an evening.

48. Conclusions : I. No day is noon.
II. No day is an evening.

DIRECTIONS (Qs. 49-53) : Study the following paragraph and then answer the questions that follow.

Five golfers C, D, E, F and G play a series of matches in which the following are always true of the results. Either C is the last and G is the 1st or C is the 1st and G is the last. D finishes ahead of E. Every golfer plays in and finishes every match. There are no ties in any match, i.e. no two players ever finish in the same position in a match.

49. Which of the following cannot be true ?
(a) E finishes second.
(b) F finishes second.
(c) E finishes ahead of F.
(d) F finishes ahead of D.
(e) None of these

50. If D finishes third, then which of the following must be true?
(a) G finishes first.
(b) E finishes ahead of F.
(c) F finishes ahead of E.
(d) F finishes behind D.
(e) None of these

51. If C finishes first, then in how many different orders is it possible for the other golfers to finish?
(a) 1
(b) 2
(c) 3
(d) 4
(e) None of these

52. Which of the following additional conditions make it certain that F finishes second ?
(a) C finishes ahead of D.
(b) D finishes ahead of F.
(c) F finishes ahead of D.
(d) D finishes behind G.
(e) None of these

53. If exactly one golfer finishes between C and D, then which of the following must be true?
(a) C finishes first. (b) G finishes first.
(c) F finishes third. (d) E finished fourth.
(e) None of these

DIRECTIONS (Qs. 54-58): Study the following sequence carefully and answer the questions given below:

M E 5 P B 2 A 7 K N 9 T R U 4 6 I J D F 1 Q 3 W 8 V I S Z

54. How many such numbers are there in the above sequence, each of which is both immediately preceded by and immediately followed by a consonant ?
(a) None (b) One
(c) Two (d) Three
(e) More than three

55. If the order of the first twenty letters/numbrs in the above sequence is reversed and the remaining letters/numbers are kept unchanged, which of the following will be the fourteenth letter/number from the right end after the rearrangement?
(a) B (b) 6
(c) 2 (d) 1
(e) None of these

56. Which of the follwing letter/number is the eighth to the left of the nineteenth letter/number from the left end?
(a) N (b) T
(c) 1 (d) D
(e) None of these

57. Four of the following five are alike in a certain way with regard to their position in the above sequence and so form a group. Which is the one that **does not** belong to that group?
(a) WIQ (b) PAE
(c) NR7 (d) 4JR
(e) D16

58. How many such vowels are there in the above sequence, each of which is immediately preceded by a consonant and immediately followed by a vowel?
(a) None (b) One
(c) Two (d) Three
(e) More than three

DIRECTIONS (59-63) : In a certain code language, the symbol for '0' is '#' and for '1' is '$'. There are no other symbols for numbers greater than one. The numbers greater than one, are to be written only by using the two symbols given above. The value of symbol for '1' doubles itself every time it shifts one place to the left.

0 is written as #,
1 is written as $,
2 is written as $#,
3 is written as $$,
4 is written as $## and so on,

59. Which number will represent the code $$$$?
(a) 11 (b) 12
(c) 13 (d) 14
(e) 15

60. Which of the following will represent number17?
(a) #$$## (b) $$#$$
(c) $###$ (d) ###$#
(e) None of these

61. Which of following will represent number 7?
(a) $$$$ - $##$ (b) $##$ - ###$
(c) $### - ###$ (d) #$$$- $$#$
(e) None of these

62. Which of the following will represent the value of ($### + $# ÷ #$#)?
(a) 8 (b) 9
(c) 5 (d) 4
(e) None of these

63. Which of the following will represent the value of ($#$# + #$#$)?
(a) 11 (b) 12
(c) 13 (d) 15
(e) 18

DIRECTIONS (Qs. 64-68) Read the following passage carefully and answer the Question given below it.

Six friends Ajay, Vijay, Pardeep, Sachin, Nikhil and Kamal married within a year in the months of February, April, July, September, November and December and in the cities of Manila, Mysore, Chennai, Delhi, Mumbai and Kolkata, but not necessarily following the above order. The bride's names were Geeta, Jasmine, Mala, Yakshika, Nagma and Nasreen, once again not following any order. The following are some facts about their weddings.
Pardeep's wedding took place in Chennai; however he was not married to Geeta or Nasreen. Ajay's wedding took place in Manila and Nikhil's in Delhi; however neither of them was married to Jasmine or Yakshika. The wedding in Kolkata took place in February. Mala's wedding took place in April, but not in Manila. Geeta and Nagma got married in February and November and in Chennai and Kolkata but not necessarily following the above order. Sachin visited Mysore or Kolkata after his marriage in December. Kamal was married to Jasmine to September

64. Mala's husband is
(a) Ajay (b) Vijay
(c) Nikhil (d) Sachin
(e) Pardeep

65. Vijay's wedding took place in
(a) Mysore (b) Mumbai
(c) Kolkata (d) Delhi
(e) Chennai

66. In Mumbai, the wedding of one of the friends took place in the month of
(a) April (b) September
(c) November (d) December
(e) July

67. Kamal's wedding was held in
(a) Mysore (b) Chennai
(c) Kolkata (d) Delhi
(e) Mumbai

68. Which among the following is couple?
(a) Ajay- Jasmine (b) Kamal- Nasreen
(c) Vijay- Geeta (d) Kamal - Yakshika
(e) Sachin- Nagma

DIRECTIONS (Qs.69-73): Study the following information to answer the given questions

P&Q means P is neither greater than nor equal to Q
P%Q means P is neither smaller than nor greater than Q
P*Q means P is not greater Q
P$Q means P is greater than Q
P@Q means P is either greater than or equal to Q
Give answer:
(a) Only I is true (b) Only II is true
(c) Either I or II true (d) Neither I nor II is true
(e) Both I and II are true

69. U $ Y @ W * K; W % X @ Z
I. U $ K II. Z * K

70. G @ H $ J * K; H $ M; J $ U
I. H $ U II. M & G

71. L * K & J @ U; J *T*R
I. T $ L II. U * R

72. P @ Q @ W % S @ L; Y * S
I. Y $ P II. Y % P

73. G @ H $ J *K; H $ M; J $ U
I. M & K II. K $ U

74. In a certain code SYSTEM is written as NVGHBS then in the same code how FRACTION is written?
(a) MRGLXZUI (b) MGRLXZUI
(c) MLRGZXUI (d) MLRGXZIU
(e) None of these

75. In a row of 50 students, A is fourteenth from the left end and B is tenth from the right end. How many students are there in between A and C if C is eight to the left of B?
(a) 14 (b) 16
(c) 18 (d) 20
(e) None of these

DIRECTIONS (Qs. 76-80) : Study the following information carefully to answer the given questions.

Eight people L, M, N, O, P, Q, R and S are sitting around a circular table with equal distance
between each other but not necessarily in the same order. Some of them are facing the centre while some are facing outside.(i.e away from the centre)

- M sits third to the left of L. Only three people sit between M and S. P sits to the immediate right of S.
- Immediate neighbours of P face opposite directions(i.e. if one neighbour faces the centre then the other neighbour faces outside and vice-versa.) Only one person sit between P and O.
- R sits second to the right of O. Both R and N face the same direction as S.(i.e if S faces the centre then R and N also faces the centre and vice-versa.)
- Immediate neighbours of Q faces opposite directions(i.e if one neighbour faces the centre then the other neighbour faces outside and Vice-versa.)
- P does not face outside. O faces a direction opposite to that of M.

76. How many people sit between L and Q when counted from the left of Q?
(a) Five (b) None
(c) Four (d) One
(e) Two

77. Which of the following statements is true as per the given arrangement?
(a) Q faces the centre
(b) Only three people sit between P and L
(c) R sits to the immediate right of N
(d) None of the given options is true
(e) N is an immediate neighbour of O

78. Who amongst the following sits third to the left of P?
(a) Q (b) N
(c) M (d) L
(e) R

79. How many people face the centre as per the given arrangement?
(a) Four (b) One
(c) Two (d) Three
(e) More than four

80. What will come in place of question mark (?) in the given series based on the positions as given in the arrangement?
PS LR MP SM ?
(a) ON (b) SO
(c) NQ (d) OL
(e) LS

HINTS & EXPLANATIONS

1. (a) $\left[\left(5\sqrt{7}+\sqrt{7}\right)\times\left(4\sqrt{7}+8\sqrt{7}\right)\right]-(19)^2=?$

$\Rightarrow (6\sqrt{7}\times 12\sqrt{7})-(361)=?$

$\Rightarrow 72\times\sqrt{7}\times\sqrt{7}-361=?$

$\therefore ?=504-361=143$

2. (c) Given Expression =

$$\frac{\frac{0.207}{0.0023}}{23}=\frac{0.207}{0.0001}=\frac{0.2070}{0.0001}=2070.$$

3. (e) $\sqrt{33124}\times\sqrt{2601}-(83)^2=(?)^2+(37)^2$

$\Rightarrow (?)^2=\sqrt{33124}\times\sqrt{2601}-(83)^2-(37)^2$

$\Rightarrow (?)^2=182\times 51-6889-1369$

$\Rightarrow (?)^2=9282-6889-1369$

$\Rightarrow (?)^2=1024$

$\therefore ?=\sqrt{1024}=32$

4. (b) $5\frac{17}{37}\times 4\frac{51}{52}\times 11\frac{1}{7}+2\frac{3}{4}=?$

$\Rightarrow\left(\frac{202}{37}\times\frac{259}{52}\times\frac{78}{7}\right)+\left(\frac{11}{4}\right)=?$

$\Rightarrow 303+\frac{11}{4}=?$

$\therefore ?=\frac{1223}{4}=305.75$

5. (b) $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}=\frac{\sqrt{16\times 2}+\sqrt{16\times 3}}{\sqrt{4\times 2}+\sqrt{4\times 3}}=\frac{4\sqrt{2}+4\sqrt{3}}{2\sqrt{2}+2\sqrt{3}}$

$=\frac{4(\sqrt{2}+\sqrt{3})}{2(\sqrt{2}+\sqrt{3})}=2$

6. (c) Let Principal = ₹ P

$P\left(1+\frac{10}{100}\right)^3-P=993 \Rightarrow\left(\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}-1\right)P=993$

$\Rightarrow\left(\frac{1331-1000}{1000}\right)P=993$ or ,

$P=\frac{993\times 1000}{331}=3000$

$\therefore$ Simple interest = ₹$\left(\frac{3000\times 3\times 10}{100}\right)$ = ₹ 900

7. (d) Concentration of boric acid = 80% = 80 cc

Quantity of water = 20 cc

Let x cc of water be added to get the concentration of 50%.

$\Rightarrow\frac{80}{100+x}=\frac{50}{100}$ or $\frac{80}{100+x}=\frac{1}{2}$ or $x=60$ cc

8. (b) Successive discounts of 20% and 15% on ₹ 100 yields to

$100\times 0.8\times 0.85=$ ₹ 68

$\therefore$ Single discount = $(100-68)=32\%$

9. (a) Let the second car overtakes the first car after t hours.

Distance covered by the first car = Distance covered by the second car.

$\Rightarrow 10\,t=8+\left(8+\frac{1}{2}\right)+\left(8+\frac{2}{2}\right)+.....+\left(8+\frac{t-1}{2}\right)$

or $10t=8t+\frac{1}{2}[1+2+....+(t-1)]$

or $10t=8t+\frac{1}{2}\frac{t(t-1)}{2}$ or $2t=\frac{1}{4}(t^2-t)$

$\Rightarrow t=9$ hrs. $[t\neq 0]$

10. (b) $m_1\times d_1\times t_1\times w_2=m_2\times d_2\times t_2\times w_1$

$24\times 10\times 8\times 1=m_2\times 6\times 10\times 1$

$\Rightarrow m_2=\frac{24\times 10\times 8}{6\times 10}=32$ men

11. (d) Let edge of the new cube = x cm.

Volume of the newly formed figure (cube)

= sum of volume of smaller cubes.

i.e. $(x)^3=(3)^3+(4)^3+(5)^3=27+64+125=216\Rightarrow x=6$ cm

12. (a) Given, $x : y = 1 : 3$, $y : z = 5 : k$, $z : t = 2 : 5$

$t : x = 3 : 4$

$\frac{x}{y}\times\frac{y}{z}\times\frac{z}{t}\times\frac{t}{x}=1$

$\Rightarrow\frac{1}{3}\times\frac{5}{k}\times\frac{2}{5}\times\frac{3}{4}=1\Rightarrow\frac{1}{2}=k$

$\therefore k=\frac{1}{2}$

13. (c) Let each lot of onion contains x kg onion, then total cost price of these two lots together
$= 10x + 15x = 25x$
Selling price of whole lot $= 15 \times (x + x)$
$= 15 \times 2x = 30x$

$$\text{Profit percentage} = \frac{30x - 25x}{25x} \times 100$$

$$= \frac{5x}{25x} \times 100 = 20\%$$

14. (a) Let the present ages of X and Y be 5x years and 6x years respectively.

Then, $\frac{5x+7}{6x+7} = \frac{6}{7} \Leftrightarrow 7(5x + 7) = 6(6x + 7) \Leftrightarrow x = 7.$

15. (b) In order that two books on Hindi are never together, we must place all these books as under:
X E X E X E X ..... X E X
where E denotes the position of an English book and X that of a Hindi book.
Since there are 21 books on English, the number of places marked X are therefore, 22.
Now, 19 places out of 22 can be chosen in $^{22}C_{19} = {}^{22}C_3 = \frac{22 \times 21 \times 20}{3 \times 2 \times 1} = 1540$ ways.
Hence, the required number of ways = 1540.

16. (e) The series is $+0.5, +1, +(a)\ 5, +2, ...$

17. (c) The series is $+1^2, +2^2, +3^2, +4^2, ...$

18. (b) The series is $-8, -7, -6, -5, ...$

19. (a) The series is $\times 3 - 1$ in each term.

20. (d) The series is $\div 2 - 1$ in each term.

21. (a) $196.1 \times 196.1 \times 196.1 \times 4.01 \times 4.01 \times 4.001 \times 4.999 \times 4.999$
$= (196.1)^3 \times 4 \times ?$
or $4 \times ? = 4.01 \times 4.001 \times 4.999 \times 4.999$ or $? = 4 \times 5 \times 5 = 100$

22. (c) $? = \frac{2}{7} \times \frac{1}{8} + \frac{3}{7} \times \frac{14}{6} = \frac{1}{28} + 1 = 1\frac{1}{28} = 1$

23. (a) $? = (10.1)^{2.01} + (2.9)^{3.001} = (10)^2 + (3)^3 = 100 + 27 = 130$

24. (e) $4.76 \times ? = \sqrt{1999.9997}$
$4.76 \times ? = 44.72$ or $? = 9$

25. (d) $? = 23\%$ of $4011 + \frac{1}{7}$ of $5555 = 922.53 \div 79357 = 1700$

26. (d) The series is
$\times 2 + 1, \times 2 + 2, \times 2 + 3,$
$\times 2 + 4, \times 2 + 5$

27. (a) The series is
$18 + 1^2 = 19$
$19 + 2^2 = 23$
$23 + 3^2 = 32$
$32 + 4^2 = 48$
$48 + 5^2 = 73$
$73 + 6^2 = 109$

28. (e) The series is $\times 0.5 + 0.5,$
$\times 1 + 1, \times 1.5 + 1.5, \times 2 + 2,$
$\times 2.5 + 2.5, \times 3 + 3$

29. (b) The series is
$\times 2 - 2, \times 2 - 2, \times 2 - 2, \times 2 - 2, \ldots$

30. (c) $(2 - 1) \times 7 = 7; (7 - 2) \times 6 = 30;$
$(30 - 3) \times 5 = 135; (135 - 4) \times 4$
$= 524;$
$(524 - 5) \times 3 = 1557; (1557 - 6) \times 2$
$= 3102$

31. (a) $\text{Ratio} = 12 \times \frac{7}{12} : 6 \times \frac{2}{3} = 7 : 4$

32. (c) 4% of $2500 = 100$

33. (d) $\text{Ratio} = \left(16 \times \frac{5}{8} + 15 \times \frac{7}{5}\right) : \left(16 \times \frac{3}{8} + 15 \times \frac{8}{15}\right) = 17 : 14$

34. (d) $\frac{3}{8} \times 16 \times 25 = 150$

35. (b) $2500 \times \frac{11}{100}\left[\frac{6}{11} - \frac{5}{11}\right] = 25$

36. (d) Total investment in 2014 = 2923.1 + 7081.6 = 10004.7
Total investment in 2015 = 3489.5 + 8352.0 = 11,841.5

$$\therefore \%\ \text{increase} = \frac{11841.5 - 10,004.7}{10,004.7} \times 100 = 18.36\%$$

37. (c) Total investment in Chittor = 6412.6
Total investment in Khammam = 15433.6

$$\therefore \frac{\text{Total investment in Khammam}}{\text{Total investment in Chittor}} = \frac{15433.6}{6412.6} = 2.40$$

38. (b) Investment in electricity & thermal energy in 2014 in two districts $= 815.2 + 632.4 + 2065.8 + 1232.7$
$= 4746.1$
% in terms of total investment

$$= \frac{4746.1}{10,004.7} \times 100 = 47.43\%$$

39. (b) % increase in Khammam district in the area of

$$\text{Electricity} = \frac{2365.1 - 2065.8}{2065.8} \times 100 = 14.5\%$$

$$\text{Chemical} = \frac{986.4 - 745.3}{745.3} \times 100 = 32.34\%$$

$$\text{Solar} = \frac{1792.1 - 1363.5}{1363.5} \times 100 = 31.43\%$$

$$\text{Nuclear} = \frac{2182.1 - 1674.3}{1674.3} \times 100 = 30.32$$

Hence highest increase is in the area of chemical

40. (a) % increase in investment from 2014 to 2015

$$= \frac{8352 - 7081.6}{7081.6} = 17.93\%$$

$\therefore$ Total investment in 2016 = 1.1793×8352

= ₹ 9850 crores

41. (d) A's wife E is the mother.

42. (c) A is the husband of E.

43. (d) Clearly there are four male members A, B, D and F.

(44-45) : All buildings are houses + No house is an apartment = A + E = E = No building is an apartment (i). Again, No house is an apartment + All apartments are flats = E + A = O* = Some flats are not house (ii). Again, No building is an apartment + All apartments are flats = E + A = O* = Some flats are not buildings (iii).

44. (b) Conclusion (i) above is the conclusion II.

45. (a)

(46-47) : Some oceans are seas (I) $\rightarrow$ conversion $\rightarrow$ Some seas are oceans (I) + All oceans are rivers = I + A = I = Some seas are rivers (i). Again, All ocean are rivers + No river is a canal = A + E = E = No oceans is a canal (ii). Again, Some seas are rivers + No river is a canal = I + E = O* = Some canals are not seas (iii).

46. (d) All rivers can never be oceans $\rightarrow$ implication $\rightarrow$ Some rivers are oceans. This conclusion is the converse of the given premise "All oceans are rivers."

47. (e) Conclusion II is the above conclusion (ii). Conclusion I is the above conclusion (i).

(48): No day is night + All night are noon = E + A = O* = Some noon are not days (i). Again, All nights are noon + No noon is an evening = A + E = E = No night is an evening (ii).

48. (d) None follows.

49. (a) Either C or G has to be first and D has to come before E. Hence, E cannot, finish second.

50. (c) F finishes second when D finishes third. Thus F finishes ahead of E.

51. (c) In the event of C finishing first, G finishes last and we will have the following three possible ordering of finishes.

CFDEG, CDEFG and CDFEG.

52 (c) When F finishes ahead of D, than F will definitely finish at the second place.

53. (d) When there is exactly one golfer between C and D, then E finishes at the fourth place.

54. (e) Four

M E 5 P B 2 A 7 K N **9** T R U 4 6 I J D F **1** Q **3** W **8** V I S Z

55. (a) F D J I 6 4 U R T 9 N K 7 A 2 B P 5 E M 1 Q 3 W 8 V I S Z

56. (e) Eighth to the left of the nineteenth letter/number from the left $\Rightarrow (19 - 8) =$ 11th letter/number from left. Hence, required element is 9.

57. (e) Except it second element in each group is third to the right of first element while third element of each group is second to the left of first element of the respective group.

58. (a) There are no such vowels.

59. (e) $(1\times23)+(1\times22)+(1\times21)+(1\times20)$

$=8+4+2+1=15$

60. (c) 17 can be written in binary form as follows:

$=(1\times24)+(0\times23)+(0\times22)+(0\times21)+(1\times20)$

= $###$

61. (c) $###$ = $(1\times23)+(0\times22)+(0\times21)+(0\times20)=8+0+0+0=8$

###$ = $(0\times23)+(0\times22)(0\times21)+(1\times20)=0+0+0+1=1$

$### - ###$ = 8-1=7

62. (b) $###$ = $(1\times23)+(0x22)+(0x21)+(0x20)=8+0+0+0=8$

$# = $(1\times21)+(0x\ 20)=2+0=2$

#$# = $(0x22)+(1\times21)+(0x\ 20)=0+2+0=2$

($### + $# ÷ #$#) = 8+2÷2 = 8+1 = 9

63. (d) $#$# = $(1\times23)+(0x22)+(1\times21)+(0x20)=10$

#$#$ = $(0\times23)+(1\times22)+(0x21)+(1\times20)=5$

($#$# + #$#$) = 10+5= 15

64. (c)

65. (c)

66. (b)

67. (e)

68. (c)

69. (b) Only II is true

$U < Y \geq W \geq K$; $W = X \leq Z$

U>K => False

$Z \leq K$ => True

70. (e) Both I and II are true
$G \geq H > J \leq K$; $H > M$; $J > U$
$H > U$ => true
$M < G$ => true

71. (e) Both I and II are true
$L \leq K < J \leq U$; $J \leq T \leq R$
$T < L$ => true
U ? R => true

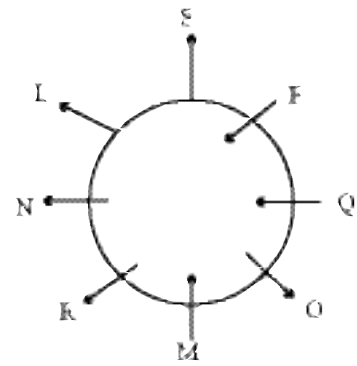
72 (c) Either I or II true
$P \geq Q \geq W = S \geq L$; $Y \leq S$
$Y < P$
$Y = P$

73. (b) Only II is true
$G \geq H > J \leq K$; $H > M$; $J > U$
$M < K$ => false
$K > U$ => true

74. (d) MLRGXZIU
First reverse the word and then write complement of each letter, like M+N = 27, A+Z =27 and so on.

75. (c) 18

(76-80)



76. (c)
77. (a)
78. (c)
79. (d)
80. (a)