

# **QUANTATIVE APTITUDE**

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# 1. NUMBER SYSTEM

1. The least Prime number is :  
a) 0                      b) 1                      c) 2                      d) 3
2. What is the total number of prime numbers less than 70?  
a) 17                      b) 18                      c) 19                      d) 20
3. The total number of even prime number is :  
a) 0                      b) 1                      c) 2                      d) None of these
4. Find the sum of prime numbers lying between 60 and 75.  
a) 199                      b) 201                      c) 211                      d) 272
5. How many numbers between 100 and 600 begin with or end with a digit of 5?  
a) 40                      b) 100                      c) 110                      d) 120
6. The unit's digit in the product  $274 \times 318 \times 577 \times 313$  is :  
a) 2                      b) 3                      c) 4                      d) 5
7. The digit in unit's place of the product  $81 \times 82 \times \dots \times 89$  is :  
a) 0                      b) 2                      c) 6                      d) 8
8. If the unit digit in the product  $(459 \times 46 \times 28^* \times 484)$  is 2, the digit in place of \* is :  
a) 3                      b) 5                      c) 7                      d) None of these
9. The unit's digit in the product  $(3127)^{173}$  is :  
a) 1                      b) 3                      c) 7                      d) 9
10. The unit's digit in the product  $(7^{71} \times 6^{59} \times 3^{65})$  is :  
a) 1                      b) 2                      c) 4                      d) 6
11. The digit in the unit's place of the number represented by  $(7^{95} - 3^{58})$  is :  
a) 0                      b) 4                      c) 6                      d) 7
12. The number of prime factors of  $(3 \times 5)^{12} (2 \times 7)^{10} (10)^{25}$  is :  
a) 47                      b) 60                      c) 72                      d) None of these
13. The sum of first 45 natural numbers is :  
a) 1035                      b) 1280                      c) 2070                      d) 2140
14. How many numbers between 200 and 600 are divisible by 4, 5 and 6?  
a) 5                      b) 6                      c) 7                      d) 8
15. The value of  $(11^2 + 12^2 + 14^2 + \dots + 20^2)$  is :  
a) 385                      b) 2485                      c) 2870                      d) 3255
16. If  $1^*548$  is divisible by 3, which of the following digits can replace \*?  
a) 0                      b) 2                      c) 7                      d) 9
17. What least value must be assigned to \* so that the number  $63576^*2$  is divisible by 8?  
a) 1                      b) 2                      c) 3                      d) 4
18. What least value must be given to \* so that the number  $451^*603$  is exactly divisible by 9?  
a) 2                      b) 5                      c) 7                      d) 8
19. Which one of the following numbers is exactly divisible by 11?  
a) 235641                      b) 245642                      c) 315624                      d) 415624

20. What least value must be assigned to \* so that the number 86325\*6 is divisible by 11?
- a) 1      b) 2      c) 3      d) 5
21. A number 476\*\*0 is divisible by both 3 and 11. The non-zero digits in the hundredth and tenth place respectively are:
- a) 7, 4      b) 7, 5      c) 8, 5      d) None of these
22. Which of the following numbers is divisible by 3, 7, 9, and 11?
- a) 639      b) 2079      c) 3791      d) 37911
23. The value of P, when  $4864 \times 9P2$  is divisible by 12, is :
- a) 2      b) 5      c) 8      d) None of these
24. If the number 42573\* is completely divisible by 72, then which of the following numbers should replace the asterisk?
- a) 4      b) 5      c) 6      d) 7
25. The digit indicated by \* and \$ in 3422212\*\\$ so that this number is divisible by 99, are respectively :
- a) 1, 9      b) 3, 7      c) 4, 6      d) 6
26. 325325 is a six-digit number. It is divisible by :
- a) 7 only      b) 11 only      c) 13 only      d) all 7, 11 and 13
27. The difference between the squares of two consecutive odd integers is always divisible by :
- a) 3      b) 6      c) 7      d) 8
28. The greater number by which the product of three consecutive multiples of 3 is always divisible by :
- a) 54      b) 81      c) 162      d) 243
29. The least number which must be subtracted from 6709 to make it exactly divisible by 9 is
- a) 2      b) 3      c) 4      d) 5
30. Find the number which is nearest to 457 and is exactly divisible by 11.
- a) 450      b) 451      c) 460      d) 462
31. The number nearest to 99547 which is exactly divisible by 687 is :
- a) 98928      b) 99479      c) 99615      d) 100166
32. What largest number of five digits is divisible by 99?
- a) 99909      b) 99981      c) 99990      d) 99999
33. A number when divided by 899 gives a remainder 63. If the same number is divided by 29, the remainder will be :
- a) 3      b) 4      c) 5      d) 10
34. When a number is divided by 13, the remainder is 11. When the same number is divided by 17, the remainder is 9. What is the number?
- a) 339      b) 349      c) 369      d) Data inadequate
35. The difference between two numbers is 1365. When the larger number is divided by the smaller one, the quotient is 6 and the remainder is 15. The smaller number is:
- a) 240      b) 270      c) 295      d) 360

36. A number when divided by 6 leaves a remainder 3. When the square of the same number is divided by 6. The remainder is :  
 a) 0                    b) 1                    c) 2                    d) 3
37. A number when divided by 3 leaves a remainder 1. When the quotient is divided by 2, it leaves a remainder 1. What will be the remainder when the number is divided by 6?  
 a) 2                    b) 3                    c) 4                    d) 5
38.  $4^{61} + 4^{62} + 4^{63} + 4^{64}$  is divisible by :  
 a) 3                    b) 10                  c) 11                  d) 13
39. Find the unit's in the product  $(2467)^{153} \times (341)^{72}$ .  
 a) 7                    b) 6                    c) 5                    d) 4
40. Find the unit's digit in  $(264)^{102} + (264)^{103}$ .  
 a) 0                    b) 1                    c) 2                    d) 3
41. Find the total number of prime factors in the expression  $(4)^{11} \times (7)^5 \times (11)^2$ .  
 a) 29                  b) 30                  c) 31                  d) 32
42. The sum of two numbers is 7 and the sum of their squares is 25, then their product is?  
 a) 10                  b) 12                  c) 16                  d) 24
43.  $7^6 - 1$  when divided by 6 would leave a remainder of –  
 a) 0                    b) 2                    c) 3                    d) 1
44. If the sum of the digits of two digit number is 8, the digit at unit place is 2 more than the digit at tens place, find out that number?  
 a) 35                  b) 68                  c) 79                  d) 46
45. The sum of the digits of a two digits number is 8. If the digits are reversed the number decreased by 54. Find the number?  
 a) 53                  b) 62                  c) 71                  d) 80
46. The sum of two digits of a number is 7, if 27 be added to the number the digits are reversed. The number is  
 a) 16                  b) 25                  c) 34                  d) 43
47. The difference of the digits of a two digit number is 4 and the sum of the number and number obtained by reversing the two digits is 66. Find the numbers?  
 a) 26 or 62           b) 37 or 73           c) 59 or 95           d) 15 or 51
48. If 21 divided into two parts such that 7 times the first part added to 5 times the second part makes 145. The first part is?  
 a) 17                  b) 18                  c) 19                  d) 20
49. A labour engaged for 30 days on the condition that he receives Rs.25/- for each day he works and is fined Rs. 7.50Ps for each day he is absent. He gets Rs. 425 in all for how many days he was absent?  
 a) 5 days              b) 10 days            c) 15 days            d) 14 days

50. There are some benches in a class room. If 4 students sit on one bench, 3 benches are left vacant, and if 3 students sit on each bench, 3 students are left standing. What is the total number of students in the class?

a) 48

b) 52

c) 60

d) 64

**KEY**

1. c

2. c

3. b

4. d

5. c

6. a

7. a

8. c

9. c

10. c

11. b

12. d

13. a

14. b

15. b

16. a

17. c

18. d

19. d

20. c

21. c

22. b

23. d

24. c

25. a

26. d

27. d

28. c

29. c

30. d

31. c

32. c

33. c

34. b

35. b

36. d

37. c

38. b

39. a

40. a

41. a

42. b

43. d

44. a

45. c

46. b

47. d

48. b

49. b

50. d

## 2. LCM & HCF

1. The H.C.F. of  $2^2 \times 3^3 \times 5^5$ ,  $2^3 \times 3^2 \times 7$  and  $2^4 \times 3^4 \times 5 \times 7^2 \times 11$  is :
 

a) $2^2 \times 3^2 \times 5$	b) $2^2 \times 3^2 \times 5 \times 7 \times 11$
c) $2^4 \times 3^4 \times 5^5$	d) $2^4 \times 3^4 \times 5^5 \times 7 \times 11$
2. The H.C.F. of  $2^4 \times 3^2 \times 5^3 \times 7$ ,  $2^3 \times 3^3 \times 5^2 \times 7^2$  and  $3 \times 5 \times 7 \times 11$  is :
 

a) 105	b) 1155	c) 2310	d) 27720
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3. Find the highest common factor of 36 and 84.
 

a) 4	b) 6	c) 12	d) 18
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4. The H.C.F. of 204, 1190 and 1445 is :
 

a) 17	b) 18	c) 19	d) 21
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5. The H.C.F. of 3556 and 3444 is :
 

a) 23	b) 25	c) 26	d) 28
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6. The L.C.M. of  $2^3 \times 3^2 \times 5 \times 11$ ,  $2^4 \times 3^4 \times 5^2 \times 7$  and  $2^5 \times 3^3 \times 5^3 \times 7^2 \times 11$  is :
 

a) $2^3 \times 3^2 \times 5$	b) $2^5 \times 3^4 \times 5^3$
c) $2^3 \times 3^2 \times 5 \times 7 \times 11$	d) $2^5 \times 3^4 \times 5^3 \times 7^2 \times 11$
7. The H.C.F. of  $\frac{2}{3}$ ,  $\frac{8}{9}$ ,  $\frac{64}{81}$ , and  $\frac{10}{27}$  is :
 

a) $\frac{2}{3}$	b) $\frac{2}{81}$	c) $\frac{160}{3}$	d) $\frac{160}{81}$
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8. The H.C.F. of  $\frac{9}{10}$ ,  $\frac{12}{25}$ ,  $\frac{18}{35}$ , and  $\frac{21}{40}$  is :
 

a) $\frac{3}{5}$	b) $\frac{252}{5}$	c) $\frac{3}{2800}$	d) $\frac{63}{700}$
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9. The L.C.M. of  $\frac{1}{3}$ ,  $\frac{5}{6}$ ,  $\frac{2}{9}$ ,  $\frac{4}{27}$  is :
 

a) $\frac{1}{54}$	b) $\frac{10}{27}$	c) $\frac{20}{3}$	d) None of these
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10. The L.C.M. of  $\frac{2}{3}$ ,  $\frac{3}{5}$ ,  $\frac{4}{7}$ ,  $\frac{9}{13}$  is :
 

a) 36	b) $\frac{1}{36}$	c) $\frac{1}{1365}$	d) $\frac{12}{455}$
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11. H.C.F. of 3240, 3600 and a third number is 36 and their L.C.M. is  $2^4 \times 3^5 \times 5^2 \times 7^2$ .
 

a) $2^2 \times 3^5 \times 7^2$	b) $2^2 \times 5^3 \times 7^2$	c) $2^5 \times 5^2 \times 7^2$	d) $2^3 \times 3^5 \times 7^2$
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12. The ratio of two numbers is 3: 4 and their H.C.F. is 4. Their L.C.M. is :
 

a) 12	b) 16	c) 24	d) 48
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13. The sum of two numbers is 213 and their H.C.F. is 27. The numbers are :
 

a) 27, 189	b) 81, 189	c) 108, 108	d) 154, 162
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14. The sum of two numbers is 528 and their H.C.F. is 33. The number of pairs of numbers satisfying the above conditions is :
 

a) 4	b) 6	c) 8	d) 12
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15. The number of number-pairs lying between 40 and 100 with their H.C.F. as 15 is :
 

a) 3	b) 4	c) 5	d) 6
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16. The product of two numbers is 4107. If the H.C.F of these numbers is 37, then the greater number is :  
 a) 101                    b) 107                    c) 111                    d) 185
17. The product of two numbers is 2028 and their H.C.F is 13, the number of such pairs is :  
 a) 1                    b) 2                    c) 3                    d) 4
18. Three numbers which are co-prime to each other are such that the product of the first two is 551 and that of the last two is 1073. The sum of the three numbers is :  
 a) 75                    b) 81                    c) 85                    d) 89
19. The L.C.M of two numbers is 48. The numbers are in the ratio 2: 3. The sum of the numbers is  
 a) 28                    b) 32                    c) 40                    d) 64
20. The H.C.F and L.C.M of the two numbers are 84 and 21 respectively. If the ratio of the two numbers is 1 : 4, then the larger of the two numbers is :  
 a) 12                    b) 48                    c) 84                    d) 108
21. The L.C.M of two numbers is 495 and their H.C.F is 5. If the sum of the numbers is 10, then their difference is :  
 a) 10                    b) 46                    c) 70                    d) 90
22. If the sum of two numbers is 55 and the H.C.F and L.C.M of these numbers are 5 and 120 respectively, then the sum of the reciprocals of the numbers is equal to :  
 a)  $\frac{55}{601}$                     b)  $\frac{601}{55}$                     c)  $\frac{11}{120}$                     d)  $\frac{120}{11}$
23. The L.C.M of two numbers is 45 times their H.C.F. If one of the numbers is 125 and the sum of H.C.F and L.C.M is 1150, the other number is:  
 a) 215                    b) 220                    c) 225                    d) 235
24. The H.C.F and L.C.M of two numbers are 11 and 385 respectively. If one number lies between 75 and 125, then that number is :  
 a) 77                    b) 88                    c) 99                    d) 110
25. Two numbers, both greater than 29, have H.C.F 29 and L.C.M 4147. The sum of the numbers is :  
 a) 666                    b) 669                    c) 696                    d) 966
26. L.C.M of two prime numbers  $x$  and  $y$  ( $x > y$ ) is 161. The value of  $3y - x$  is :  
 a) - 2                    b) - 1                    c) 1                    d) 2
27. The greater number that exactly divides 105, 1001 and 2436 is :  
 a) 3                    b) 7                    c) 11                    d) 21
28. The greater possible length which can be used to measure exactly the lengths 7 m, 3 m 85 cm, 12 m 95 cm is :  
 a) 15 cm                    b) 25 cm                    c) 35 cm                    d) 42 cm
29. Three different containers contain 496 litres, 403 litres and 713 litres of mixtures of milk and water respectively. What biggest measure can measure all the different quantities exactly?  
 a) 1 litre                    b) 7 litres                    c) 31 litres                    d) 41 litres
30. The maximum number of students among them 1001 pens and 910 pencils can be distributed in such a way that each student gets the same number of pens and same number of pencils is :  
 a) 91                    b) 910                    c) 1001                    d) 1911

31. A rectangular court yard 3.78 metres long and 5.25 metres wide is to be paved exactly with square tiles, all of the same size. What is the largest size of the tile which could be used for the purpose?
- a) 14 cms      b) 21 cms      c) 42 cms      d) None of these
32. Find the greatest number that will divide 43, 91 and 183 so as to leave the same remainder in each case.
- a) 4      b) 7      c) 9      d) 13
33. Let N be the greatest number that will divide 1305, 4665 and 6905, leaving the same remainder in each case. Then sum of the digits in N is :
- a) 4      b) 5      c) 6      d) 8
34. What will be the least number which when doubled will be exactly divisible by 12, 18, 21 and 30?
- a) 196      b) 630      c) 1260      d) 2520
35. The smallest fraction, which each of  $\frac{6}{7}$ ,  $\frac{5}{14}$ ,  $\frac{10}{21}$  will divide exactly, is :
- a)  $\frac{30}{7}$       b)  $\frac{30}{98}$       c)  $\frac{60}{147}$       d)  $\frac{50}{294}$
36. The greatest number of four digits which is divisible by 15, 25, 40 and 75 is :
- a) 9000      b) 9400      c) 9600      d) 9800
37. The least number which is a perfect square and is divisible by each of the numbers 16, 20 and 24 is :
- a) 1600      b) 3600      c) 6400      d) 14400
38. The smallest number which when diminished by 7, is divisible by each one of 24, 32, 36 and 54 is :
- a) 1008      b) 1015      c) 1022      d) 1032
39. The least number which when increased by 5 is divisible by each one of 24, 32, 36 and 54 is :
- a) 427      b) 859      c) 869      d) 4320
40. The least number, which when divided by 12, 15, 20 and 54 leaves in each case a remainder of 8 is :
- a) 504      b) 536      c) 544      d) 548

### KEY

- |     |   |     |   |     |   |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|
| 1.  | a | 2.  | a | 3.  | c | 4.  | a | 5.  | d | 6.  | d |
| 7.  | b | 8.  | c | 9.  | c | 10. | a | 11. | a | 12. | d |
| 13. | a | 14. | a | 15. | b | 16. | c | 17. | b | 18. | c |
| 19. | c | 20. | c | 21. | a | 22. | c | 23. | c | 24. | a |
| 25. | c | 26. | a | 27. | b | 28. | c | 29. | c | 30. | a |
| 31. | b | 32. | a | 33. | a | 34. | b | 35. | a | 36. | c |
| 37. | b | 38. | b | 39. | b | 40. | d |     |   |     |   |

### 3. AVERAGE

1. Find the average of first 40 natural numbers.  
a) 20.5      b) 30.5      c) 35.5      d) 21.5
2. Find the average of first 20 multiples of 7.  
a) 74.5      b) 73.5      c) 75.5      d) 76.5
3. The average of four consecutive even numbers is 27. Find the largest of these numbers.  
a) 40      b) 50      c) 30      d) 20
4. There are two sections A and B of a class, consisting of 36 and 44 students respectively. If the average weight of section A is 40 kg and that of section B is 35 kg, find the average weight of the whole class.  
a) 35.25      b) 36.25      c) 38.25      d) 37.25
5. Nine persons went to a hotel for taking their meals. Eight of them spent Rs. 12 each on their meals and the ninth spent Rs. 8 more than the average expenditure of all the nine. What was the total money spent by them?  
a) Rs. 117      b) Rs. 118      c) Rs. 119      d) Rs. 120
6. Of the three numbers, second is twice the first and is also thrice the third. If the average of the three numbers is 44, find the largest number.  
a) 71      b) 72      c) 73      d) 74
7. The average of 25 results is 18. The average of first twelve of them is 14 and that the last twelve is 17. Find the thirteenth result.  
a) 76      b) 77      c) 78      d) 79
8. The average of 11 results is 60. If the average of first six results is 58 and that the last six is 63, find the sixth result.  
a) 62      b) 64      c) 65      d) 66
9. The average weight of A, B, C is 45 kg. If the average weight of A and B be 40 kg and that of B and C be 43 kg, find the weight of B.  
a) 31 kg      b) 32 kg      c) 33 kg      d) 34 kg
10. The average age of a class of 39 students is 15 years. If the age of the teacher be included, then the average increases by 3 months. Find the age of the teacher.  
a) 23 years      b) 24 years      c) 25 years      d) 26 years
11. The average weight of 10 oarsmen in a boat is increased by 1.8 kg when one of the crew, who weights 53 kg is replaced by a new man. Find the weight of the new man.  
a) 71 kg      b) 72 kg      c) 73 kg      d) 74 kg
12. There were 35 students in a hostel. Due to the admission of 7 new students, the expenses of the mess were increased by Rs. 42 per day while the average expenditure per head diminished by Rs 1. What was the original expenditure of the mess?  
a) Rs. 400      b) Rs. 410      c) Rs. 420      d) Rs. 430
13. A batsman makes a score of 87 runs in the 17<sup>th</sup> inning and thus increases his average by 3. Find his average after 17<sup>th</sup> inning.  
a) 39      b) 40      c) 41      d) 42

14. Distance between two stations A and B is 778 km. A train covers the journey from A to B at 84 km per hour and returns back to A with a uniform speed of 56 km per hour. Find the average speed of the train during the whole journey.
- a) 67.3 km/hr      b) 67.4 km/hr      c) 67.5 km/hr      d) 67.2 km/hr
15. The average of 20 numbers is zero. Of them, at the most, how many may be greater than zero?
- a) 0      b) 1      c) 10      d) 19
16. Find the average of all the numbers between 6 and 34 which are divisible by 5.
- a) 18      b) 20      c) 24      d) 30
17. The average of first five multiples of 3 is :
- a) 3      b) 9      c) 12      d) 15
18. A student was asked to find arithmetic mean of the numbers 3, 11, 7, 9, 15, 13, 8, 19, 17, 21, 14 and x. He found the mean to be 12. What should be the number in place of x?
- a) 3      b) 7      c) 17      d) 31
19. The average of 2, 7, 6 and x is 5 and the average of 18, 1, 6, x and y is 10. What is the value of y?
- a) 5      b) 10      c) 20      d) 30
20. If the mean of 5 observations  $x, x + 2, x + 4, x + 6$  and  $x + 8$  is 11, then the mean of the last three observations is :
- a) 11      b) 13      c) 15      d) 17
21. If the mean of a, b, c is M and  $ab + bc + ca = 0$ , then the mean of  $a^2, b^2, c^2$  is :
- a)  $M^2$       b)  $3M^2$       c)  $6M^2$       d)  $9M^2$
22. The average of non-zero number and its square is 5 times the number. The number is :
- a) 9      b) 17      c) 29      d) 295
23. The average of 7 consecutive numbers is 20. The largest of these numbers is :
- a) 20      b) 22      c) 23      d) 24
24. The average of five consecutive odd numbers is 61. What is the difference between the highest and lowest numbers?
- a) 2      b) 5      c) 8  
d) Cannot be determined      e) None of these
25. The sum of the three consecutive odd numbers is 38 more than the average of these numbers. What is the first of these numbers?
- a) 13      b) 17      c) 19  
d) Data inadequate      e) None of these
26. The average age of the boys in a class is 16 years and that of the girls is 15 years. The average age for the whole class is :
- a) 15 years      b) 15.5 years      c) 16 years  
d) Cannot be computed with the given information
27. A library has an average of 510 visitors on Sunday and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is :
- a) 250      b) 276      c) 280      d) 285

28. If the average marks of three batches of 55, 60 and 45 students respectively is 50, 55 and 60, then the average marks of all the students is :  
a) 53.33      b) 54.68      c) 55      d) None of these
29. A car owner buys petrol at Rs 7.50, Rs.8 and Rs. 8.50 per litre for three successive years. What approximately is the average cost per litres of petrol if he spends Rs. 4000 each year?  
a) Rs. 7.98      b) Rs. 8      c) Rs. 8.50      d) Rs. 9
30. The average of five numbers is 27. If one number is excluded, the average becomes 25. The excluded number is :  
a) 25      b) 27      c) 30      d) 35
31. The average score of a cricketer for ten matches is 38.9 runs. If the average for the first six matches is 42, then the average for the last four matches.  
a) 33.25      b) 33.5      c) 34.25      d) 35
32. The average of six numbers us 3.95. The average of two of them is 3.4, while the average of the other two is 3.85. What is the average of the remaining two numbers?  
a) 4.5      b) 4.6      c) 4.7      d) 4.8
33. The batting average for 40 innings of a cricket player is 50 runs. His highest score exceeds his lowest score by 172 runs. If these two innings are excluded, the average of the remaining 38 innings is 48 runs. The highest score of the player is :  
a) 165 runs      b) 170 runs      c) 172 runs      d) 174 runs
34. The average price of 10 books is Rs. 12 while the average price of 8 of these books is Rs. 11.75. Of the remaining two books, if the price of one book is 60% more than the price of the other, what is the price of each of these two books?  
a) Rs. 5, Rs. 7.50      b) Rs. 8, Rs. 12      c) Rs. 10, Rs. 16      d) Rs.12, Rs. 14
35. The average of runs of a cricket player of 10 innings was 32. How many runs must he make in his next innings so as to increase his average of runs by 4?  
a) 2      b) 4      c) 70      d) 76
36. In the first 10 overs of a cricket game, the run rate was only3.2. What should be the run rate in the remaining 40 overs to reach the target of 282 runs?  
a) 6.25      b) 6.5      c) 6.75      d) 7
37. The average age of 15 students of a class is 15 years. Out of these, the average age of 5 students is 14 years and that of the other 9 students is 16 years. The age of the 15<sup>th</sup> student is :  
a) 11 years      b) 14 years      c) 15 years      d)  $15\frac{2}{7}$  years
38. The average temperature of the town in the first four days of a month was 58 degrees. The average for the second, third, fourth and fifth days was 60 degrees. If the temperatures of the first and fifth days were in the ratio 7 : 8, then what is the temperature on the fifth day?  
a) 64 degrees      b) 62 degrees      c) 56 degrees      d) None of these

39. The average monthly income of P and Q is Rs. 5050. The average monthly income of Q and R is Rs. 6250 and the average monthly income of P and R is Rs. 5200. The monthly income of P is :  
a) Rs. 3500      b) Rs. 4000      c) Rs. 4050      d) Rs. 5000
40. The average age of 36 students in a group is 14 years. When teacher's age is included to it, the average increases by one. What is the teacher's age in years?  
a) 31      b) 36      c) 51  
d) Cannot be determined      e) None of these
41. The average monthly salary of 20 employees in an organization is Rs. 1500. If the manager's salary is added, then the average salary increases by Rs. 100. What is the manager's monthly salary?  
a) Rs. 2000      b) Rs. 2400      c) Rs. 3600      d) Rs. 4800
42. The average weight of a class of 24 students is 35 kg. If the weight of the teacher be included, the average rises by 400 g. The weight of the teacher is :  
a) 45 kg      b) 50 kg      c) 53 kg      d) 55 kg
43. The average age of a husband and his wife was 23 years at the time of their marriage. After five years they have a one-year old child. The average age o the family now is :  
a) 19 years      b) 23 years      c) 28.5 years      d) 29.3 years
44. The average salary of all the workers in a workshop is Rs. 8000. The average salary of 7 technicians is Rs. 12000 and the average salary of the rest is Rs. 6000. The total number of workers in the workshop is :  
a) 20      b) 21      c) 22      d) 23
45. In an examination, a pupil's average marks were 63 per paper. If he had obtained 20 more marks for is Geography paper and 2 more marks for his History paper, his average per paper would have been 65. How many papers were there in the examination?  
a) 8      b) 9      c) 10      d) 11      e) 12
46. The average age of students of a class is 15.8 years. The average age of boys in the class is 16.4 years and that of the girls is 15.4 years. The ration of the number of boys to the number of girls in the class is :  
a) 1 : 2      b) 2 : 3      c) 3 : 4      d) 3 : 5
47. A motorist travels to a place 150km away at an average speed of 50 km/hr and returns at 30 km/hr. His average speed for the whole journey in km/hr is :  
a) 35      b) 37      c) 37.5      d) 40
48. A team of 8 persons joins in a shooting competition. The best marksman scored 85 points. If he had scored 92 points, the average score for the team would have been 84. The number of points, the team scored was :  
a) 588      b) 645      c) 665      d) 672
49. A certain factory employed 600 men and 400 women and the average wage was Rs. 25.50 per day. If a woman got Rs. 5 less than a man, then what are their daily wages?  
a) Man : Rs. 25 , Woman : Rs. 20      b) Man : Rs. 27.50, Woman : Rs.22.50  
c) Man : Rs. 30 , Woman : Rs. 25      d) Man : Rs. 32.50, Woman : Rs. 27.50

50. After replacing an old member by a new member, it was found that the average age of five members of a club is the same as it was 3 years ago. What is the difference between the ages of the replaced and the youngest child is :
- a) 2 years      b) 4 years      c) 8 years      d) 15 years

**KEY**

1.	a	2.	b	3.	c	4.	d	5.	a	6.	b
7.	c	8.	d	9.	a	10.	c	11.	a	12.	c
13.	a	14.	d	15.	b	16.	b	17.	b	18.	b
19.	c	20.	b	21.	b	22.	a	23.	c	24.	c
25.	b	26.	d	27.	d	28.	b	29.	a	30.	d
31.	c	32.	b	33.	d	34.	c	35.	d	36.	a
37.	a	38.	a	39.	b	40.	c	41.	c	42.	a
43.	a	44.	b	45.	d	46.	b	47.	c	48.	c
49.	b	50.	a								

# 4. RATIO & PROPORTION

1. If  $a : b = 5 : 9$  and  $b : c = 4 : 7$ , find  $a : b : c$   
a)  $20 : 36 : 63$       b)  $20 : 38 : 63$       c)  $20 : 34 : 63$       d)  $20 : 32 : 63$
2. If  $x : y = 3 : 4$ , find  $(4x + 5y) : (5x - 2y)$ .  
a)  $\frac{34}{7}$       b)  $\frac{32}{7}$       c)  $\frac{36}{7}$       d)  $\frac{30}{7}$
3. Divide Rs. 672 in the ratio 5:3.  
a) Rs. 252      b) Rs. 242      c) Rs. 262      d) Rs. 232
4. Divide Rs. 1162 among A, B, C in the ratio 35 : 28 : 20.  
a) A - Rs. 490, B - Rs. 394, C - Rs. 280      b) A - Rs. 490, B - Rs. 392, C - Rs. 280  
c) A - Rs. 490, B - Rs. 396, C - Rs. 280      d) A - Rs. 490, B - Rs. 390, C - Rs. 280
5. A bag contains 50 p, 25 p, and 10 p coins in the ratio 5 : 9 : 4, amounting to Rs. 206. Find the number of coins of each type.  
a) 200 : 350 : 160      b) 200 : 360 : 160      c) 200 : 360 : 180      d) 200 : 380 : 160
6. A mixture contains alcohol and water in the ratio 4 : 3. If 5 litres of water is added to the mixture, the ratio becomes 4 : 5. Find the quantity of alcohol in the given mixture.  
a) 10 litres      b) 20 litres      c) 30 litres      d) 40 litres
7. If  $A : B = 4 : 5$  and  $B : C = 6 : 7$ , then  $A : B : C$  is :  
a)  $24 : 30 : 35$       b)  $30 : 42 : 77$       c)  $35 : 49 : 42$       d) None of these
8. If  $A : B = 3 : 4$  and  $b : c = 8 : 9$ , then  $A : C$  is :  
a)  $1 : 3$       b)  $3 : 2$       c)  $2 : 3$       d)  $1 : 2$
9. If  $A : B = \frac{1}{2} : \frac{3}{8}$ ,  $B : C = \frac{1}{3} : \frac{5}{9}$  and  $C : D = \frac{5}{6} : \frac{3}{4}$  then the ratio  $A : B : C : D$  is :  
a)  $4 : 6 : 8 : 10$       b)  $6 : 4 : 8 : 10$       c)  $6 : 8 : 9 : 10$       d)  $8 : 6 : 10 : 9$
10. If  $2A = 3B = 4C$ , then  $A : B : C$  is :  
a)  $2 : 3 : 4$       b)  $4 : 3 : 2$       c)  $6 : 4 : 3$       d)  $20 : 15 : 2$
11. If  $\frac{A}{3} = \frac{B}{4} = \frac{C}{5}$ , then  $A : B : C$  is  
a)  $4 : 3 : 5$       b)  $5 : 4 : 3$       c)  $6 : 4 : 3$       d)  $20 : 15 : 2$
12. If  $2A = 3B$  and  $4B = 5C$ , then  $A : C$  is  
a)  $4 : 3$       b)  $8 : 15$       c)  $15 : 8$       d)  $3 : 4$
13. If  $\frac{1}{5} : \frac{1}{x} = \frac{1}{x} : \frac{1}{1.25}$ , then the value of  $x$  is :  
a) 1.5      b) 2      c) 2.5      d) 3.5
14. If  $0.75 : x :: 5 : 8$ , then  $x$  is equal to :  
a) 1.12      b) 1.20      c) 1.25      d) 1.30
15. If  $x : y = 5 : 2$ , the  $(8x + 9y) : (8x + 2y)$  is :  
a)  $22 : 29$       b)  $26 : 61$       c)  $29 : 22$       d)  $61 : 26$
16. If 15% of  $x = 20\%$  of  $y$ , then  $x : y$  is :  
a)  $3 : 4$       b)  $4 : 3$       c)  $17 : 16$       d)  $16 : 17$

17. The salaries of A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be the new ratio of their salaries?
- 3 : 3 : 10
  - 10 : 11 : 20
  - 23 : 33 : 60
  - Cannot be determined
18. If Rs. 782 be divided into three parts, proportional to  $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$ , then the smallest part is
- Rs. 182
  - Rs. 190
  - Rs. 196
  - Rs. 204
19. Two numbers are in ratio 3 : 5. If 9 is subtracted from each, the new numbers are in the ratio 12 : 23. The smaller number is :
- 27
  - 33
  - 49
  - 55
20. Two numbers are in the ratio 1 : 2 is added to both, their ratio changes to 3 : 5. The greatest number is :
- 24
  - 26
  - 28
  - 32
21. In a bag, there are coins of 25 p, 10 p and 5 p in the ratio of 1 : 2 : 3. If there are Rs. 30 in all, how many 5 p coins are there?
- 50
  - 100
  - 150
  - 200
22. Salaries of Ravi and Sumit are in the ratio 2 : 3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40 : 57. What is sumit's present salary?
- Rs. 17,000
  - Rs. 20,000
  - Rs. 25,500
  - None of these
23. A sum of Rs. 1300 is divided amongst P, Q, R and S such that
- $$\frac{\text{P's share}}{\text{Q's share}} = \frac{\text{Q's share}}{\text{R's share}} = \frac{\text{R's share}}{\text{S's share}}$$
- Rs. 140
  - Rs. 160
  - Rs. 240
  - Rs. 320
24. A and B together have Rs. 1210. If  $\frac{4}{15}$  of A's amount is equal to  $\frac{2}{5}$  of B's amount, how much amount does B have?
- Rs. 460
  - Rs. 484
  - Rs. 550
  - Rs. 664
25. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is :
- 2 : 5
  - 3 : 5
  - 4 : 5
  - 6 : 7
26. Seats for Mathematics, Physics and Biology in a school are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75 % respectively. What will be the ratio of increased seats?
- 2 : 3 : 4
  - 6 : 7 : 8
  - 6 : 8 : 9
  - None of these
27. The ratio of the number of boys and girls in a college is 7: 8. If the percentage increase in the number of boys and girls be 20% and 10% respectively, what will be the new ratio?
- 8 : 9
  - 17 : 18
  - 21 : 22
  - Cannot be determined

28. A sum of money is to be distributed among A, B, C, D in the proportion of  $5 : 2 : 4 : 3$ . If C gets Rs. 1000 more than D, what is B's share?
- a) Rs. 500      b) Rs. 1500      c) Rs. 2000      d) None of these
29. If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number?
- a)  $2 : 5$       b)  $3 : 7$       c)  $5 : 3$       d)  $7 : 3$
30. Ratio of the earnings of A and B is  $4 : 7$ . If the earnings of A increase by 50% and those of B decrease by 25%, the new ratio of their earnings becomes  $8 : 7$ . What are A's earnings?
- a) Rs. 21,000      b) Rs. 26,000      c) Rs. 28,000      d) Data inadequate
31. The fourth proportional to 5, 8, 15 is :
- a) 18      b) 24      c) 19      d) 20      e) 21
32. 60 kg of an alloy A is mixed with 100 kg of alloy B. If alloy A has lead and tin in the ratio  $3 : 2$  and alloy B has tin and copper in the ratio  $1 : 4$ , then the amount of tin in the new alloy is :
- a)  $1 : 1$       b)  $2 : 3$       c)  $1 : 2$       d)  $3 : 2$
33. 15 litres of mixture contains 20% alcohol and the rest water. If 3 litres of water be mixed with it, the percentage of alcohol in the new mixture would be :
- a) 15%      b)  $16\frac{2}{3}\%$       c) 17%      d)  $18\frac{1}{2}\%$
34. 20 litres of a mixture contains milk and water in the ratio  $5 : 3$ . If 4 litres of this mixture be replaced by 4 litres of milk, the ratio of milk to water in the new mixture would be :
- a)  $2 : 1$       b)  $7 : 3$       c)  $8 : 3$       d)  $4 : 3$
35. 85 kg of a mixture contains milk and water in the ratio  $27 : 7$ . How much more water is to be added to get a new mixture containing milk and water in the ratio  $3 : 1$ ?
- a) 5 kg      b) 6.5 kg      c) 7.25 kg      d) 8 kg
36. The age of A and B are in the ratio  $3 : 1$ . Fifteen years hence, the ratio will be  $2 : 1$ . Their present ages are :
- a) 30 years, 10 years      b) 45 years, 15 years  
c) 21 years, 7 years      d) 60 years, 20 years
37. The average age of three boys is 25 years and their ages are in the proportion  $3 : 5 : 7$ . The age of the youngest boy is :
- a) 21 years      b) 18 years      c) 15 years      d) 9 years
38. The speeds of three cars are in the ratio  $5 : 4 : 6$ . The ratio between the time taken by them to travel the same distance is :
- a)  $5 : 4 : 6$       b)  $6 : 4 : 5$       c)  $10 : 12 : 15$       d)  $12 : 15 : 10$
39. In a college, the ratio of the number of boys to girls is  $8 : 5$ . If there are 160 girls, the total number of students in the college is :
- a) 100      b) 250      c) 260      d) 416

40. The sides of a triangle are in the ratio  $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$  and its perimeter is 104 cm. The length of the longest side is :
- a) 52 cm      b) 48 cm      c) 32 cm      d) 80
41. The ratio of the number of boys and girls in a school is 3 : 2. If 20% of the boys and 25% of the girls are scholar holders, what percentage of the students does not get the scholarship?
- a) 56      b) 70      c) 78      d) 80
42. In a school, 10% of the boys are same in number as  $\frac{1}{4}$  th of the girls. What is the ratio of boys to girls in that school?
- a) 3 : 2      b) 5 : 2      c) 2 : 1      d) 4 : 3
43. x varies inversely as square of y. Given that  $y = 2$  for  $x = 1$ . The value of x for  $y = 6$  will be equal to :
- a) 3      b) 9      c)  $\frac{1}{3}$       d)  $\frac{1}{9}$
44. If 10% of x = 20% of y, x : y is equal to :
- a) 1 : 2      b) 2 : 1      c) 5 : 1      d) 10 : 1
45. The ratio of the income of A and B is 5 : 4 and the ratio of their expenditure is 3 : 2. If at the end of the year, each saves Rs. 1600, then the income of A is :
- a) Rs. 3400      b) Rs. 3600      c) Rs. 4000      d) Rs. 4400
46. Zinc and Copper are melted together in the ratio 9 : 11. What is the weight of method mixture, if 28.8 kg of zinc has been consumed in it?
- a) 58 kg      b) 60 kg      c) 64 kg      d) 70 kg
47. The compounded ratio of (2 : 3), (6 : 11) and (11 : 2) is :
- a) 1 : 2      b) 2 : 1      c) 11 : 24      d) 36 : 121
48. If 0.4 of a number is equal to 0.06 of another number, the ratio of the number is :
- a) 2 : 3      b) 3 : 4      c) 3 : 20      d) 20 : 3
49. The least whole number which when subtracted from both the terms of the ratio 6 : 7 gives a ratio less than 16 : 21 is :
- a) 2      b) 3      c) 4      d) 6
50. A and B are two alloys of gold and copper prepared by mixing metals in the ratio 7 : 2 and 7 : 11 respectively. If equal quantities of the alloys are melted to form a third alloy C, the ratio of gold and copper in C will be :
- a) 5 : 7      b) 5 : 9      c) 7 : 5      d) 9 : 5

## **KEY**

- |     |   |     |   |     |   |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|
| 1.  | a | 2.  | b | c.  | a | 4.  | b | 5.  | b | 6.  | a |
| 7.  | a | 8.  | c | 9.  | d | 10. | c | 11. | c | 12. | c |
| 13. | c | 14. | b | 15. | c | 16. | b | 17. | c | 18. | d |
| 19. | b | 20. | c | 21. | c | 22. | d | 23. | b | 24. | b |
| 25. | b | 26. | a | 27. | c | 28. | c | 29. | c | 30. | d |
| 31. | b | 32. | b | 33. | b | 34. | b | 35. | a | 36. | b |
| 37. | c | 38. | d | 39. | d | 40. | b | 41. | c | 42. | b |
| 43. | d | 44. | b | 45. | c | 46. | c | 47. | b | 48. | c |
| 49. | b | 50. | c |     |   |     |   |     |   |     |   |

## 5. PROBLEMS ON AGES

1. Sachin is younger than Rahul by 4 years. If their ages are in the respective ratio of 7 : 9, how old is Sachin?  
a) 16 years      b) 18 years      c) 28 years  
d) Cannot be determined      e) None of these
2. The ratio between the present ages of P and Q is 6 : 7. If Q is 4 years old than P, what will be the ratio of the ages of P and Q after 4 years?  
a) 3 : 4      b) 3 : 5      c) 4 : 3  
d) Data inadequate      e) None of these
3. The ratio between the present ages of P and Q is 5 : 7 respectively. If the difference between Q's present age and P's age after 6 years is 2, what is the total of P's and Q's present ages?  
a) 48 years      b) 52 years      c) 56 years  
d) Cannot be determined      e) None of these
4. At present, the ratio between the ages of Arun and Deepak is 4 : 3. After 6 years, Arun's age will be 26 years. What is the age of Deepak at present?  
a) 12 years      b) 15 years      c)  $19\frac{1}{2}$  years      d) 21 years
5. Present ages of Sameer and Anand are in the ratio 5 : 4 respectively. Three years hence, the ratio of their ages will become 11 : 9 respectively. What is Anand's present age in years?  
a) 24      b) 27      c) 40  
d) Cannot be determined      e) None of these
6. Six years ago, the ratio of the ages of Kunal and Sagar was 6 : 5. Four years hence, the ratio of their ages will be 11 : 10. What is Sagar's age at present?  
a) 16 years      b) 18 years      c) 20 years  
d) Cannot be determined      e) None of these
7. The total of the ages of Jayant, Prem and Saransh is 93 years. Ten years ago, the ratio of their ages was 2 : 3 : 4. What is the present age of Saransh?  
a) 24 years      b) 32 years      c) 34 years      d) 38 years
8. The ratio of the present ages of two brothers is 1 : 2 and 5 years back, the ratio was 1 : 3. What will be the ratio of their ages after 5 years?  
a) 1 : 4      b) 2 : 3      c) 3 : 5      d) 5 : 6
9. Hitesh is 40 years old and Ronnie is 60 years old. How many years ago was the ratio of their ages 3 : 5?  
a) 5 years      b) 10 years      c) 20 years      d) 37 years
10. The ratio of the father's age to his son's age is 7 : 3. The product of their ages is 756. The ratio of their ages after 6 years will be :  
a) 5 : 2      b) 2 : 1      c) 11 : 7      d) 13 : 9

11. The ratio of the ages of a man and his wife is 4 : 3. After 4 years, this ratio will be 9 : 7. If at the time of marriage, the ratio was 5 : 3, then how many years ago were they married?  
 a) 8 years      b) 10 years      c) 12 years      d) 15 years
12. The ratio between the school ages of Neelam and Shaan is 5 : 6 respectively. If the ratio between the one-third age of Neelam and half of Shaan's age is 5 : 9, then what is the school age of Shaan?  
 a) 25 years      b) 30 years      c) 36 years  
 d) Cannot be determined      e) None of these
13. The ratio between the present ages of A and B is 5 : 3 respectively. The ratio between A's age 4 years ago and B's age 4 years hence is 1 : 1. What is the ratio between A's age 4 years hence and B's age 4 years ago?  
 a) 1 : 3      b) 2 : 1      c) 3 : 1      d) 4 : 1      e) None of these
14. A is two years older than B who is twice as old as C. If the total of the ages of A, B and C be 27, then how old is B?  
 a) 7      b) 8      c) 9      d) 10      e) 11
15. Eighteen years ago, a father was three times as old as his son. Now the father is only twice as old as his son. Then the sum of the present ages of the son and the father is :  
 a) 54      b) 72      c) 105      d) 108
16. The age of father 10 years ago was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:  
 a) 5 : 2      b) 1 : 5      c) 9 : 2      d) 13 : 4
17. The sum of the present ages of a father and his son is 60 years. Six years ago, father's age was five times the age of the son. After 6 years, son's age will be :  
 a) 12 years      b) 14 years      c) 18 years      d) 20 years
18. The total age of A and B is 12 years more than the total age of B and C. C is how many years younger than A ?  
 a) 12      b) 24      c) C is elder than A  
 d) Data inadequate      e) None of these
19. Q is as much younger than R as he is older than T. If the sum of the ages of R and T is 50 years, what is definitely the difference R and Q's age?  
 a) 1 year      b) 2 years      c) 25 years  
 d) Data inadequate      e) None of these
20. The age of a man is three times the sum of the ages of his two sons. Five years hence, his age will be double of the sum of the ages of his sons. The father's present age is :  
 a) 40 years      b) 45 years      c) 50 years      d) 55 years
21. Rajan got married 8 years ago. His present age is  $\frac{6}{5}$  times his age at the time of his marriage. Rajan's sister was 10 years younger to him at the time of his marriage. The age of Rajan's sister is :  
 a) 32 years      b) 36 years      c) 38 years      d) 40 years
22. The sum of the ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest child?  
 a) 4 years      b) 8 times      c) 10 times      d) None of these

23. The difference between the ages of two persons is 10 years. Fifteen years ago, the elder one was twice as old as the younger one. The present age of the elder person is:  
 a) 25 years      b) 35 years      c) 45 years      d) 55 years
24. A father said to his son, "I was as old you are at present at the time of your birth". If the father's age is 38 years now., the son's age five years back was :  
 a) 14 years      b) 19 years      c) 33 years      d) 38 years
25. In 10 years, A will be twice as old as B was 10 years ago. If a is now 9 years older than B, the present age of B is :  
 a) 19 years      b) 29 years      c) 39 years      d) 49 years
26. Sneh's age is  $\frac{1}{6}$  th of her father's age. Sneh's father's age will be twice of Vimal's age after 10 years. If Vimal's eighth birthday was celebrated two years before, then what is Sneh's present age?  
 a)  $6\frac{2}{3}$  years      b) 24 years      c) 30 years      d) None of these
27. If 6 years are subtracted from the present age of Gagan and the remainder is divided by 18, then the present age of his grandson Anup is obtained. If Anup is 2 years younger to Madan whose age is 5 years, then what is Gagan's present age?  
 a) 48 years      b) 60 years      c) 84 years      d) 96 years
28. Ayesha's father was 38 years of age when she was born while her mother was 36 years old when her brother four years younger to her was born. What is the difference between the ages of her parents?  
 a) 2 years      b) 4 years      c) 6 years      d) 8 years
29. My brother is 3 years elder to me. My father was 28 years of age when my sister was born while my mother was 26 years of age when I was born. If my sister was 4 years of age when my brother was born, then what was the age of my father and mother respectively when my brother was born?  
 a) 32 yrs, 23 yrs      b) 32 yrs, 29 yrs      c) 35 yrs, 29 yrs      d) 35 yrs, 33 yrs
30. A person was asked to state his age in years. His reply was, "Take my age three years hence, multiply it by 3 and then subtract three times my age three years ago and you will know how old I am". What was the age of the person?  
 a) 18 years      b) 20 years      c) 24 years      d) 32 years

### KEY

1.	e	2.	e	3.	a	4.	b	5.	a	6.	a
7.	d	8.	c	9.	b	10.	b	11.	c	12.	d
13.	c	14.	d	15.	d	16.	b	17.	d	18.	a
19.	d	20.	b	21.	c	22.	a	23.	b	24.	b
25.	c	26.	d	27.	b	28.	c	29.	a	30.	a

## 6. PARTNERSHIP

1. P and Q started a business with Rs. 1500/- and Rs. 1000/- respectively. Find the share of P in an annual profit of Rs. 250/- (in Rs.)  
a) 150                    b) 100                    c) 200                    d) 50
2. In a business A, B and C invested Rs. 6,000, Rs. 8,000 and Rs. 12,000 respectively. Find the share of B in the total profit of Rs. 5,200? (in Rs.)  
a) 1200                    b) 1600                    c) 2400                    d) 400
3. A and B started a business with Rs. 15,000 and Rs. 10,000 respectively. After 6 months A withdrew Rs. 5,000 and B invested Rs. 5,000 more. What is the share of A out of the total profit of Rs. 4,800? (Rs. in Rs.)  
a) 2400                    b) 1200                    c) 3600                    d) 600
4. A and B enter into partnership. A invests Rs. 16,000 for 8 months and B remains in the business for 4 months. Out of a total profit, B claims  $\frac{2}{7}$  of the profit, what is the contribution of B? (in Rs.)  
a) 6000                    b) 3200                    c) 6400                    d) 12800
5. A start a business by investing Rs. 2,700. After some time B joined him by investing Rs. 1800. At the end of money year, the profit was divided in to ratio 2:1. After how many months did B join the business?  
a) After 6 months            b) After 5 months            c) After 4 months            d) After 3 months
6. A and B started a business with Rs. 3,000 and Rs. 5,000 respectively. After 4 months A put in Rs. 1,000 more. What is the share of B in an annual profit of Rs. 5,200 (in Rs.)  
a) 3000                    b) 2800                    c) 3200                    d) 2500
7. A, B and C enter into a partnership. A contributes Rs. 36,000 for 4 months, B contributes Rs. 18,000 for 3 months and C contributes Rs. 27,000 for 5 months. If the total profit is Rs. 2, 96,000. Find the share of B? (in Rs.)  
a) 1, 20,000                    b) 1, 28,000                    c) 48, 000                    d) 8000
8. A and B rent a pasture for 10 months. A puts in 80 cows for 7 months. How many can B put in for the remaining 3 months, if B pays half as much again as A.  
a) 420                    b) 280                    c) 350                    d) 140
9. A profit of Rs. 450 is divided between two partners, one of whom has contributes Rs. 1,200 for 5 months and the other Rs. 750 for 4 months. Hoe=w much amount the second partner received? (in Rs.)  
a) 180                    b) 250                    c) 300                    d) 150
10. A began a business with Rs. 1,250 and is joined after wards by B with Rs. 3,750. When did B join if the profits at the end of the year are divided quality?  
a) After 6 months            b) After 7 months            c) After 8 months            d) After 9 months
11. The ratio of investments of two partners A and B is 5:6 and the ratio of their profits is 5:12. If A invested the money for 8 months, find for how much time did B invest the money?  
a) 8 months                    b) 10 months                    c) 1 year 2 months            d) 1 year 4 months

12. A and B started a joint firm. A's investment was thrice the investment of B and the period of his investment was two times the period of investment of B. If B got Rs. 4,000 as profit. What is their total profit? (in Rs.)  
a) 7000      b) 14000      c) 21000      d) 28000
13. In a partnership between X and Y, X's capital is  $\frac{2}{5}$  of total and is invested for  $\frac{2}{3}$  year. If his share of the profit is  $\frac{4}{7}$  of the total, for how long Y's capital in the business?  
a)  $\frac{1}{3}$  year      b)  $\frac{1}{4}$  year      c)  $\frac{4}{3}$  year      d)  $\frac{2}{7}$  year
14. In a partnership, A invests  $\frac{1}{6}$  of the capital for  $\frac{1}{6}$  of the time, B invests  $\frac{1}{3}$  of the capital for  $\frac{1}{3}$  of the time, and C the rest of the capital for whole time. Find A's share in the total profit of Rs. 3,450 (in Rs.)  
a) 300      b) 150      c) 450      d) 350
15. A, B and C started a business. The capital of A is three-fourth of the total capital of B & C together and the capital of B is two-third of the total capital of C & A together. Find the share of C in the annual profit of Rs. 35,000.  
a) Rs. 12,000      b) Rs. 20,000      c) Rs. 6,000      d) Rs. 10,000
16. The capitals of A and B in a business are in the ratio of 3:4 and the period for which they invested are in the ratio of 4:5. Find of A in the total profit of Rs. 8500.  
a) Rs. 3000      b) Rs. 4000      c) Rs. 2000      d) Rs. 2500
17. A and B invest in a business in the ratio of 3:2. If 5% of the total profit goes to charity and A's share is Rs. 855. What is the total profit?  
a) Rs. 1500      b) Rs. 2500      c) Rs. 3000      d) Rs. 4000
18. Two partners invested Rs. 1250 and Rs. 850 respectively in a business. Both the partners distribute 60% of the profit equality and distribute the rest 40% as the interest on their capitals of one partner received Rs. 40 more than the other. Find the total profit? (in Rs.)  
a) 555      b) 525      c) 625      d) 895
19. A,B and C started a business by investing Rs. 20,000; Rs. 25,000; and Rs. 40,000 respectively. They decided to receive 140% interest on their capitals and the balance to be divided equality. If they got Rs. 20,500 as the annual profit. Find the share of C including the interest? (in Rs.)  
a) 800      b) 12,000      c) 20,000      d) 8,000
20. A and B invest Rs. 3,000 and Rs. 4,000 in a business. A receive Rs. 10 per month out of the profit as a remuneration for running the business and the rest of profit is divided in proportion to the investment. If in a year 'A' totally receives Rs. 390, what does B receive? (in Rs.)  
a) 300      b) 580      c) 360      d) 490
21. A and B started a business by investing Rs. 50,000 and Rs. 80,000 respectively. B was a sleeping partner. A had to receive 20 % of the annual profit for his work and the balance was to be divided between them in proportion to their capitals. If the total amount received by A was Rs. 33,000 find the total annual profit? (in Rs.)  
a) 78,000      b) 90,000      c) 65,000      d) 75,000

22. Harish and Prakash invested Rs. 90,000 and Rs. 1, 20,000 in a business. After 4 months Harish invested Rs. 10,000 more, after 2 more months Prakash withdraw Rs. 20, 000. At the end of the year they earned a total profit of Rs. 1, 86,000/- . Find the difference between the profits earned by them. (in Rs.)
- a) 20, 000      b) 15,000      c) 12,000      d) 18,000
23. A and B started a business by investing Rs. 80,000 and Rs. 1, 00,000 respectively. After 5 months A invested Rs. 20,000 more and after one month B withdraws Rs. 20,000. At the end of the year they wanted to divide the profit according to the capital they invested and A got Rs. 2,000 more than B. Find the total profit? (in Rs.)
- a) 2,00,000      b) 3, 10,000      c) 4, 20,000      d) 2, 18,000
24. A and B invested Rs. 40, 000 and Rs. 50, 000 respectively. After 4 months A withdraw Rs. 15, 000 and after 4 more months B withdraw Rs. 10, 000. If A's share in the annual profit is Rs. 18, 000 find the total annual profit? (in Rs.)
- a) 46,000      b) 58, 000      c) 35, 000      d) 28, 000
25. A,B and C started a business by investing Rs. 10, 000, Rs. 20, 000 and Rs. 25, 000 respectively. After 2 months A invested Rs. 10, 000 and after 4 more months B invested Rs. 10, 000. Find the share of C in the annual profit of Rs. 41, 000. (in Rs.)
- a) 20, 000      b) 30, 000      c) 25, 000      d) 15, 000
26. A and B entered into a partnership investing Rs. 16, 000 and Rs. 12, 000 respectively. After 3 months A withdraw Rs. 5000, while B invested Rs. 5000 more, after 3 more months C joins the business with a capital of Rs. 21, 000. The share of B exceeds that of C by how much out of a total profit of Rs. 46, 200. (in Rs.)
- a) 4600      b) 6300      c) 3600      d) 5800
27. A and B enter into a partnership with unequal sums of money, it being agreed that each is to receive 6% per annum on his capital, and that any profit remaining after this shall be divided equality. At the end of a year A receives Rs. 4, 630 and B, Rs. 3, 730; and it found that B thus gets Rs. 650 more than he would have received if all the profit had been share in proportion to the capital invested by each. Find what each man's capital is?(in Rs.)
- a) 36000, 21000      b) 35000, 20000      c) 39000, 24000      d) None of these
28. A, B, C enter into a partnership in a business with capitals of Rs. 5, 000, Rs. 6, 000, Rs. 4, 000 respectively. A gets 30% of the profit for managing the business and the balance is divided in proportion to their capitals. At the end of year A gets Rs. 200 more than B and C together. Find the total profit of each. (in Rs.)
- a) 1620, 840, 540      b) 1620, 820, 560      c) 1600, 840, 560      d) 1600, 800, 600
29. A, B and C are partners. A, whose money has been in the business for 4 months claims 1/8 of the profit. B whose money has been in the business for 6 months claims 1/3 of the profit. If C had Rs. 1, 560 in the business for 8 months, how much money did A and B contribute to the business? (in Rs.)
- a) 780, 1220      b) 720, 1280      c) 700, 1300      d) 750, 1250

30. A, B, C invest Rs. 8,000, Rs. 4, 000 and Rs. 2, 000 respectively in a business. A and B receive respectively 20% and 10% of the annual profit as salaries, and the remainder is shared by A, B and C in proportion to the capital they invested. If the profit is Rs. 3, 200, what does each receive? (in Rs.)  
a) 1280, 1600, 320    b) 1280, 960, 960    c) 1600, 960, 640    d) 1920, 960, 320
31. A, B and C enter into a partnership and decide to contribute to the total capital of Rs. 12, 000 in the following manner. A will contribute 25% of the total capital; B's contribution will be 80% of the C's contribution and 50% of the contribution of A and C together. What is the contribute of B towards capital? (in Rs.)  
a) 2000    b) 3000    c) 4000    d) 5000
32. A, B, C are partners. A receives  $\frac{2}{3}$  of the profit, B and C dividing the remainder equality. A's income is increased by Rs. 400 when the rate of profit rises from 5 to 7 percent. Find the capital of B.  
a) Rs. 5000    b) Rs. 10000    c) Rs. 15000    d) Rs. 20000
33. Three persons A, B and C enter into partnership; A contributes Rs. 840; B Rs. 1, 200 and C Rs. 1, 560. A acts as manager for which he receives  $\frac{1}{10}$ th of the profit and the remaining of the profit is divided between all the three partners in proportion to their contributions. What fractional part of the whole profits does C receive?  
a)  $\frac{87}{200}$     b)  $\frac{93}{200}$     c)  $\frac{83}{200}$     d)  $\frac{117}{200}$

### KEY

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. a  | 2. b  | 3. c  | 4. c  | 5. a  | 6. d  |
| 7. d  | 8. a  | 9. c  | 10. b | 11. d | 12. c |
| 13. d | 14. d | 15. a | 16. b | 17. c | 18. a |
| 19. a | 20. b | 21. d | 22. c | 23. c | 24. a |
| 25. d | 26. b | 27. d | 28. b | 29. b | 30. a |
| 31. b | 32. c | 33. d |       |       |       |

## 7. TIME AND WORK

1. A does a work in 10 days and b does the same work in 15 days. In how many does they together will do the same work?  
a) 5 days      b) 6 days      c) 8 days      d) 9 days
2. A, B and C can complete a piece of work in 24, 6 and 12 days respectively. Working together, they will complete the same work in :  
a)  $\frac{1}{24}$  day      b)  $\frac{7}{24}$  day      c)  $3\frac{3}{7}$  days      d) 4 days
3. A man can do a piece of work in 5 days, but with the help of his son, he can do it in 3 days. In what time can the son do it alone?  
a)  $6\frac{1}{2}$  days      b) 7 days      c)  $7\frac{1}{2}$  days      d) 8 days
4. A can lay railway track between two given stations in 16 days and B can do the same job in 12 days. With the help of C, they did the job in 4 days only. Then, C alone can do the job in :  
a)  $9\frac{1}{5}$  days      b)  $9\frac{2}{5}$  days      c)  $9\frac{3}{5}$  days      d) 10 days
5. A takes twice as much time as B or thrice as much time to finish a piece of work. Working together, they can finish the work in 2 days. B can do the work alone in:  
a) 4 days      b) 6 days      c) 8 days      d) 12 days
6. Two workers A and B are engaged to do a work. A working alone takes 8 hours more to complete the job than if both worked together. If B worked alone, he would need  $4\frac{1}{2}$  hours more to complete the job than they both working together. What time would they take to do the work together?  
a) 4 hours      b) 5 hours      c) 6 hours      d) 7 hours
7. P can complete a work in 12 days working 8 hours a day. Q can complete the same work in 8 days working 10 hours a day. If both P and Q work together, working 8 hours a day, in how many days can they complete the work?  
a)  $5\frac{5}{11}$       b)  $5\frac{6}{11}$       c)  $6\frac{5}{11}$       d)  $6\frac{6}{11}$
8. A and B can do a work in 12 days, B and C in 15 days, C and A in 20 days. If A, B and C work together, they will complete the work in :  
a) 5 days      b)  $7\frac{5}{6}$       c) 10 days      d)  $15\frac{2}{3}$  days
9. A and B can do a piece of work in 72 days; B and C can do it in 120 days ; A and C can do it in 90 days. In what time can A and B alone do it?  
a) 80 days      b) 100 days      c) 120 days      d) 150 days
10. A and B can do a piece of work in 5 days; B and C can do it in 7 days; A and C can do it in 4 days. Who among these will take the least time if put to do it alone?  
a) A      b) B      c) C      d) Data inadequate

11. A can do a piece of work in 4 hours; B and C together can do it in 3 hours, while A and C together can do it in 2 hours. How long will B alone take to do it?
- a) 8 hours      b) 10 hours      c) 12 hours      d) 24 hours
12. A can do certain work in the same time in which B and C together can do it. If A and B together could do it in 10 days and C alone in 50 days, then B alone could do it in:
- a) 15 days      b) 20 days      c) 25 days      d) 30 days
13. A works twice as fast as B. If B can complete a work in 12 days independently, the number of days in which A and B can together finish the work is :
- a) 4 days      b) 6 days      c) 8 days      d) 18 days
14. A is twice as good a workman as B and together they finish a piece of work in 14 days. The number of days taken by A alone to finish the work is :
- a) 11      b) 21      c) 28      d) 42
15. A thrice as good a workman as B and therefore is able to finish a job in 60 days less than B. Working together, they can do it in :
- a) 20 days      b)  $22\frac{1}{2}$  days      c) 25 days      d) 30 days
16. A and B can do a job together in 7 days. A is  $1\frac{3}{4}$  times as efficient as B. The same job can be done by A alone in :
- a)  $9\frac{1}{3}$  days      b) 11 days      c)  $12\frac{1}{4}$  days      d)  $16\frac{1}{3}$  days
17. Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days taken by Tanya to do the same piece of work is :
- a) 15      b) 16      c) 18      d) 25
18. A is 30% more efficient than B. How much time will they, working together, take to complete a job which A alone could have done in 23 days?
- a) 11 days      b) 13 days      c)  $20\frac{3}{17}$  days      d) None of these
19. A can do a work in 15 days and B in 20 days. If they work on it together for 4 days, then the fraction of the work that is left is :
- a)  $\frac{1}{4}$       b)  $\frac{1}{10}$       c)  $\frac{7}{15}$       d)  $\frac{8}{15}$
20. A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?
- a) 5      b)  $5\frac{1}{2}$       c) 6      d) 8
21. A and B can complete a work in 15 days and 10 days respectively. They started doing the work together but after 2 days B had to leave and A alone completed the remaining work. The whole work was completed in:
- a) 8 days      b) 10 days      c) 12 days      d) 15 days
22. A can finish a work in 24 days, B in 9 days and C in 12 days. B and C start the work but are forced to leave after 3 days. The remaining work was done by A in :
- a) 5 days      b) 6 days      c) 10 days      d)  $10\frac{1}{2}$  days

23. A machine P can print one lakh books in 8 hours; machine Q can print the same number of books in 10 hours while machine R can print them in 12 hours. All the machines are started at 9 a.m. while machine P is closed at 11 a.m. and the remaining two machines complete the work. Approximately at what time will the work be finished?  
 a) 11:30 a.m.      b) 12 noon      c) 12:30 p.m.      d) 1 p.m.
24. A and B can do a piece of work in 30 days, while B and C can do the same work in 24 days and C and A in 20 days. They all work together for 10 days when B and C leave. How many days more will A take to finish the work?  
 a) 18 days      b) 24 days      c) 30 days      d) 36 days
25. X and Y can do a piece of work in 20 days and 12 days respectively. X started the work alone and then after 4 days Y joined him till the completion of the work. How long did the work last?  
 a) 6 days      b) 10 days      c) 15 days      d) 20 days
26. A and B can together finish a work in 30 days. They worked together for 20 days and then B left. After another 20 days, A finished the remaining work. In how many days A alone can finish the job?  
 a) 40      b) 50      c) 54      d) 60
27. X can do a piece of work in 40 days. He works at it for 8 days and the Y finished it in 16 days. How long will they together take to complete the work?  
 a)  $13\frac{1}{3}$  days      b) 15 days      c) 20 days      d) 56 days
28. A does  $\frac{4}{5}$  of a work in 20 days. He then calls in B and they together finish the remaining work in 3 days. How long B alone would take to do the whole work?  
 a) 23 days      b) 37 days      c)  $37\frac{1}{2}$  days      d) 40 days
29. A and B together can do a piece of work in 30 days. A having worked for 16 days, B finishes the remaining work alone in 44 days. In how many days shall B finish the whole work alone?  
 a) 30 days      b) 40 days      c) 60 days      d) 70 days
30. A can do a piece of work in 14 days which B can do in 21 days. They begin together but 3 days before the completion of the work, A leaves off. The total number of days to complete the work is :  
 a)  $6\frac{3}{5}$       b)  $8\frac{1}{2}$       c)  $10\frac{1}{5}$       d)  $13\frac{1}{2}$
31. A, B and C are employed to do a piece of work for Rs. 529. A and B together are supposed to do  $\frac{19}{23}$  of the work and B and C together  $\frac{8}{23}$  of the work. What amount should A be paid?  
 a) Rs. 315      b) Rs. 345      c) Rs. 355      d) Rs. 375
32. Kim can do a work in 3 days while David can do the same work in 2 days. Both of them finish the work together and get Rs. 150. What is the share of Kim?  
 a) Rs. 30      b) Rs. 60      c) Rs. 70      d) Rs. 75

33. A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they complete the work in 3 days. How much is to be paid to C?
- a) Rs. 375      b) Rs. 400      c) Rs. 600      d) Rs. 800
34. A and B together can complete a work in 12 days. A alone can complete it in 20 days. If B does the work only for half a day daily, then in how many days A and B together will complete the work?
- a) 10 days      b) 11 days      c) 15 days      d) 20 days
35. A alone can complete a work in 16 days and B alone in 12 days. Starting with A, they work on alternate days. The total work will be completed in :
- a) 12 days      b) 13 days      c)  $13\frac{5}{7}$  days      d)  $13\frac{3}{4}$  days
36. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?
- a) 12 days      b) 15 days      c) 16 days      d) 18 days
37. Twenty women can do a work in sixteen days. Sixteen men can complete the same work in fifteen days. What is the ratio between the capacity of a man and a woman?
- a) 3 : 4      b) 4 : 3      c) 5 : 3      d) Data inadequate
38. 10 men complete a piece of work in 15 days and 15 women can complete the same work in 12 days. If all the 10 men and 15 women work together, in how many days will the work get completed?
- a) 6      b)  $6\frac{1}{3}$       c)  $6\frac{2}{3}$       d)  $7\frac{2}{3}$
39. 12 men complete a work in 9 days. After they have worked for 6 days, 6 more men join them. How many days will they take to complete the remaining work?
- a) 2 days      b) 36 days      c) 4 days      d) 5 days      e) None of these
40. Three men, four women and six children can complete a work in seven days. A woman does double the work a man does and a child does half the work a man does. How many women alone can complete this work in 7 days?
- a) 7      b) 8      c) 12      d) Cannot be determined      e) None of these
41. A man, a woman and a boy can complete a job in 3, 4 and 12 days respectively. How many boys must assist 1 man and 1 woman to complete the job in  $\frac{1}{4}$  of a day?
- a) 1      b) 4      c) 19      d) 41
42. 10 men and 15 women together can complete a work in 6 days. It takes 100 days for one man alone to complete the same work. How many days will be required for one woman alone to complete the same work?
- a) 90      b) 125      c) 145      d) 150      e) None of these
43. 10 women can complete a work in 7 days and 10 children take 14 days to complete the work. How many days will 5 women and 10 children take to complete the work?
- a) 3      b) 5      c) 7      d) Cannot be determined      e) None of these

44. 5 men and 2 boys working together can do four times as much work as a man and a boy.  
 Working capacities of a woman and a boy are in the ratio :  
 a) 1 : 2      b) 2 : 1      c) 1 : 3      d) 3 : 1
45. If 12 men and 16 boys can do a piece of work in 5 days; 13 men and 24 boys can do it in 4 days, then the ratio of the daily work done by a man to that of a boy is :  
 a) 2 : 1      b) 3 : 1      c) 3 : 2      d) 5 : 4
46. 4 men and 6 women can complete a work in 8 days, while 3 men and 7 women can complete it in 10 days. In how many days will 10 women complete it?  
 a) 35      b) 40      c) 45      d) 50
47. One man, 3 women and 4 boys can do a piece of work in 96 hours, 2 men and 8 boys can do it in 80 hours, 2 men and 3 women can do it in 120 hours, 5 men and 12 boys can do it in :  
 a)  $39\frac{1}{11}$  hours      b)  $42\frac{7}{11}$  hours      c)  $43\frac{7}{11}$  hours      d) 44 hours
48. If 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days, the time taken by 15 men and 20 boys in doing the same type of work will be :  
 a) 4 days      b) 5 days      c) 6 days      d) 7 days
49. 45 men can complete a work in 16 days. Six days after they started working, 30 more men joined them. How many days will they now take to complete the remaining work?  
 a) 6 days      b) 7 days      c) 8 days      d) 9 days
50. Worker A takes 8 hours to do a job. Worker B takes 10 hours to do the same job. How long should it take both A and, working together but independently, to do the same job?  
 a)  $4\frac{4}{9}$  days      b)  $4\frac{5}{9}$  days      c)  $4\frac{7}{9}$  days      d)  $4\frac{8}{9}$  days

### KEY

1.	b	2.	c	3.	c	4.	c	5.	b	6.	c
7.	a	8.	c	9.	c	10.	a	11.	c	12.	c
13.	a	14.	b	15.	b	16.	b	17.	b	18.	b
19.	d	20.	c	21.	c	22.	c	23.	d	24.	a
25.	b	26.	d	27.	a	28.	c	29.	c	30.	c
31.	b	32.	b	33.	b	34.	c	35.	d	36.	b
37.	b	38.	c	39.	a	40.	a	41.	d	42.	c
43.	c	44.	b	45.	a	46.	b	47.	c	48.	a
49.	a	50.	a								

## 8. PIPES AND CISTERS

1. Two pipes A and B can fill a tank in 20 and 30 minutes respectively. If both the pipes are used together, then how long will it take to fill the tank?  
a) 12 min      b) 15 min      c) 25 min      d) 50 min
2. A cistern can be filled by a tap in 4 hours while it can be emptied by another tap in 9 hours. If both the taps are opened simultaneously, then after how much time will the cistern get filled?  
a) 4.5 hrs      b) 5 hrs      c) 6.5 hrs      d) 7.2 hrs
3. A tap can fill a tank in 6 hours. After half the tank is filled, three more similar taps are opened. What is the total time taken to fill the tank completely?  
a) 3 hrs 15 min      b) 3 hrs 45 min      c) 4 hrs      d) 4 hrs 15 min
4. A water tank is two-fifth full. Pipe A can fill a tank in 10 minutes and pipe B can empty it in 6 minutes. If both the pipes are open, how long will it take to empty or fill the tank completely?  
a) 6 min. to empty      b) 6 min. to fill      c) 9 min. to empty  
d) 9 min. to fill      e) None of these
5. Pipe A can fill a tank in 5 hours, pipe B in 10 hours and pipe C in 30 hours. If all the pipes are open, in how many hours will the tank be filled?  
a) 2      b) 205      c) 3      d) 3.5
6. Pipes A and B can fill a tank in 5 and 6 hours respectively. Pipe C can empty it in 12 hours. If all the three pipes are opened together, then the tank will be filled in :  
a)  $1\frac{13}{17}$  hours      b)  $2\frac{8}{11}$  hours      c)  $3\frac{9}{17}$  hours      d)  $4\frac{1}{2}$  hours
7. Three pipes A, B and C can fill a tank from empty to full in 30 minutes, 20 minutes and 10 minutes respectively. When the tank is empty, all the three pipes are opened. A, B and C discharge chemical solutions P, Q and R respectively. What is the proportion of solution R in the liquid in the tank after 3 minutes?  
a)  $\frac{2}{11}$       b)  $\frac{6}{11}$       c)  $\frac{7}{11}$       d)  $\frac{8}{11}$
8. Two pipes A and B can respectively fill a cistern in 60 minutes and 75 minutes respectively. There is a third pipe in the bottom of the cistern to empty it. If all the three pipes are simultaneously opened, then the cistern is full in 50 minutes. In how much time, the third pipe alone can empty the cistern?  
a) 90 min      b) 100 min      c) 110 min      d) 120 min
9. A pump can fill a tank with water in 2 hours. Because of a leak, it took  $2\frac{1}{3}$  hours to fill the tank. The leak can drain all the water of the tank in :  
a)  $4\frac{1}{3}$  hrs      b) 7 hrs      c) 8 hrs      d) 14 hrs
10. Two taps A and B can fill a tank in 5 hours and 20 hours respectively. If both the taps are open then due to a leakage, it took 30 minutes more to fill the tank. If the tank is full, how long will it take for the leakage alone to empty the tank?  
a)  $4\frac{1}{2}$  hrs      b) 9 hrs      c) 18 hrs      d) 36 hrs

11. Two pipes A and B together can fill a cistern in 4 hours. If they are opened separately, then B would have taken 6 hours more than A to fill the cistern. How much time will be taken by A to fill the cistern separately?
- a) 1 hr                    b) 2 hrs                    c) 6 hrs                    d) 8 hrs
12. One pipe can fill a tank three times as fast as another pipe. If together the two pipes can fill the tank in 36 minutes, then the slower pipe alone will be able to fill the tank.
- a) 81 min                b) 108 min                c) 144 min                d) 192 min
13. A tank is filled in 5 hours by three pipes, A, B and C. The pipe C is twice as fast as B and B is twice as fast as A. How much time will pipe A alone take to fill the tank?
- a) 20 hrs                b) 25 hrs                c) 35 hrs  
d) Cannot be determined    e) None of these
14. A tank is filled by three pipes with uniform flow. The first two pipes operating simultaneously fill the tank in the same time during which the tank is filled by the third pipe alone. The second pipe fills the tank 5 hours faster than the first pipe and 4 hours slower than the third pipe. The time required by the first pipe is :
- a) 6 hrs                b) 10 hrs                c) 15 hrs                d) 30 hrs
15. 12 buckets of water fill a tank when the capacity of each bucket is 13.5 litres. How many buckets will be needed to fill the same tank, if the capacity of each bucket is 9 litres?
- a) 8                    b) 15                    c) 16                    d) 18
16. Bucket P has thrice the capacity as bucket Q. It takes 60 turns for bucket P to fill the empty drum. How many turns it will take for both the buckets P and Q, having each turn together to fill the empty drum?
- a) 30                    b) 40                    c) 45                    d) 90
17. Two pipes A and B can fill a tank in 12 minutes and 15 minutes respectively. If both the taps are opened simultaneously, and the tap A is closed after 3 minutes, then how much more time will it take by tap B?
- a) 7 min 15 sec        b) 7 min 45 sec        c) 8 min 5 sec        d) 8 min 15 sec
18. Two pipes A and B can fill a tank in 15 minutes and 20 minutes respectively. Both the pipes are opened together but after 4 minutes, pipe A is turned off. What is the total time required to fill the tank?
- a) 10 min 20 sec        b) 11 min 45 sec        c) 12 min 30 sec        d) 14 min 40 sec
19. A large tanker can be filled by two pipes A and B in 60 minutes and 40 minutes respectively. How many minutes will it take to fill the tanker from empty state if B is used for half the time and A and B fill it together for the other half?
- a) 15 min                b) 20 min                c) 27.5 min                d) 30 min
20. Two pipes A and B can fill a cistern in 12 minutes and 15 minutes respectively while a third pipe C can empty the full tank in 6 minutes. A and B are kept open for 5 minutes in the beginning and then C is also opened. In what time is the cistern emptied?
- a) 30 min                b) 33 min                c)  $37\frac{1}{2}$  min                d) 45 min
21. Three taps A, B and C can fill a tank in 12, 15 and 20 hours respectively. If A is open all the time and B and C are open for one hour each alternately, the tank will be full in :
- a) 6 hrs                b)  $6\frac{2}{3}$  hrs                c) 5 hrs                d)  $7\frac{1}{2}$  hrs

22. Two pipes can fill a tank in 20 and 24 minutes respectively and a waste pipe can empty 3 gallons per minute. All the three pipes working together can fill the tank in 15 minutes. The capacity of the tank is :
- a) 60 gallons      b) 100 gallons      c) 120 gallons      d) 180 gallons
23. Two pipes A and B can fill a cistern in  $37\frac{1}{2}$  minutes and 45 minutes respectively. Both pipes are opened. The cistern will be filled in just half an hour, if the pipe B is turned off after :
- a) 5 min      b) 9 min      c) 10 min      d) 15 min
24. Three pipes A, B and C can fill a tank in 6 hours. After working at it together for 2 hours, C is closed and A and B can fill the remaining part in 7 hours. The number of hours by C alone to fill the tank is :
- a) 10      b) 12      c) 14      d) 16
25. Two pipes A and B can fill a tank in 24 min. and 32 min. respectively. If both the pipes are opened simultaneously, after how much time B should be closed so that the tank is full in 18 minutes?
- a) 8 min      b) 9 min      c) 10 min      d) 11 min

**KEY**

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. a  | 2. d  | 3. b  | 4. a  | 5. c  | 6. c  |
| 7. b  | 8. b  | 9. d  | 10. d | 11. c | 12. c |
| 13. c | 14. c | 15. d | 16. c | 16. c | 17. d |
| 18. d | 19. d | 20. d | 21. d | 22. c | 23. b |
| 24. c | 25. a |       |       |       |       |

## 9. TIME AND DISTANCE

1. A car moves at the speed of 80 km/hr. What is the speed of the car in meters per second?  
a) 8 m / sec      b)  $20\frac{1}{9}$  m / sec      c)  $22\frac{2}{9}$  m / sec      d) None of these
2. Which of the following trains is the fastest?  
a) 25 m / sec      b) 1500 m / min      c) 90 km / hr      d) None of these
3. A man walking at the rate of 5 km / hr crosses a bridge in 15 minutes. The length of the bridge (in metres) is :  
a) 600      b) 750      c) 1000      d) 1250
4. How long will a boy take to run round a square field of side 35 metres, if he runs at the rate of 9 km / hr?  
a) 50 sec      b) 52 sec      c) 54 sec      d) 56 sec
5. A car is running at a speed of 108 kmph. What distance will cover in 15 seconds?  
a) 45 metres      b) 55 metres      c) 450 metres  
d) Cannot be determined      e) None of these
6. One of the two buses completes a journey of 300 km in  $7\frac{1}{2}$  hours and the other a journey of 450 km in 9 hours. The ratio of their average speeds is :  
a) 2 : 3      b) 3 : 4      c) 4 : 5      d) 8 : 9
7. A truck covers a distance of 550 metres in 1 minute whereas a bus covers a distance of 33 kms in 45 minutes. The ratio of their speeds is :  
a) 3 : 4      b) 4 : 3      c) 3 : 5      d) 50 : 3
8. The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 kms in 4 hours, then the speed of the first train is :  
a) 70 km / hr      b) 75 km / hr      c) 84 km / hr      d) 87.5 km / hr
9. A train travels at an average of 50 miles per hour for  $2\frac{1}{2}$  hours and then travels at a speed of 70 miles per hour for  $1\frac{1}{2}$  hours. How far did the train travel in the entire 4 hours?  
a) 120 miles      b) 150 miles      c) 200 miles      d) 230 miles
10. Sound is said to travel in air at about 1100 feet per second. A man hears the axe striking the tree,  $\frac{11}{5}$  seconds after he sees it strike the tree. How far is the man from the wood chopper?  
a) 2197 ft      b) 2420 ft      c) 2500 ft      d) 2629 ft
11. An express train travelled at an average speed of 100 km / hr, stopping for 3 minutes after every 75 km. How long did it take to reach its destination 600 km from the starting point?  
a) 6 hrs 21 min      b) 6 hrs 24 min      c) 6 hrs 27 min      d) 6 hrs 30 min
12. A certain distance is covered by a cyclist at a certain speed. If a jogger covers half the distance in double the time, the ratio of the speed of the jogger to that of the cyclist is :  
a) 1 : 2      b) 2 : 1      c) 1 : 4      d) 4 : 1

13. The speed of a car increases by 2 kms after every one hour. If the distance travelled in the first one hour was 35 kms, what was the total distance travelled in 12 hours?
- 456 kms
  - 482 kms
  - 552 kms
  - 556 kms
  - None of these
14. A train covers a distance of 10 km in 12 minutes. If its speed is decreased by 5 km / hr, the time taken by it to cover the same distance will be :
- 10 min
  - 11 min 20 sec
  - 13 min
  - 13 min 20 sec
15. An aeroplane covers a certain distance at a speed of 240 kmph in 5 hours. To cover the same distance in  $1\frac{2}{3}$  hours, it must travel at a speed of :
- 300 kmph
  - 360 kmph
  - 600 kmph
  - 720 kmph
16. A salesman travels a distance of 50 km in 2 hours and 30 minutes. How much faster in kilometers per hour, on an average, must he travel to make such trip in  $\frac{5}{6}$  hour less time?
- 10
  - 20
  - 30
  - None of these
17. A person has to cover a distance of 6 km in 45 minutes. If he covers one-half of the distance in two-third of the total time; to cover the remaining distance in the remaining time, his speed (in km/hr) must be :
- 6
  - 8
  - 12
  - 15
18. A man performs  $\frac{3}{5}$  of the total journey by rail,  $\frac{17}{20}$  by bus and the remaining 6.5 km on foot. His total journey is :
- 65 km
  - 100 km
  - 120 km
  - 130 km
19. A can complete a journey in 10 hours. He travels first half of the journey at the rate of 21 km / hr and second half at the rate of 24 km / hr. Find the total journey in km.
- 220 km
  - 224 km
  - 230 km
  - 234 km
20. A person travels equal distances with speed of 3 km/ hr, 4 km/ hr and 5 km/hr and takes a total time of 47 minutes. The total distance (in km) is :
- 2
  - 3
  - 4
  - 5
21. A farmer travelled a distance of 61 km in 9 hours. He travelled partly on foot @ 4 km/hr and partly on bicycle @ 9 km/hr. The distance travelled on foot is :
- 14 km
  - 15 km
  - 16 km
  - 17 km
22. A is faster than B, A and B each walk 24 km. The sum of their speeds is 7 km/ hr and the sum of times by them is 14 hours. Then, A's speed is equal to :
- 3 km / hr
  - 4 km / hr
  - 5 km / hr
  - 7 km / hr
23. A person travels from P and Q at a speed of 40 kmph and returns by increasing his speed by 50%. What is his average speed for both the trips?
- 36 kmph
  - 45 kmph
  - 48 kmph
  - 50 kmph
24. A boy goes to his school from his house at a speed of 3 km/hr and returns at a sped of 2 km/hr. If he takes 5 hours in going and coming, the distance between his house and school is :
- 5 km
  - 5.5 km
  - 6 km
  - 6.5 km

25. A man on tour travels first 160 km / hr and the next 160 km at 80 km / hr. The average speed for the first 320 km of the tour is :  
 a) 35.55 km / hr      b) 36 km / hr      c) 71.11 km / hr      d) 71 km / hr
26. A boy rides his bicycle 10 km at an average speed of 12 km / hr and again travels 12 km at an average speed of 10 km / hr. His average speed for the entire trip is approximately :  
 a) 10.4 km / hr      b)  $60 \frac{5}{123}$  km / hr      c) 62 km / hr      d)  $65 \frac{5}{123}$  km / hr
27. A car travels the first one-third of a certain distance with a speed of 10 km / hr, the next one-third distance with a speed of 20 km / hr, and the last one-third distance with a speed of 60 km / hr. The average speed of the car for the whole journey is :  
 a) 18 km / hr      b) 24 km / hr      c) 30 km / hr      d) 36 km / hr
28. A car travelling with  $\frac{5}{7}$  of its actual speed covers 42 km in 1 hr 40 min 48 sec. Find the actual speed of the car :  
 a)  $17 \frac{6}{7}$  km / hr      b) 25 km / hr      c) 30 km / hr      d) 35 km / hr
29. A train running at  $\frac{7}{11}$  of its own speed reached a place in 22 hours. How much time could be saved if the train would have run at its own speed?  
 a) 7 hours      b) 8 hours      c) 14 hours      d) 16 hours
30. A man can reach a certain place in 30 hours. If he reduces his speed by  $\frac{1}{15}$ th, he goes 10 km less in that time. Find his speed.  
 a) 4 km / hr      b) 5 km / hr      c)  $5 \frac{1}{2}$  km / hr      d) 6 km / hr
31. Walking  $\frac{6}{7}$ th of his usual speed, a man is 12 minutes too late. The usual time taken by him to cover that distance is :  
 a) 1 hour      b) 1 hr 12 min      c) 1 hr 15 min      d) 1 hr 20 min
32. Starting from his house one day, a student's walks at a speed of  $2 \frac{1}{2}$  kmph and reaches his school 6 minutes late. Next day he increases his speed by 1 kmph and reaches the school 6 minutes early. How far is the school from his house?  
 a) 1 km      b)  $1 \frac{1}{2}$  km      c)  $1 \frac{3}{4}$  km      d) 2 km
33. A train when moves at an average speed of 40 kmph, reaches its destination on time. When its average speed becomes 35 kmph, then it reaches its destination 15 minutes late. Find the length of journey.  
 a) 30 km      b) 40 km      c) 70 km      d) 80 km
34. Robert is travelling on his cycle and has calculated to reach point A at 2 P.M. If he travels at 10 kmph; he will reach there at 12 noon if he travels at 15 kmph. At what speed must he travel to reach A at 1 P.M?  
 a) 8 kmph      b) 11 kmph      c) 12 kmph      d) 14 kmph
35. If a train runs at 40 kmph, it reaches its destination late by 11 minutes but if it runs at 50 kmph, it is late by 5 minutes only. The correct time for the train to complete its journey is  
 a) 13 min      b) 15 min      c) 19 min      d) 21 min

36. A man covered a certain distance at some speed. Had he moved 3 kmph faster, he would have taken 40 minutes less. If he had moved 2 kmph slower, he would have taken 40 minutes more. The distance (in km) is :
- a) 35      b)  $36\frac{2}{3}$       c)  $37\frac{1}{2}$       d) 40
37. A train can travel 50% faster than a car. Both start from point A at the same time and reach point B 75 kms away from A at the same time. On the way, however, the train lost about 12.5 minutes while stopping at the stations. The speed of the car is :
- a) 100 kmph      b) 110 kmph      c) 120 kmph      d) 130 kmph
38. Excluding stoppages, the speed of a bus is 54 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?
- a) 9      b) 10      c) 12      d) 20
39. A car covers a distance of 715 km at a constant speed. If the speed of the car would have been 10 km / hr more, then it would have taken 2 hours less to cover the same distance. What is the original speed of the car?
- a) 45 km / hr      b) 50 km / hr      c) 55 km / hr      d) 65 km / hr
40. In covering a certain distance, the speeds of A and B are in the ratio of 3 : 4. A takes 30 minutes more than B to reach the destination. The time taken by A to reach the destination is :
- a) 1 hour      b)  $1\frac{1}{2}$  hours      c) 2 hours      d)  $2\frac{1}{2}$  hrs
41. In covering a distance of 30 km, Abhay takes 2 hours more than Sameer. If Abhay doubles his speed, then he would take 1 hour less than Sameer, Abhay's speed is :
- a) 5 kmph      b) 6 kmph      c) 6.25 kmph      d) 7.5 kmph
42. Three persons are walking from a place A to another place B. Their speeds are in the ratio of 4 : 3 : 5. The time ratio to reach B by these persons will be :
- a) 4 : 3 : 5      b) 5 : 3 : 4      c) 15 : 9 : 20      d) 15 : 20 : 12
43. With a uniform speed a car covers the distance in 8 hours. Had the speed been increased by 4 km / hr, the same distance could have been covered in  $7\frac{1}{2}$  hours. What is the distance covered?
- a) 420 km      b) 480 km      c) 640 km  
b) Cannot be determined      e) None of these
44. Two men start together to walk to a certain destination, one at 3 kmph and another at 3.75 kmph. The latter arrives half an hour before the former. The distance is :
- a) 6 km      b) 7.5 km      c) 8 km      d) 9.5 km
45. If a person walks at 14 km / hr instead of 10 km / hr, he would have walked 20 km more. The actual distance travelled by him is :
- a) 50 km      b) 56 km      c) 70 km      d) 80 km
46. In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km / hr and the time of flight increased by 30 minutes. The duration of the flight is:
- a) 1 hour      b) 2 hours      c) 3 hours      d) 4 hours

47. It takes eight hours for a 600 km journey, if 120 km is done by train and the rest by car. It takes 20 minutes more, if 200 km is done by train and the rest by car. The ratio of the speed of the train to that of the car is :  
a) 2 : 3      b) 3 : 2      c) 3 : 4      d) 4 : 3
48. A thief steal a car at 2.30 p.m and drives it at 60 kmph. The theft is discovered at 3 p.m and the owner sets off in another car at 75 kmph. When will he overtake the thief?  
a) 4.30 p.m      b) 4.45 p. m      c) 5 p.m      d) 5.15 p.m
49. Two guns were fired from the same place at an interval of 10 minutes of 10 minutes and 30 seconds, but a person in the train approaching the place hears the second shot 10 minutes after the first. The speed of the train( in km / hr), supposing that speed travels at 330 metres per second, is :  
a) 19.8      b) 58.6      c) 59.4      d) 111.80
50. The distance between two cities A and B is 330 km. A train starts from A at 8 a.m and travels towards B at 60 km / hr. Another train starts from B at 9 a.m. and travels towards A at 75 km / hr. At what time do they meet?  
a) 10 a.m      b) 10.30 a.m      c) 11 a.m      d) 11.30 am

### KEY

- |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. c  | 2. d  | 3. d  | 4. d  | 5. c  | 6. c  | 7. a  | 8. a  |
| 9. d  | 10. b | 11. a | 12. c | 13. c | 14. d | 15. d | 16. a |
| 17. c | 18. d | 19. b | 20. b | 21. c | 22. b | 23. c | 24. c |
| 25. c | 26. b | 27. a | 28. d | 29. b | 30. c | 31. c | 32. c |
| 33. c | 34. c | 35. c | 36. d | 37. c | 38. b | 39. c | 40. c |
| 41. a | 42. d | 43. b | 44. a | 45. a | 46. a | 47. a | 48. a |
| 49. c | 50. c |       |       |       |       |       |       |

## 10. TRAINS

1. Find the time taken by a train 240 mt. long running at 54 km / hr, in crossing an electric pole.  
a)  $4\frac{4}{9}$  sec      b) 16 sec      c) 32 sec      d) 24 sec
2. Find the time taken by a train 360 mt. long running at 38 km / hr, in crossing a standing man.  
a) 36 sec      b) 10 sec      c) 72 sec      d) 32 sec
3. Find the speed of a train, if it crosses a telegraphic post in 20 seconds, its length being 450 mt.  
a)  $6\frac{1}{4}$  sec      b)  $22\frac{1}{2}$  m/sec      c)  $27\frac{1}{2}$  m/sec      d)  $28\frac{1}{2}$  m/sec
4. Find the time to cross a bridge of 180 mt. length by a train of 320 mt, length running at a speed of 45 km/hr?  
a) 20 sec      b) 40 sec      c) 60 sec      d) 65 sec
5. A train of 150 mt, length travels with a speed of 72 km/hr. How much time would the train take to cross a platform if 250 mt. length?  
a) 20 sec      b) 25 sec      c) 40 sec      d) 48 sec
6. Find the time taken by a procession of length 500 mt. moving at a rate of 10 mt/sec to cross street of 140 mt. length?  
a) 14 sec      b) 64 sec      c) 80 sec      d) 50 sec
7. A train 100 mt long is running at 36 km/hr takes seconds to bridge. What is the length of the bridge?  
a) 150 m      b) 250 m      c) 175 m      d) 300 m
8. A train 700 mt long is running at the speed of 72 km/hr. If it crosses a tunnel in 1 min, what is the length of the tunnel?  
a) 500 m      b) 750 m      c) 1200 m      d) 1900 m
9. A person sees a train passing over 1 km long bridge. The length of the train is half that of bridge. If the train clears the bridge in 2 min. What is the speed of the train?  
a) 54 km/h      b) 45 km/h      c) 36 km/h      d) None of these
10. A train of 180 mt, length is travelling at a rate of 45 km/hr. It cross another train moving in the same direction at a speed of 35 km/hr in 2 min. Find the length of the second train?  
a) 152.7m      b) 333.3 m      c) 260.3 m      d) 153.3 m
11. A train of 250 mt, length is travelling at the rate of 72 km/hr. It crosses another train of 250 mt, length moving in the same direction in 1 min and 40 sec. Find the speed of the second train?  
a) 54 km/h      b) 32 km/h      c) 72 km/h      d) 39 km/h
12. A train of length 150mt, takes 10 seconds to pass over train 100 my, long coming from the opposite direction, if the speed of the first train be 30 km/hr. What is the speed of the second train?  
a) 90 km/h      b) 60 km/h      c) 30 km/h      d) 72 km/h

13. Two trains running in the same direction at 40 km/hr and 22 km/hr completely pass one another in 1 min. If the length of the train is 125 mt. What is the length of the second train?
- a) 300 m      b) 250 m      c) 175 m      d) 190m
14. A train moving with a speed of 48 km/hr crosses another train moving at a speed of 30 km/hr in the same direction in 1 min 20 sec. The length of two trains are in the ratio of 5: 3. Find the lengths of the two trains?
- a) 100m 60m      b) 150m 90m      c) 200m 120m      d) 250m 150m
15. Two trains are running in opposite directions with speeds of 62 km/hr and 40 km/hr respectively. If the length of the first train is 250 mt and they cross each other in 18 sec. What is the length of the train?
- a) 150m      b) 260m      c) 320m      d) 480m
16. Two trains 128 mt and 132 mt long are running towards each other on parallel lines a 42 km/hr respectively. The faster train crosses a man in slower train in 18 sec. What is the length of faster train?
- a) 13 sec      b) 14 sec      c) 15 sec      d) 16 sec
17. Two trains 132 mt and 108 mt long are running in opposite directions, one at the rate of 32 km/hr and another at the rate of 40 km/hr. In what time will be clear of each other from the movement they meet?
- a) 10 sec      b) 11 sec      c) 12 sec      d) 16 sec
18. Two stations A & B are 110 km apart on a straight line. One train starts from A at 7 a.m and travels towards B at 20 km/hr, another train starts from B at 8 a.m and travels towards A at 25 km/hr. At what time will they meet?
- a) 10 A.M      b) 10.15 A.M      c) 11 A.M      d) 11.30 A.M
19. A train is running at the rate of 40 km/hr. A man also is going in the same direction, parallel to the train at the speed of 25 km/hr. If the train crosses the man in 48 sec. What is the length of the train?
- a) 100 m      b) 150 m      c) 200 m      d) 250 m
20. A train 100 mt long travels at 70 km/hr. A man is running at 10 km/hr in train at 10 km/hr in the same direction in which the train is going. In what time the train will pass the man?
- a) 6 sec      b) 12 sec      c) 18 sec      d) 20 sec
21. A train 270 mt long is moving at a speed of 25 km/hr. In what time it will cross a man coming from the opposite direction at a speed of 2 km/hr?
- a) 36 sec      b) 72 sec      c) 90 sec      d) 110 sec
22. The Pallu express leaves from Parindha at 9 am and reaches Brundha at 11 am and the Vallu express leaves from Brundha at 10 am and reaches Parindha at 1 pm. Find at what time both the trains meet each other?
- a) 10.24 am      b) 10.36 am      c) 11 am      d) None of these

23. The Gowthami express leaves Kakinada at 7 pm and reaches Vijayawada at 11 pm and the Vasista express leaves Vijayawada at 8 pm and reaches Kakinada at 1 am. Find at what time both the trains meet each other?  
a) 9.40 pm      b) 10.40 am      c) 10.40 pm      d) None of these
24. Two trains A and B start from the same terminal L and proceeds to the terminal K. Train A starts at 10 am and reaches at 6 pm and Train B starts at 12 noon and reaches at 4 pm. Find at what time does both the trains meet each other?  
a) 1 pm      b) 2 pm      c) 3 pm      d) 3.30 pm

### KEY

1.	b	2.	a	3.	b	4.	b	5.	a	6.	b
7.	a	8.	a	9.	b	10.	d	11.	a	12.	b
13.	c	14.	d	15.	b	16.	a	17.	c	18.	a
19.	c	20.	a	21.	a	22.	b	23.	a	24.	b

# 11. BOATS & STREAMS

1. A man can row with the stream at 11 km/hr and against the stream at 8 km/hr. What is the speed of the stream?  
a) 1.5 km/h      b) 9.5 km/h      c) 4 km/h      d) 3 km/h
2. A man can row upstream at 11 km/hr and downstream at 16 km/hr. Find man's rate in still water?  
a) 5 km/h      b) 13.5 km/h      c) 2.5 km/h      d) 8 km/h
3. A man can row downstream at 14 km/hr and upstream at 9 km/hr. What is man's rate in still water?  
a) 11.5 km/h      b) 2.5 km/h      c) 7 km/h      d) 5 km/h
4. The speed of a boat in downstream is 15 km/hr and the rate of the stream is 1.5 km/hr. What is the speed of the stream?  
a) 12 km/h      b) 13.7 km/h      c) 8.15 km/h      d) 17 km/h
5. If a man's rate with the current is 12 km/hr and the rate of the current is 1.5 km/hr. What is man's rate against the current?  
a) 13.5 km/h      b) 10.5 km/h      c) 9 km/h      d) 5.25 km/h
6. The speed of a boat in downstream is 30 km/hr and the speed of the stream is 5 km/hr. What is the speed of boat in upstream?  
a) 35 km/h      b) 25 km/h      c) 20 km\h      d) 10 km\h
7. A boat goes 40 km upstream in 8 hrs and 36 km downstream is 6 hrs. What is the speed of the boat in standing water?  
a) 5.5 km/h      b) 1 km/h      c) 5 km/h      d) 6 km/h
8. A man rows upstream 16 km and downstream 28 km, taking 5 hrs each time. What is the velocity of the current?  
a) 1.4 km/h      b) 1.2 km/h      c) 4.4 km/h      d) 5.6 km/h
9. A boat moves upstream at the rate of 1 km in 10 min and downstream at the rate of 1 km in 6 min. What is the speed of the current?  
a) 4 km/h      b) 2 km/h      c) 6 km/h      d) 10 km/h
10. A man can row at 5 km/hr in still water and the velocity of the current is 1 km/hr. It takes him 1 hr to row to a place and back. How far is the place?  
a) 4.8 km      b) 2.4 km      c) 12 km      d) 1.2 km
11. A man can row 6 km\hr in still water. When the river is running at 1.2 km/hr, it takes him 1 hr to row to a place and back. How far is the place?  
a) 12 km      b) 7.2 km      c) 4.88 km      d) 2.88 km
12. A boat travels upstream from B to A downstream from A and B in 3 hrs. If the speed of the boat in still water is 9 km/hr and the speed of the current is 3 km/hr. What is the distance between A and B?  
a) 6 km      b) 12 km      c) 24 km      d) 10 km

13. Speed of a boat in standing water is 6 km/hr and the speed of the stream is 1.5 km/ hr. A man rows to a place at a distance of 22.5 km and comes back to the standing point. What is the total time taken by him?

- a) 4 hrs                  b) 6 hrs                  c) 8 hrs                  d) 10 hrs

14. Man can swim 3 km/hr in still water. If the velocity of the stream be 2 km/hr, what is the time taken by him to swim to a place 10 km upstream and back?

- a) 10 hrs                  b) 11 hrs                  c) 12 hrs                  d) 14 hrs

**KEY**

1.      a      2.      b      3.      a      4.      a      5.      c      6.      c  
7.      a      8.      b      9.      b      10.     b      11.     d      12.     b  
13.     c      14.     c

## 12. PERCENTAGES

1. Express the following percentage into their equivalent simple fractions:
- a) 40%      b) 0.5 %      c) 0.25%      d)  $33\frac{1}{3}\%$

2. Find the percentages equivalents to the following simple fractions:
- a)  $\frac{1}{5}$       b)  $\frac{3}{4}$       c)  $2\frac{1}{2}$       d)  $12\frac{1}{2}$

3. Find the values of the following:
- a) 40% of 560      b) 10% of 360      c) 15% of 280  
d)  $6\frac{1}{4}\%$  of 320      e)  $8\frac{1}{3}\%$  of 720

4. Find the percentage of the following:
- a) 210 of 840      b) 125 of 375      c) 44 of 220  
d) 15 of 180      e) 9 of 90

5. The price of an article is cut by 10%, to restore it to the former value, by what percent the new price must be increased?

- a) 10%      b) 11 %      c) 9 %      d)  $11\frac{1}{9}\%$

6. The price of an article is cut by 25%, to restore it to the former value; by what percent the new price must be increased?

- a)  $33\frac{1}{3}\%$       b)  $33\frac{2}{3}\%$       c)  $16\frac{1}{3}\%$       d)  $16\frac{2}{3}\%$

7. The price of an article is cut by 50%, to restore it to the former value, by what percent the new price must be increased?

- a) 25%      b) 50%      c) 75%      d) 100%

8. The price of an article is increased by 25%, to restore it to the former value, by what percent the new price must be decreased?

- a) 20%      b) 25%      c)  $33\frac{1}{3}\%$       d) 40 %

9. The price of an article is increased by 40%, restore it to the former value, by what percent the new price must be decreased?

- a)  $28\frac{4}{7}\%$       b)  $16\frac{2}{3}\%$       c)  $33\frac{1}{3}\%$       d) 40%

10. The commission of a broker remains unchanged though the rate of commission is increased from 4% to 5%. What is the percentage of slump in the business?

- a) 20%      b) 25%      c) 30%      d) 35%

11. The price of sugar is increased by 20. If the expenditure is not allowed to increase, what is the ratio between the reduction in consumption and the original consumption?

- a) 6:1      b) 1:6      c) 3:5      d) 5:3

12. Water tax is increased by 20% but its consumption is decreased by 20%. Then what is the decrease in the expenditure of money?

- a) 4% dec      b) 4% in c      c) 40% in c      d) no change

13. If the price of tea is increased by 25%, find by how much percent a householder must reduce her consumption of tea so as not to increase the expenditure?

- a) 25%      b) 20%      c)  $16\frac{2}{3}\%$       d)  $16\frac{1}{3}\%$

14. The price of sugar increased by 12.5%. To maintain previous budget, to what percent the consumption should be reduced?
- a)  $33\frac{1}{3}\%$       b)  $16\frac{2}{3}\%$       c)  $11\frac{1}{9}\%$       d) 12.5%
15. Rakesh credits 15% of his salary in his fixed deposit account and spends 30% of the remaining amount on groceries. If the cash in hand is Rs. 2,380. What is his salary?
- a) Rs. 42,500      b) Rs. 3000      c) Rs. 3000      d) Rs. 4000
16. A man donated 5% of his income to a trust and deposited 20% of the remaining in a bank. If he now has Rs. 1919 left, what is his income?
- a) Rs. 3535      b) Rs. 2525      c) Rs. 3750      d) Rs. 3750
17. From the salary of an officer, 10% is deducted as house rent. 15% of the rest he spends on children's education and 10% of the balance he spends on clothes; he is left with Rs. 1377, what is his salary?
- a) Rs. 1500      b) Rs. 1750      c) Rs. 2000      d) Rs. 2500
18. A fruit seller had some apples. He sells 40% and still has 420 apples. How many he had originally?
- a) Rs. 1700      b) Rs. 700      c) Rs. 630      d) Rs. 300
19. In an examination 65% of the total examinees passed. If the number of failures is 420, what is the total number of examinees?
- a) 1200      b) 780      c) 360      d) 270
20. In a college election, a candidate secured 62% of the votes and is elected by a majority of 144 votes. What is the total number of votes polled?
- a) 362      b) 600      c) 400      d) 168
21. In an election between two candidates, the candidate who got 30% of the votes polled is defeated by 15,000 votes. What is the number of votes polled by the winning candidate?
- a) 26,250      b) 40,250      c) 35,250      d) 39,250
22. In an election between two candidates, one got 55% of the valid votes, 20% of the votes were invalid. If the total number of votes was 7,500 what is the number of votes that the other candidate gets?
- a) 2,700      b) 6000      c) 4,200      d) 5,600
23. In an examination, it is required to get 36% of maximum marks to pass. A student got 113 marks and declared failed by 85 marks. What were the maximum marks?
- a) 550      b) 297      c) 198      d) 239
24. A student who secures 20% marks in an examination fails by 30 marks. Another student who secures 32% marks gets 42 marks more than those required to pass. What is the percentage of marks required to pass?
- a) 20      b) 15      c) 25      d) None of these
25. A candidate needs 35% marks to pass. If he gets 96 marks and fails by 16 marks, then what is the maximum marks?
- a) 112      b) 320      c) 208      d) 328
26. One litre of water is evaporated from 6 litres of a solution containing 5% salt. What is the percentage of salt in the remaining solution?
- a) 6%      b) 4%      c) 8%      d) 5%

27. A mixture contains alcohol and water in the ratio 4:3. If 7 litres of water is added to the mixture, the ratio of the alcohol and water 3:4. What is the quality of alcohol in the mixture?
- a) 10 lits      b) 15 lits      c) 12 lits      d) 8 lits
28. A mixture of 40 litres of milk and water contains 10% water. How much water should be added to this so that water may be 20% in the new mixture?
- a) 2.5 lits      b) 4 lits      c) 3.5 lits      d) 5 lits
29. 20 litres of a mixture contain milk and water in the ratio 5:3. If 4 lts. Of this mixture are replaced by 4 lts. Of milk, what is the ratio of milk and water in the new mixture?
- a) 3:7      b) 7:3      c) 2:7      d) 7:2
30. The population of a town is 1,76,400. It increases annually at the rate of 5% per annum. What will be its population after 2 years?
- a) 1,94,040      b) 1,94,400      c) 1,94,481      d) 2,00,000
31. The population of a town is increased by 5 % annually. If it is 15,342 now. What is its population 2 years ago?
- a) 12,000      b) 14,000      c) 15,000      d) 1,00,000
32. The population of a town is 8,000. It increases by 10%, during first year and by 20% during the second year. What is its population after 2 years?
- a) 10,560      b) 10,750      c) 10,340      d) 10,900
33. The current birth rate per thousand is 32 whereas corresponding death rate is 11 per thousand. What is the net growth rate in terms of population increase in percentage?
- a) 21%      b) 210%      c) 2.1%      d) 0.21%
34. The value of a machine depreciates 10% annually. If its present value Rs. 4, 000, what is its value 2 years hence?
- a) 3,200      b) 3,240      c) 3,260      d) 3,280
35. The value of a machine depreciates at the rate of 10% per annum. If its present value is Rs 81,000 what will be its worth after 3 years?
- a) 59,049      b) 69,049      c) 70,000      d) 54,000
36. The value of a machine depreciates at the rate of 10% every year. It was purchased 3 years ago. If it's present value is Rs. 8,748. What was its purchased price?
- a) 12,000      b) 12,500      c) 13,000      d) 6,750
37. The value of a machine depreciates at the rate of 20% every six months. It was purchased 1 year ago. What was its purchased price, if its present value is Rs. 44,000?
- a) 61,600      b) 68,750      c) 69,850      d) 70,000
38. In an examination, 42% students failed in Hindi and 52% failed in English. If 17% failed in both the subjects. What is the percentage of those who passed in both the subjects?
- a) 11%      b) 23%      c) 15%      d) 77%
39. 72% of the students of a certain class took biology and 44% took Mathematics. If each student took Biology or Mathematics and 40 students took both, what is the total number of students in the class?
- a) 100      b) 150      c) 90      d) 250

40. If the side of a square increased by 30%. At what percent its area is increased?  
a) 30%                    b) 39%                    c) 60%                    d) 69%
41. The length of a rectangle is decreased by 10%. Then what is the decrease in the area of new rectangle?  
a) 10%                    b) 11%                    c) 20%                    d) 21%
42. The radius of a circle is increased by 1%. What is the increased percent in its area?  
a) 21%                    b) 2.1%                    c) 2.01%                    d) 0.21%
43. The length of rectangle is increased by 60%, by what percent would the width have to be decreased to maintain the same area?  
a) 40%                    b) 37.5%                    c) 38.5%                    d) 42%
44. In measuring the side of a square, an error of 5% in excess is made. What is the error percent in the calculated area?  
a) 10%                    b) 10.25%                    c) 10.5%                    d) 11%

**KEY**

- |             |                      |            |                     |        |       |
|-------------|----------------------|------------|---------------------|--------|-------|
| 1. a) $2/5$ | b) $1/200$           | c) $1/400$ | d) $1/3$            |        |       |
| 2. a) 20%   | b) 75%               | c) 250%    | d) 1250%            |        |       |
| 3. a) 224   | b) 36                | c) 42      | d) 20               | e) 60  |       |
| 4. a) 25%   | b) $33\frac{1}{3}\%$ | c) 20%     | d) $8\frac{1}{3}\%$ | e) 10% |       |
| 5. d        | 6. a                 | 7. d       | 8. a                | 9. a   | 10. a |
| 10. b       | 11. b                | 12. a      | 13. b               | 14. c  | 15. d |
| 16. b       | 17. c                | 18. b      | 19. a               | 20. b  | 21. a |
| 22. a       | 23. a                | 24. c      | 25. b               | 26. a  | 27. b |
| 28. d       | 29. b                | 30. c      | 31. b               | 32. a  | 33. c |
| 34. b       | 35. a                | 36. a      | 37. b               | 38. b  | 39. d |
| 40. d       | 41. a                | 42. c      | 43. b               | 44. b  |       |

## 13. PROFIT & LOSS

1. By selling 33 mts. Of cloth John gains the selling price of 11 mts. Find the gain percent.  
a) 11%      b) 20%      c) 35%      d) 50%
2. By selling 100 lts. Of milk Ramesh gains the selling price of 25 lts. Find the gain percent.  
a)  $33\frac{1}{3}\%$       b)  $33\frac{2}{3}\%$       c)  $16\frac{1}{3}\%$       d) 45%
3. A boy buys 20 apples for a rupee and sells 16 for a rupee. Find his gain percent.  
a) 20%      b) 25%      c) 30%      d) 35%
4. A man buys apples at the rate of 6 for Rs. 5/- and sells them at the rate of 5 for Rs. 6/-.  
How much is his gain?  
a) 25%      b) 44%      c)  $33\frac{1}{3}\%$       d)  $16\frac{1}{3}\%$
5. The cost price of 12 tables is equal to selling price of 16 tables, what is the loss percent?  
a) 20%      b) 25%      c) 30%      d) 60%
6. A man gains 10% by selling a certain article for a certain price if he sells it at double the price, what would be the profit?  
a) 20%      b) 120%      c) 40%      d) 50%
7. If oranges are brought at the rate of 15 for a rupee, how many must be sold for a rupee so as to gain 25%  
a) 10      b) 11      c) 12      d) 13
8. A man brought oranges at the rate of 24 for a rupee. How many should he sell for a rupee to gain 20% on his outlay?  
a) 18      b) 20      c) 22      d) 16
9. A man brought apples at the rate of 30 for Rs. 100/-. How many should he sell for Rs. 50/- as to gain 50%?  
a) 5      b) 10      c) 15      d) 20
10. If oranges are brought at the rate of 12 for a rupee. How many should he sell for a rupee to gain 20% on his outlay?  
a) 6      b) 8      c) 4      d) 10
11. A purchased a house for Rs. 3,125/- and sold it to B after realizing a profit of 8%. B sold it to C at a gain of 6%. What C pays for it?  
a) Rs. 3487.50      b) Rs. 3568.50      c) Rs. 3577.50      d) Rs. 3000
12. A purchased a house for Rs. 6,250/- and sold it to B at a gain of 10%. B sold it to C at a gain of 5%. What C pays for it?  
a) Rs. 7200      b) Rs. 7218.75      c) Rs. 7218.25      d) Rs. 7300
13. A purchased a car for Rs. 50,000/- and sold to B at a gain of 4%. B sold it to C at a gain of 6%. What C pays for it?  
a) Rs. 55,000      b) Rs. 52,000      c) Rs. 52,120      d) Rs. 55,150

14. An article costing Rs. 84/- was sold at a profit of 50%. The second purchaser sold it once again at a loss of 25%. At what price did he sell?  
a) Rs. 90              b) Rs. 92              c) Rs. 98.50              d) Rs. 94.50
15. A shopkeeper increases the price of an article first by 25% and then by 20%. What is the percent increase?  
a) 45%              b) 50%              c) 60%              d) 65%
16. A shopkeeper increases the price of an article first by 15% and then by 10%. What is the percent increase?  
a) 26%              b) 26.5%              c) 30%              d) 32.5%
17. A retailer increases the price of an article first by 50% and then reduces price by 50%. What is percent gain/loss?  
a) 25% gain              b) 25% loss              c) 20% gain              d) 20% loss
18. A retailer increases the price of an article first by 100% and then reduces price by 100%. What is percent gain/loss?  
a) 100% gain              b) 100% loss              c) 50% gain              d) 50% loss
19. A man sells two radio sets for Rs. 250 each. At one he gains 10% and on the other he loses 10%. What is his total gain or loss?  
a) Rs. 5.05 loss              b) Rs. 5.05 gain              c) Can't say              d) None of these
20. A man sells 2 horses at the rate of Rs. 1,500 each. At one he gains 25% and on the other he loses 25%. What is his total gain/loss?  
a) Rs. 200 gain              b) Rs. 200 loss              c) Can't say              d) None of these
21. A man sells 2 horses at the same price on one he makes a profit of 10% and on the other he loses 10%; on the whole whether he gets profit and loss; how much%?  
a) 1% loss              b) 1% gain              c) 20% gain              d) no loss no gain
22. A man sells two tables at same price, on one he makes a profit of 50% and on the other he loses 50%; on the whole whether he gets profit or loss; how much%?  
a) 25% gain              b) 25% loss              c) 50% loss              d) no loss no gain
23. An electric Iron was sold at a profit of 15%, had it been sold for Rs. 600/- the profit would have been 20%. What is the former selling price of electric iron?  
a) Rs. 500              b) Rs. 575              c) Rs. 600              d) Rs. 675
24. A man sells a watch at a gain of 5%. If it had been sold for Rs. 15 more he would have gained 8%. What is the cost price?  
a) Rs. 500              b) Rs. 525              c) Rs. 540              d) Rs. 600
25. A man sold his watch at a gain of 5%. If it had been sold for Rs. 15 more he would have gained 10%. What is the cost price of the watch?  
a) Rs. 300              b) Rs. 360              c) Rs. 375              d) Rs. 400
26. If the selling an article for Rs. 125, a merchant loses 5%. At what price should he sell it to gain 14%?  
a) Rs. 150              b) Rs. 135              c) Rs. 140              d) Rs. 175

27. A man sells an article at a loss of 10%; if he had received Rs. 5 more he would gained 12.5%. What did the article cost him?  
 a) Rs. 20      b) Rs. 22      c)  $\text{Rs. } 22 \frac{2}{9}$       d) Rs. 25
28. An article when sold at a gain of 5% yields Rs. 15 more than when sold at a loss of 5%. What was its cost price?  
 a) Rs. 100      b) Rs. 120      c) Rs. 125      d) Rs. 150
29. A man sells a watch at a gain of 10%. If it had been sold for Rs.50 more he would have gained 14%. Find the cost price?  
 a) Rs. 1000      b) Rs. 1250      c) Rs. 1500      d) Rs. 2000
30. Dayanand purchased 150 kg. of wheat at the rate of Rs. 700 per quintal. He sold 50 kg and made 10% profit. At what rate per Kg should he sell the remaining to get profit of 20% on the total deal?  
 a) Rs. 6      b) Rs. 7.50      c) Rs. 8.75      d) Rs. 9
31. A trader purchased 250 kg. of rice at the rate of Rs.500 per quintal. He sold 100 kg and was lost 5%. At what rate per Kg should he sell the remaining to get profit of 10% on the total deal?  
 a) Rs. 5      b) Rs. 6      c) Rs. 8      d) Rs. 9.25
32. A man has goods worth Rs. 300; he sells one third of them so as to loose 10%. By how much percent should he raise the selling price in order to gain 10% on the whole?  
 a) 10%      b) 20%      c) 30%      d) 40%
33. A man has goods worth Rs. 1500; he sells two third of them so as to lose 10%. By how much percent should he raise the selling price in order to do the business in no profit or loss basis.  
 a) 10%      b) 15%      c) 20%      d) 25%
34. The price of sugar being raised by 20%. By how much percent must reduces his consumption of that article so as not to increase his expenditure.  
 a)  $33 \frac{1}{3}\%$       b)  $16 \frac{2}{3}\%$       c) 20%      d) 40%
35. If the price of sugar is increased by 10%, by what percent should its consumption be reduced so that the expenses on sugar may remain the same.  
 a)  $33 \frac{1}{3}\%$       b)  $16 \frac{2}{3}\%$       c)  $9 \frac{1}{11}\%$       d) 42%
36. The price of a gas cylinder has gone up to 25%. The percentage reduction in consumption of gas by a house holder so as not to increase the expenditure on gas is.  
 a) 20%      b) 25%      c) 50%      d) 75%
37. Because of a decrease of manpower, a top factory reduced its monthly output by 20%. What is the necessary percent increase of manpower to bring the output to normal production?  
 a) 20%      b) 25%      c) 40%      d) 50%
38. A trader buys oranges at the rate 5 for Rs. 6 and sells them at rate 6 for Rs. 5. How much does his loss percent.  
 a) 11%      b) 25%      c) 44%      d)  $30 \frac{5}{9}\%$

39. A man brought two articles, one costing Rs. 500 more than the other. He charged 8 % profit on the dearer article and loss 3% on the other and on whole he gained Rs. 240. Find the cost of each article.
- a) Rs. 2500, Rs. 2000                          b) Rs. 3500, Rs. 3000  
b) Rs. 4500, Rs. 4000                          d) Rs. 5500, Rs. 5000
40. A grocer sells sugar at cost price but earns a profit of 25% by weighing less. How much does he weigh for a kilogram?
- a) 1200gm                          b) 800gm                          c) 1600gm                          d) 900gm

**KEY**

- |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|
| 1. d  | 2. a  | 3. b  | 4. b  | 5. b  | 6. b  | 7. c  |
| 8. b  | 9. b  | 10. c | 11. c | 12. b | 13. d | 14. d |
| 15. b | 16. b | 17. b | 18. b | 19. a | 20. b | 21. a |
| 22. b | 23. b | 24. a | 25. c | 26. a | 27. c | 28. d |
| 29. b | 30. c | 31. b | 32. b | 33. c | 34. b | 35. c |
| 36. a | 37. b | 38. d | 39. b | 40. b |       |       |

## 14. DISCOUNT

1. The marked price of a traders goods are 30% higher than cost price. But he gives a discount of 10%. What percentage of gain does he get?  
a) 20%                    b) 10%                    c) 17%                    d) 12%
2. The marked price of a traders goods are 50% higher than his cost price. But he gives a discount of 50%. What is loss?  
a) 25%                    b) 5.5%                    c) 75%                    d) 90%
3. What is a single discount equivalent to a discount series of 40% and 20%?  
a) 48%                    b) 52%                    c) 36%                    d) 64%
4. What is a single discount equivalent to a discount series of 50% and 25%?  
a) 62.5%                 b) 37.5%                 c) 25%                    d) 75%
5. What is a single discount equivalent to a discount series of 20% and 20%?  
a) 64%                    b) 48.8%                  c) 72%                    d) 28%
6. What is a single discount equivalent to a discount series of 25% and 25%?  
a) 56.25%                b) 43.75%                c) 60%                    d) 48%
7. A trader gives a discount of 10% on the marked price of a transistor in the bargain makes profit of 10%. If the marked price of the transistor be Rs. 330, what is its cost price?  
a) Rs. 270                b) Rs. 297                c) Rs. 300                d) Rs. 289
8. A trader gives a discount of 20% on the marked price of an article but in the bargain makes a profit of 20%. If the marked price of the article be Rs.500, what is its cost price?  
a) 400                    b) Rs. 300                c) Rs. 333.33            d) Rs. 280
9. A trader gives a discount of 25% on the marked price but in the bargain makes a profit of 10%. If the marked price be Rs. 1500, what is the cost price?  
a) Rs.  $1022\frac{5}{11}$             b) Rs.  $1022\frac{6}{11}$             c) Rs.  $1022\frac{7}{11}$                 d) Rs.  $1022\frac{8}{11}$
10. Giving a discount of 40% the trader makes a profit of 25% on the outlay. If the marked price be Rs. 500, what is C.P?  
a) Rs. 300                b) Rs. 240                c) Rs. 180                d) Rs. 150
11. A man's price is 20% above the cost price. He allows his customers a discount and makes a profit of 8%. Find the rate of discount.  
a) 10%                    b) 12%                    c) 20%                    d) 4%
12. How much percent above the cost price should a shopkeeper mark his goods so as to earn a profit of 36% after allowing a discount of 15% on the marked price?  
a) 20%                    b) 30%                    c) 40%                    d) 60%
13. Pankaj bought a bag with 20% discount on the original price. He got a profit of Rs. 50, by selling at 150% of the price at which he bought. What was the original price of the bag?  
a) Rs. 125                b) Rs. 150                c) Rs. 160                d) Rs. 175
14. How much must be added to the cost price of goods so that a profit of 20% of Rs. 50, by selling at 150% of the price at which he bought. What was the original price of this bag?  
a)  $33\frac{1}{3}\%$                 b)  $33\frac{2}{3}\%$                 c)  $16\frac{1}{3}\%$                 d) 35%

15. The list price of a watch Rs. 160. A retailer bought the same watch for Rs. 122.40. He got two successive discounts one at 10% and the other at a rate which was-not legible. What is the second discount rate?
- a) 10%                      b) 15%                      c) 20%                      d) 25%

**KEY**

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. c  | 2. a  | 3. b  | 4. a  | 5. b  | 6. b  |
| 7. a  | 8. c  | 9. d  | 10. b | 11. a | 12. d |
| 13. a | 14. a | 15. b |       |       |       |

# 15. SIMPLE INTEREST

1. Find the simple interest on Rs. 1460 at 5% p.a. from 3<sup>rd</sup> July to 19<sup>th</sup> November. (appr).  
a) 28      b) 56      c) 72      d) 14
2. Find the simple interest on Rs. 1600 at  $\frac{41}{2}\%$  p.a. for 2 years 9 months.(in rs)  
a) 99      b) 198      c) 200      d) 216
3. Find the simple interest on Rs. 5664 at  $13\frac{3}{4}\%$  p.a. for 9 months.(in rs)  
a) 485      b) 514      c) 584      d) 604
4. Find the simple interest of Rs. 3125 at 15% p.a. for 73 days.(in rs)  
a) 93.75      b) 937.5      c) 9.375      d) 93.75
5. Find the simple interest on Rs. 1600 from March 3<sup>rd</sup> to July 27<sup>th</sup> at  $3\frac{3}{4}\%$  per annum(in rs)  
a) 21      b) 22      c) 23      d) 24
6. What sum of money will yield Rs. 60 as simple interest at 6% p.a. in 5 years?  
a) Rs. 100      b) Rs. 150      c) Rs. 200      d) Rs. 600
7. What sum of money will produce Rs. 143 as simple interest at  $2\frac{1}{2}\%$  p.a. in  $3\frac{1}{4}$  years.  
a) Rs. 160      b) Rs. 570      c) 1760      d) Rs. 1920
8. The simple interest on a certain sum for 3 years at 14% p.a. is Rs. 235.50. Find the sum.  
a) Rs. 235.20      b) Rs. 784      c) Rs. 560      d) Rs. 780
9. Interest on a certain sum of money for  $2\frac{1}{3}$  years at  $3\frac{3}{4}\%$  p.a. is Rs. 210. Find the sum.  
a) Rs. 800      b) Rs. 1600      c) Rs. 2400      d) Rs. 3200
10. Find the rate percent per annum at which the interest on Rs. 600 be Rs. 156 in 2 years.  
a) 10%      b) 12%      c) 13%      d) 15%
11. At what rate percent per annum will the interest on Rs. 550 be Rs.66 in 3 years.  
a) 2%      b) 4%      c) 6%      d) 8%
12. A sum of Rs. 468.75 was lent out at simple interest and at the end of 1 year 8 months the total amount was Rs. 500. Find the rate percent per annum.  
a) 4%      b) 5%      c) 6 %      d) 10%
13. If Rs. 1200 amounts to Rs. 1440 in 4 years at S.I. find out the rate of interest per annum.  
a) 4%      b) 5%      c) 6 %      d) 10%
14. If the interest on money be 1 paisa per rupee per month, what is the rate percent per annum.  
a) 10%      b) 12%      c) 15%      d) 20%
15. In what time will Rs. 8500 amount to Rs. 14620 at  $4\frac{1}{2}\%$  p.a.  
a) 18 years      b) 16 years      c) 12 years      d) 9 years
16. Rs. 5000 amounts to Rs. 6100 at  $51\frac{1}{2}\%$  per annum. Find the time.  
a) 4 years      b) 10 years      c) 16 years      d) 8 years

17. In what time will Rs. 3546 amount to Rs. 7092 at  $3\frac{1}{2}\%$  simple interest?
- $20\frac{2}{7}$  years
  - $20\frac{3}{7}$  years
  - $28\frac{4}{7}$  years
  - $20\frac{5}{7}$  years
18. In what time will the interest on Rs. 350 amount to Rs. 42 at 7% p.a. simple interest.
- $1\frac{1}{7}$  years
  - $1\frac{3}{7}$  years
  - $1\frac{4}{7}$  years
  - $1\frac{5}{7}$  years
19. At what rate percent will an amount double itself in 20 years at simple interest.
- 4%
  - 6%
  - 5%
  - 10%
20. At what rate percent p.a. on simple interest will a sum of money triple itself in 25 years.
- 2%
  - 4%
  - 6%
  - 8%
21. At what rate percent p.a. on S.I. will a sum of money double in 30 years.
- 4%
  - 10%
  - 15%
  - $3\frac{1}{3}\%$
22. A sum of money will triples itself in 20 years at simple interest with yearly rate of.
- 5%
  - 10%
  - 15%
  - 20%
23. At what rate percent per annum will a sum of money becomes 5 times in 20 years at simple interest.
- 20%
  - 25%
  - 10%
  - 15%
24. In how many years will a sum of money double itself at 12% p.a.
- 8 years
  - 7 years
  - $8\frac{1}{3}$  years
  - $8\frac{2}{3}$  years
25. In how many years will a sum of money become thrice at 10% p.a. simple interest.
- 10 years
  - 20 years
  - 15 years
  - 30 years
26. In what time will a sum of money double itself at 6% p.a. S.I.
- $16\frac{2}{3}$  years
  - $33\frac{1}{3}$  years
  - $16\frac{2}{3}$  years
  - $33\frac{2}{3}$  years
27. In what time does a sum of money will quadruple itself at simple interest rate of 5% p.a.
- 20 years
  - 30 years
  - 40 years
  - 60 years
28. Find in what time a given sum of money will quadruple itself at simple interest at the rate of 1 paise per rupee per month.
- 10 years
  - 25 years
  - 30 years
  - 40 years
29. At what rate of interest will a sum of money become  $\frac{7}{5}$  of itself in 8 years.
- 5%
  - 10%
  - 15%
  - 20%
30. At what rate of percent p.a. if the simple interest after 5 years is  $\frac{1}{4}$ th of the amount lent.
- 4%
  - 5%
  - 6%
  - 10%
31. A sum of money becomes  $\frac{9}{5}$  of itself in 4 years at certain rate of simple interest per annum the rate of interest is.
- 15%
  - 20%
  - 25%
  - 10%
32. A sum of money doubles itself in 10 years at S.I. In how many years will it amount to 8 times itself.
- 50 years
  - 60 years
  - 70 years
  - 80 years
33. A sum of money becomes double itself in 5 years at S.I. In how many years will it become 4 times at the same rate.
- 10 years
  - 15 years
  - 20 years
  - 25 years

34. A sum of money doubles itself in 4 years at S.I. In how many years will it amount o 8 times itself.  
 a) 32 years      b) 28 years      c) 24 years      d) 16 years
35. A sum of money becomes fourfold itself in 5 years at S.I. In how many years will it amount to 6 times at the same  
 a) 8 years      b)  $8\frac{1}{3}$  years      c)  $8\frac{2}{3}$  years      d)  $8\frac{4}{3}$  years
36. A sum of money which doubles itself in 10 years four folds itself at the same rate of interest in --- years.  
 a) 15 years      b) 30 years      c) 45 years      d) 60 years
37. A certain sum of money amount to Rs. 756 in 2 years and to Rs. 873 in 3 1/2 years.  
 a) Rs. 678      b) Rs. 600      c) Rs. 717      d) Rs. 800
38. A sum of money lent at simple interest amount to Rs. 888 in 4 years and to Rs. 1073 in 9 years. Find the sum.  
 a) Rs. 740      b) Rs. 840      c) Rs. 1000      d) Rs. 980
39. A sum amounts to Rs. 702 in 2 years and Rs. 783 in 3 years. Find the sum.  
 a) Rs. 640      b) Rs. 540      c) Rs. 684      d) Rs. 650
40. A sum of money amounts to Rs. 8500 in 3 years and Rs. 9250 in 4 years. What is the rate percent.  
 a) 3%      b) 4%      c) 6%      d) 12%
41. A man had Rs.2000 part of which he lent at 5% and the rest at 4%. The whole interest was Rs. 96. How much did he lent at 4%.  
 a) Rs. 600      b) Rs. 400      c) Rs. 800      d) Rs. 1200
42. A former borrowed Rs. 25,000 from two money lenders. For one loan he paid 12% p.a. and for the other 14% p.a.. The total interest paid for one year was Rs. 3260. How much did he borrow at 14% p.a.  
 a) Rs. 12000      b) Rs. 13000      c) Rs. 12500      d) Rs. 18000
43. A person had Rs. 6000/- with him. He invested some money at 14% p.a. and balance at 15% p.a. Simple interest. After two years, he got Rs. 1750 as interest. Find the sum invested by him at 14% and 15% respectively.  
 a) Rs.2000, Rs.4000 b) Rs.2500, Rs.3500 c) Rs.3000, Rs.3000 d) Rs.4500, Rs.1500
44. A sum of money was lent partly at 5% and partly at 8% S.I. Total interest received after 3 years was Rs. 300. How much was lent at 8%?  
 a) Rs. 800      b) Rs. 1000      c) Rs. 1200      d) Rs. D.I
45. Sabins lends Rs. 1550 at S.I. Some of it at 8% and the rest at 6%. After 3 years she gets Rs. 325.50 in all. How much had she lent at 8%?  
 a) Rs. 500      b) Rs. 775      c) Rs. 800      d) Rs. 400
46. Rs. 8000 amounts to Rs. 9200 in 3 years at S.I. If the interest rate is increased by 5% to how much would it amount?  
 a) Rs. 6600      b) Rs. 6000      c) Rs. 5000      d) Rs. 10400
47. Rs. 2000 amounts to Rs. 2400 in 2 years at S.I. If the interest is decreased by 1% to how much would it amount.  
 a) Rs. 1000      b) Rs. 1500      c) Rs. 2360      d) Rs. 1350

48. Rs. 750 amounts to Rs. 900 in 2 years at S.I. If the interest rate is doubled, by how much would it amount?
- a) Rs. 2300      b) Rs. 1050      c) Rs. 3800      d) Rs. 4000
49. A sum was put at S.I at a certain rate for 2 years. Had it been put at 1% higher rate, it would have fetched Rs. 24 more. What is the sum.
- a) Rs. 800      b) Rs. 1000      c) 1200      d) Rs. 2000
50. When the rate of interest in a bank is reduced from 5% to 4%, a man deposits Rs. 2000 and his annual income remains the same. Find the original deposit.
- a) Rs. 5000      b) 1200      c) Rs. 8000      d) Rs. 4000
51. A sum of money amounts to Rs. 460 in 4 years at  $3\frac{3}{4}\%$ . What would it amount to if the rate is  $6\frac{1}{4}\%$  and time 6 years?
- a) Rs. 250      b) Rs. 550      c) Rs. 600      d) Rs. 750
52. A man invested  $\frac{1}{3}$  of his capital at 7%,  $\frac{1}{4}$  at 8% and the remainder at 10%. If his annual income is Rs. 561, what is his capital?
- a) Rs. 6600      b) Rs. 6000      c) Rs. 5000      d) Rs. 3800
53.  $\frac{1}{3}$  of my capital is invested at 4% and  $\frac{1}{4}$  of the capital at 3%. The rest of the capital is invested at 5%. If the annual income on the capital be Rs. 125, what is the capital?
- a) Rs. 2800      b) Rs. 3000      c) Rs. 3800      d) Rs. 4000
54. A sum of Rs. 2600 is lent out in two parts in such a way that the interest on one part at 10% for 5 years is equal to that on another part at 9% for 6 years. What is the sum lent out at 10%?
- a) Rs. 1000      b) Rs. 1500      c) Rs. 1700      d) Rs. 1350
55. A man lends Rs. 10,000 in four parts. If he gets 8% on Rs. 2000;  $7\frac{1}{2}\%$  on Rs. 4000 and  $8\frac{1}{2}\%$  on Rs. 1,400; what percent must he get for the remainder, if the average interest is 8.13%.
- a) 4%      b) 8%      c) 9%      d) 15%
56. What annual installment will discharge a debt of Rs. 3270 due in 3 years at 9% p.a. simple interest?
- a) Rs. 1100      b) Rs. 1000      c) Rs. 990      d) Rs. 1090
57. What annual installment will discharge a debt of Rs. 645 due in 4 years at 5% p.a. simple interest?
- a) Rs. 150      b) Rs. 125      c) Rs. 175      d) Rs. 145

## KEY

- |     |   |     |   |     |   |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|
| 1.  | a | 2.  | b | 3.  | c | 4.  | a | 5.  | d | 6.  | c |
| 7.  | c | 8.  | c | 9.  | c | 10. | c | 11. | b | 12. | a |
| 13. | b | 14. | b | 15. | b | 16. | a | 17. | c | 18. | d |
| 19. | c | 20. | d | 21. | d | 22. | b | 23. | a | 24. | c |
| 25. | a | 26. | a | 27. | d | 28. | b | 29. | a | 30. | b |
| 31. | b | 32. | c | 33. | b | 34. | b | 35. | b | 36. | b |
| 37. | b | 38. | a | 39. | b | 40. | d | 41. | b | 42. | b |
| 43. | b | 44. | d | 45. | b | 46. | d | 47. | c | 48. | b |
| 49. | c | 50. | c | 51. | b | 52. | a | 53. | b | 54. | d |
| 55. | a | 56. | b | 57. | a |     |   |     |   |     |   |

# 16. COMPOUND INTEREST

1. Find compound interest on Rs. 50,000 at 16% per annum for 2 years, compounded annually.  
a) Rs. 16000      b) Rs. 17280      c) Rs. 17500      d) Rs. 16500
2. Find compound interest on Rs. 4000 at 8% per annum for 2 years 6 months, compounded annually.  
a) Rs. 853      b) Rs. 845      c) Rs. 680      d) Rs. 16500
3. Find compound interest on Rs. 6250 at 12% per annum for 1 year, compounded half-yearly.  
a) Rs. 972.50      b) Rs. 772.50      c) Rs. 1590      d) Rs. 2000
4. Find compound interest on Rs. 4000 at 5% per annum for 1 year, compounded half-yearly.  
a) Rs. 200      b) Rs. 205.5      c) Rs. 202.5      d) Rs. 250
5. Find compound interest on Rs. 12,000 at 20% per annum for 9 months, compounded quarterly.  
a) Rs. 1891.50      b) Rs. 5978.50      c) Rs. 5978.60      d) Rs. 5978.50
6. What is the compound interest on Rs. 5000 for 4 years if the rate of interest is 10% per annum for the first 2 years and 20% p.a. for the next two years.  
a) Rs. 3127      b) Rs. 3172      c) Rs. 3712      d) None of these
7. The compound interest on Rs. 20,480 at  $6\frac{1}{4}\%$  per annum for 2 years 73 days is.  
a) Rs. 2992      b) Rs. 2929      c) Rs. 2299      d) None of these
8. The compound interest on Rs. 2000 for two years at 5% interest per annum for the first year and at 10% interest per annum for the second year.  
a) Rs. 310      b) Rs. 301      c) Rs. 103      d) Rs. 130
9. What is the time in which Rs. 2000 will amount to Rs. 2420 at 10% per annum C.I.  
a) 1 year      b) 2 years      c) 3 years      d) 5 years
10. In what time will Rs. 8000 amount to Rs. 9261 at 5% per annum compound interest.  
a) 1 year      b) 2 years      c) 3 years      d) 5 years
11. A sum of money placed at C.I. doubles itself in 5 years. It will amount to eight times itself in  
a) 10 years      b) 15 years      c) 20 years      d) 25 years
12. Rs. 1600 at 10% p.a. C.I. compounded half yearly amount to Rs. 1944.81 in  
a) 2 years      b) 3 years      c) 4 years      d) 5 years
13. In what time will a sum of Rs. 8000 amount to Rs. 9261 at 20% p.a. interest being compounded quarterly.  
a) 4 months      b) 6 months      c) 8 months      d) 9 months
14. A sum of money placed at compound interest doubles itself in 4 years. In how many years will it amount to eight times itself.  
a) 8 years      b) 10 years      c) 12 years      d) 15 years

15. At compound interest, if a certain sum of money doubles in  $n$  years, then the amount will be fourfold in  
 a)  $n^2$  years      b)  $2n$  years      c)  $n^3$  years      d)  $3n$  years
16. If a certain sum of money invested at C.I. becomes double in 4 years, in how many years will it become 8 times of it.  
 a) 12 years      b) 14 years      c) 64 years      d) 8 years
17. At C.I. a certain sum becomes triple itself in 9 years. In how many years will it become 27 times.  
 a) 18 years      b) 27 years      c) 72 years      d) 81 years
18. If a sum is doubled in 3 years at a rate of compound interest amount to Rs. 1460 in 2 years and Rs. 1606 in 3 years, what is the rate of interest.  
 1. 5%      b) 10 %      c) 15 %      d) 25 %
19. If a certain sum of money invested at C.I. amounts to Rs. 8820 for 3 years and Rs. 9261 for 4 years, what is the rate of interest per annum.  
 a) 5%      b) 6 %      c) 7%      d)  $7\frac{1}{2}\%$
20. If a sum of money at compound interest amounts in two years to Rs. 2809 and in 3 years to Rs. 2977.54. Find the rate of interest.  
 a) 6%      b) 10%      c) 15%      d)  $7\frac{1}{2}\%$
21. If a sum of money amount of Rs. 5290 in 2 years and Rs. 6083.50 in 3 years at compound interest, interest being compound annually. Find the rate of interest.  
 a) 5%      b) 15%      c) 20 %      d)  $13\frac{1}{3}\%$
22. If a sum of money amounts to Rs. 8464 in 2 years and Rs. 9733.60 in 3 years at C.I. interest being compound annually. Find the rate of interest.  
 a) 15%      b) 15.5%      c)  $15\frac{2}{3}\%$       d) 20%
23. The compound interest on a sum of money for 2 years is Rs. 26 and the simple interest for 2 years is Rs. 25. Find the rate percent.  
 a) 5%      b) 8%      c) 10%      d) 12%
24. The compound interest on a sum of money for 2 years is Rs. 41 and S.I is Rs. 40. What is the rate percent per annum.  
 a) 4%      b) 5%      c) 6%      d) 8%
25. If S. I. on Rs.625 for 2 years is Rs. 50 and C.I. on the same period is Rs.51, the rate of interest will be  
 a) 4 %      b) 5 %      c) 6%      d) 8 %
26. If S.I. on a sum of money for 2 years is Rs. 160 and C.I. is Rs. 170 the rate being the same in either case, find the rate  
 a) 25%      b) 20%      c) 15%      d) 12.5%
27. The C.I. on a sum of money for 2 years is Rs.318 and the S.I. on the same sum for the same period at the same rate is Rs.300.find the rate percent per annum.  
 a) 12%      b) 18%      c) 16%      d) 20%

28. A sum amounts to Rs. 1344 in two years at S.I. what will be the compound interest on the same sum at the same period at 5% per annum.  
a) Rs.1500      b) Rs.1444      c) Rs.1400      d) D.I
29. A sum amounts to Rs. 960 in two years at S.I. what will be the compound interest on the same amount in the same period at 5% per annum.  
a) Rs.965      b) Rs. 978      c) Rs. 984      d) D.I
30. The difference between S.I and C.I on a sum of money for two years at 10% per annum is Rs.15.The sum is  
a) Rs. 150      b) Rs.1500      c) Rs.1000      d) Rs.2000
31. The difference between the S.I and the C.I. for three years at 20% p.a. is Rs.8000.Find the sum  
a) Rs. 20000      b) Rs.62500      c) Rs.50000      d) Rs.75000
32. The difference between the S.I. and C.I. on Rs.10000 for two years at 8% p.a.is  
a) Rs.100      b) Rs. 120      c) Rs. 84      d)Rs.64
33. The difference between the S.I. and C.I. on Rs.1250 for two years at 8% is  
a) Rs.120      b) Rs.12      c) Rs.14      d) Rs.8
34. In the difference between C.I. and S.I. at the same rate on Rs.5000 for two years is Rs. 72.  
The rate of interest per annum is  
a) 5%      b) 6%      c) 10%      d)12%
35. A sum of Rs. 550 was taken as a loan. This is to be paid back in two equal installments.  
If the rate of interest be 20% compounded annually, then the value of is installments is  
a) Rs.220      b) Rs. 300      c) Rs.360      d) Rs. 720
36. A sum of Rs. 4550 is borrowed at the rate of 20% p.a. compound annually, if the amount is to be paid in three equal annual installments, determine each installment.  
a) Rs. 2160      b) Rs. 2100      c) Rs. 2610      d) Rs. 2140
37. A sum of money is borrowed and paid in two equal annual installment of Rs. 729, allowing 8% p.a. compound interest. What was the sum borrowed?  
a) Rs. 1325      b) Rs. 1300      c) Rs. 1275      d) Rs. 1250
38. The difference between simple and compound interest of a sum of money in two years at 5% per annum is Rs. 60. Find the sum.  
a) Rs. 6000      b) Rs. 24000      c) Rs. 5200      d) Rs. 6500
39. The difference between simple and compound interest for 3 years at 25% p.a. is Rs. 1125.  
Find the sum.  
a) Rs. 7000      b) Rs. 8000      c) Rs. 12000      d) Rs. 16000
40. The difference between S.I and C.I. on a sum of Rs. 1000 at 10% for 2 years is  
a) Rs. 10      b) Rs. 15      c) Rs. 16      d) Rs. 12
41. The difference between S.I. and C.I on a sum of Rs. 8000 for 3 years at 5% is  
a) Rs. 32      b) Rs. 48      c) Rs. 61      d) Rs. 52
42. The difference between S.I and C.I. on Rs. 8000 in 3 years at  $2\frac{1}{2}$  % will be  
a) Rs. 15.125      b) Rs. 15.45      c) Rs. 15.50      d) Rs. 16

43. The population of a town increased by 5% of what it had been at the beginning of each year. If the population in 1989 had been 4,41,000, find its population in 1987.  
 a) 3 lakhs      b) 4 lakhs      c) 2 lakhs      d) 1.5 lakhs
44. The present population of a town is 1,60,000. It increased by 15% p.a. After how many years will the population be 2,11,600?  
 a) 1 year      b) 2 years      c)  $1\frac{1}{2}$  years      d) 4 years
45. The population of a town increases 10% annually but it decreased by emigration annually to the extent of 20%. What will be the increase % in years.  
 a) 6%      b) 7%      c) 7.2%      d) 7.8%
46. The value of a machine depreciates at the rate of 10% p.a. If its present value is 2,50,000. What will be its worth after 3 years?  
 a) Rs. 1,80,000      b) Rs. 1,82,250      c) Rs. 1,82,500      d) Rs. 1,82,450
47. The value of a machine depreciates every year at the rate of 10% on its value at the beginning of that year. If the present value of the machine is Rs. 729, what was its worth 3 years ago.  
 a) Rs. 1000      b) Rs. 850      c) Rs. 900      d) Rs. 750
48. A tree increased annually by  $\frac{1}{4}$  of its height. By how much will it increase after 2 years, if it stands today 80 cm. high.  
 a) 75 cm      b) 150 cm      c) 125 cm      d) 130 cm

### KEY

1.	b	2.	a	3.	b	4.	c	5.	a	6.	c
7.	b	8.	a	9.	b	10.	c	11.	b	12.	a
13.	d	14.	c	15.	b	16.	a	17.	b	18.	a
19.	a	20.	a	21.	b	22.	a	23.	b	24.	b
25.	a	26.	d	27.	a	28.	d	29.	c	30.	b
31.	b	32.	d	33.	d	34.	d	35.	c	36.	a
37.	b	38.	b	39.	b	40.	a	41.	c	42.	a
43.	b	44.	b	45.	d	46.	b	47.	a	48.	c

## 17. ALLIGATIONS & MIXTURES

1. In what ratio the two qualities of rice Rs. 6 and Rs. 4 per kg be mixed respectively in order to get a mixture costing Rs. 4.80 kg.  
a) 3 : 2                  b) 2 : 1                  c) 2 : 3                  d) 3 : 4
2. In what proportion must rice at Rs. 3.10 per kg. be mixed with rice at Rs. 3.60 per kg so that the mixture be worth Rs. 3.25 a kg.  
a) 7 : 3                  b) 3 : 7                  c) 4 : 5                  d) 5 : 4
3. In what proportion should one variety of oil Rs. 9.50 per kg be mixed with another at Rs. 10 per kg to get a mixture worth Rs. 9.60 per kg?  
a) 1 : 4                  b) 2 : 3                  c) 3 : 5                  d) 4 : 1
4. In what proportion must beer at Rs. 110 a litre be mixed beer at Rs. 60 a litre so that the mixture may worth Rs. 80 a litre.  
a) 3 : 2                  b) 2 : 3                  c) 1 : 2                  d) 2 : 1
5. How much chicory at Rs. 4 a kg should be added to 15 kg of tea at Rs. 10 a kg so that the mixture be worth Rs. 6.50 per kg.  
a) 14 kg                  b) 21 kg                  c) 28 kg                  d) 36 kg
6. How much wheat at Rs. 5.20 per kg be mixed with the wheat at Rs. 4.40 per kg so that the mixture of 30 kg be sold for Rs. 144.  
a) 25 kg                  b) 15 kg                  c) 20 kg                  d) 5 kg
7. How much wheat at Rs. 4.00 a kg should be mixed with 42 kg of wheat at Rs. 6.00 a kg so as to have a mixture worth Rs. 4.80 a kg  
a) 21 kg                  b) 63 kg                  c) 42 kg                  d) 56 kg
8. How many kg of salt at 42 paise per kg must a man mix with 25 kg of salt at 24 paise per kg so that lie may, on selling the mixture at 40 paise per kg 25% gain on the outlay?  
a) 20 kg                  b) 25 kg                  c) 16 kg                  d) 12 kg
9. How many kg of custard powder costing Rs. 40 per kg must be mixed with 16 kg of custard powder costing Rs. 55 kg so that 25% may be gained by selling the mixture at Rs. 60 per kg  
a) 18 kg                  b) 32 kg                  c) 14 kg                  d) 28 kg
10. A man bought 30 kg of rice at the rate of Rs. 8.50 per kg and 20 kg of rice at the rate of Rs. 9.00 per kg, he mixed the two. At what price (approximately) per kg should he sell the mixture in order to get 20% profit  
a) Rs. 10                  b) Rs. 10.25                  c) Rs. 10.44                  d) Rs. 10.50
11. Alok bought 30 kg of rice at Rs. 8.50 per kg and 20 kg of rice at Rs. 8.00 per kg. If he has to make a 20% profit, at approximately. What rate per kg should he sell the mixture?  
a) Rs. 9.96                  b) Rs. 6.96                  c) Rs. 10                  d) Rs. 11
12. Six kilograms of tea at Rs. 6 per kg and 4 kgs of tea at Rs. 7 are mixed together and the mixture is sold at a 10% profit what is the selling price per kg of the mixture  
a) Rs. 7                  b) Rs. 7.20                  c) Rs. 7.25                  d) Rs. 7.04

13. A trader mixed 80 kg of tea at Rs. 15 per kg with 20 kg of tea at cost price of Rs. 20 per kg. In order to earn a profit of 25%, what should be the sale price of the mixed tea  
 a) Rs. 10                    b) Rs. 20                    c) Rs. 15                    d) Rs. 18
14. A trader bought 20 kg of wheat at Rs. 6.50 per kg and 30 kg of wheat at Rs. 7 per kg. He sold the mixture at a profit of Rs. 60. At what price did he sell per kg of the mixture of wheat  
 a) Rs. 6                    b) Rs. 8                    c) Rs. 10                    d) Rs. 12
15. Ramesh bought 50 kg of wheat at Rs. 8 per kg and 150 kg. of wheat at Rs. 7 per kg. He sold the mixture at a profit of Rs. 60. At what price did he sell per kg of the mixture of wheat.  
 a) Rs. 7.55                b) Rs. 8                    c) Rs. 10                    d) Rs. 12
16. Sunil bought 35 kg Tea at Rs. 140 per kg and 25 kg at Rs. 55 per kg. He mixed the two. Now at what price(approx.,) per kg he should sell so that he may get 20% on this bargain  
 a) Rs. 125.50            b) Rs. 120                    c) Rs. 125                    d) Rs. 115.25
17. A trader bought 50 kg of wheat of Rs. 7 per kg end 20 kg of wheat at Rs. 8 per kg. He mixed the two and sold the mixture at Rs. 10 per kg. What is his profit.  
 a) Rs. 190                    b) Rs. 150                    c) Rs. 125                    d) Rs. 145.75
18. In what proportion must water be mixed with spirit to gain  $16\frac{2}{3}\%$  by selling it at cost price  
 a) 1 : 6                    b) 6 : 1                    c) 7 : 1                    d) 1 : 7
19. In what ratio must water be added to the spirit to gain  $12\frac{1}{2}\%$  by selling the mixture at the cost price  
 a) 1 : 8                    b) 8 : 1                    c) 1 : 6                    d) 6 : 1
20. In what ratio should water and wine be mixed so that after selling the mixture at cost price a profit of 20% is made  
 a) 1 : 5                    b) 5 : 1                    c) 4 : 1                    d) 1 : 4
21. In what proportion must water be mixed with milk to gain 25% by selling the mixture at the cost price  
 a) 1 : 5                    b) 5 : 1                    c) 4 : 1                    d) 1 : 4
22. In what proportion water must be mixed with milk 50% by selling at cost price.  
 a) 2 : 1                    b) 1 : 3                    c) 1 : 2                    d) 3 : 2
23. A mixture of 40 litres of milk and water contains 10% water. How much water should be added to this so that water may be 20% in the new mixture.  
 a) 4 lit                    b) 5 lit                    c) 6 lit                    d) 8 lit
24. A mixture of 20 litres of milk and water contains 10% water. How much water should be added to it to increase the percentage of water to 25%  
 a) 2 lit                    b) 3 lit                    c) 4 lit                    d) 5 lit
25. 125 gallons of mixture of wine and water contains 20% water. How much water must be added to it to make water 25% in the new mixture.  
 a) 8 gallons                b)  $8\frac{1}{3}$  gallons                    c)  $8\frac{2}{3}$  gallons                    d) 10 gallons

26. 100 litres of mixture contains 13% water. How much water must be added to get 20% water in the resulting mixture.
- a) 8lit                  b) 8.25 lit                  c) 8.75 lit                  d) 10 lit
27. A mixture of 60 litres of milk and water contains 15% water. How much water should be added to make the mixture contain 25% water.
- a) 5 lit                  b) 8 lit                  c) 9 lit                  d) 15 lit
28. A merchant has 50 kg of sugar, part of which he sell at 8% profit and the rest at 18% profit. He gains 14% on the whole. The quantity sold at 18% profit is
- a) 30 kg                  b) 20 kg                  c) 15 kg                  d) 25 kg
29. Rs. 100 is lent out in two parts, one at 6% simple interest and the other at 8% simple interest. The yearly income is Rs. 7.50. The sum lent at 8% is
- a) Rs. 75                  b) Rs. 85                  c) Rs. 60                  d) Rs. 58
30. A merchant has 100 kg of sugar, part of which he sells at 7% profit and the rest at 17% profit. He gains 10% on the whole how much is sold at 17% profit.
- a) 10 kg                  b) 20 kg                  c) 30 kg                  d) 28 kg
31. A merchant borrowed Rs. 2500 from two money lenders. For on eloan he paid 8% per annum and for the other 6% per annum. The total interest paid for 1 year was Rs. 180. How much did he borrow at each rate?
- a) Rs. 100, Rs. 150                  b) Rs. 1500, Rs. 1000  
d) Rs. 1000, Rs. 2000                  c) Rs. 250, Rs. 475
32. Some amount out of Rs. 7000 was lent at 6% p.a. and the remaining at 4% p.a. If the total simple interest from both the fractions in 5 years was Rs. 1600, the sum lent at 6% p.a. was
- a) Rs. 12000                  b) Rs. 9000                  c) Rs. 2000                  d) Rs. 8000
33. How many kilograms of tea costing Rs. 30 per kg should be blended with 50 kg of tea costing Rs. 34 per kg, so that by selling the blended variety at Rs. 35 per kg, there should be a profit of 15%
- a) 400 kg                  b) 410 kg                  c) 420 kg                  d) 415.2 kg
34. A tea producer blends two qualities of tea from two different gardens on costing Rs. 27 per kg and the other Rs. 30 per kg in the ratio 5 : 3. He sells the blended tea at Rs. 30.25 per kg. Find is profit percent?
- a)  $7\frac{1}{9}\%$                   b)  $7\frac{2}{9}\%$                   c)  $7\frac{4}{9}\%$                   d)  $7\frac{5}{9}\%$
35. A man buys milk at a certain price and after mixing it with sells it again at the same price. How many ml of water he mixed in a litre of milk if he makes a profit of 20%
- a) 200 ml                  b) 150 ml                  c) 50 ml                  d) 75 ml
36. Two alloys of gold and copper are prepared by mixing in the ratio of 7:2 and 7:11. A third alloy is made after mixing the equal quantities of two alloys. What is the ratio of gold and copper in the third alloy?
- a) 7:5                  b) 5:7                  c) 4:3                  d) 3:4

37. Two vessels A and B contain milk and water mixed in the ratio 5:3 and 2:3. When these mixtures are mixed to form a new mixture containing half milk and half water, in what ratio they must be mixed?
- a) 5:4      b) 4:5      c) 3:4      d) can't say
38. In vessels A the ratio of milk and water is 4:3 and that of in B is 3:4. Both are emptied into vessel C. What is the ratio of the milk and water in vessel C.
- a) 1:2      b) 2:1      c) 3:1      d) can't say
39. Milk and water are mixed for 'A' grade as 4:1 and for B grade 3:2. A man takes equal quantities of A and B grades and mixture them. Find the ratio of milk and water in the new mixture?
- a) 7:3      b) 3:7      c) 4:5      d) 5:4
40. In two alloys copper and Zinc are in the ratio 3:1 and 2:3 respectively. After alloying together 12 kg of the first and 10 kg of the second and certain amount of pure Zinc, an alloy is obtained in which copper and zinc are in equal proportions. Find the weight of the pure zinc added?
- a) 4kg      b) 8kg      c) 9kg      d) 12kg
41. A vessel is partially filled with a mixture of 80 lts. of milk and water in the ratio of 3:2. Find the quantity of water to be added to change the ratio to 3:4.
- a) 32 lit      b) 23 lit      c) 18 lit      d) 24 lit
42. A vessel is partially filled with a mixture of 80 lts. Of milk and water in the ration of 9:7. Find the quantity of water to be added to be added to change the ratio to 5:6?
- a) 11 lit      b) 40 it      c) 45 lit      d) 60 lit
43. In a mixture of 60 lts., the ratio of milk and water is 2:1. If the ratio of the milk and water is to be 1:2, then the amount of water to be further added is?
- a) 30 lit      b) 40 lit      c) 45 lit      d) 60 lit
44. A cup of milk contains 3 parts pure milk and one part of water. How much of the mixture must be drawn and water substituted in order that the resulting mixture may be  $\frac{1}{2}$  milk and  $\frac{1}{2}$  water?
- a)  $\frac{1}{2}$       b)  $\frac{1}{3}$       c)  $\frac{1}{4}$       d)  $\frac{3}{4}$
45. In an examination out of 1200 candidates 80% boys and 75% girls passed. If the total percentage of passed candidates is 77, what is the number of boys who passed in the examination?
- a) 260      b) 320      c) 480      d) 520
46. An amount of Rs. 92 is to be divided among 200 boys and girls so that each boy gets 50 paise each girl gets 40 paise. What is the ratio of the number5 of boys and girls?
- a) 1:2      b) 2:3      c) 3:2      d) 3:4
47. An amount of Rs. 1,450 is to be divided among 800 boys and girls so that each boy gets Rs. 4 and each girl gets Rs. 1.50. What is the number of boys?
- a) 15      b) 25      c) 100      d) 85

48. Madhuri has 85 currency notes in all, out of these notes some are of worth Rs. 100 each and the remaining are of Rs.50 each. The total value of all these notes is Rs. 5000. What is the value of Rs. 50 notes?
- a) Rs. 1500      b) Rs. 2700      c) Rs. 3500      d) Rs. 3280
49. A vessel contains 100 lts. Of wine, 50% of its is taken out of the vessel every day and equal quantity of water is added, what quantity of wine remaining in the vessel at the end of third day?
- a)  $12\frac{1}{2}$  lit      b)  $12\frac{2}{3}$  lit      c)  $12\frac{5}{2}$  lit      d) 18 lit
50. A vessel of 27 lts capacity is full of pure alcohol. On the first day 18 lts were drawn and filled with water and finally on the third day 18 lts of the mixture drawn and filled with water. Find the quantity of alcohol at last?
- a) 1 lit      b) 15 lit      c) 10 lit      d) 7 lit
51. Three vessels of equal capacity contain mixture of milk and water in the ratio of 2:1, 1:2 and 3:1 respectively. If all the solutions are mixed, find the final ratio of the resulting mixture.
- a) 7:5      b) 5:7      c) 3:4      d) 4:3
52. Three vessels contain milk and water in the ratio of 4:1, 5:2 and 6:1. Their volumes are in the ratio of 1:2:2. If the contents of all the three vessels are mixed together the resulting solution will have milk and water in the ratio of -----
- a) 1:4      b) 4:1      c) 2:3      d) 3:2
53. There are some pigeons and hares in a zoo. If heads are counted, they are 200. If legs are counted, they are 580. What is the number of hares in the zoo?
- a) 15      b) 80      c) 75      d) 90

### KEY

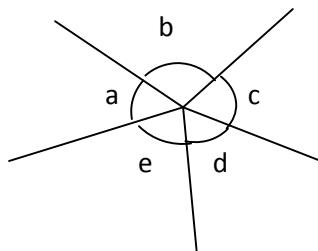
1.	c	2.	a	3.	d	4.	b	5.	b	6.	b
7.	b	8.	a	9.	c	10.	c	11.	a	12.	d
13.	b	14.	b	15.	a	16.	a	17.	a	18.	a
19.	a	20.	a	21.	d	22.	c	23.	b	24.	c
25.	b	26.	c	27.	b	28.	a	29.	a	30.	c
31.	b	32.	c	33.	b	34.	d	35.	a	36.	a
37.	b	38.	d	39.	a	40.	a	41.	a	42.	d
43.	d	44.	b	45.	c	46.	c	47.	c	48.	c
49.	a	50.	a	51.	a	52.	b	53.	d		

## 18. GEOMETRY MENSURATION

1. A is an obtuse angle. The measure of  $\angle A$  and twice its supplement differ by  $30^0$ . Then  $\angle A$  can be.

a)  $150^0$       b)  $110^0$       c)  $140^0$       d)  $120^0$

2.



In the figure above, the angles a, b, c, d and e are consecutive integers in degrees.

a = \_\_\_\_\_.

- a)  $700$   
b)  $740$   
c) Either (1) or (2)  
d) Neither (1) nor (2)
3. These are three angles. The second angle is one-third of the complement of the first angle. The third angle is half of the supplement of the first angle. The third angle is half of the supplement of the first angle. The third angle is 6 times the second angle. Find the first angle.

a)  $45^0$       b)  $60^0$       c)  $75^0$       d)  $90^0$

4. P, Q and R are on AB, BC and AC of the equilateral triangle ABC respectively. AP: PB = CQ: QB =  $1 : 2$ . G is the centroid of the triangle PQB and R is the midpoint of AC, Find BG: GR.

a)  $1 : 2$       b)  $2 : 3$       c)  $3 : 4$       d)  $4 : 5$

5. Diagonal AC of a rectangle AMCD is produced to the point E such that AC: CE =  $2 : 1$ , AB = 8 cm and BC = 6cm. Find the length of DE.

a)  $2\sqrt{19}$  cm      b) 15 cm      c) 3 17 cm      d) 13 cm

6. A rope can make 70 rounds on a cylinder's circumference whose radius is 7 cm. Find the number of rounds it can make on a cylinder's circumference whose radius is 10 cm.

a) 49      b) 98      c) 70      d) 140

7. R is rectangular tank filled to its capacity with water. The volume of the water in it is 6.8 cubic meters. Its base area is 8500 sq.cm. Find its height (in m).

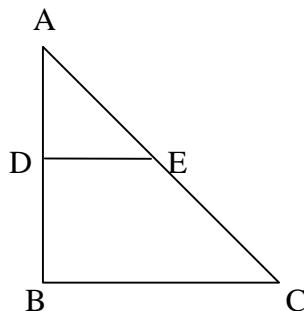
a) 4      b) 2      c) 16      d) 8

8. If a path 3 m wide is laid all round and outside a field if dimensions 25m x 15 m, then find the area of the path.

a) 276 sq.m      b) 256 sq.m      c) 240 sq.m      d) 266 sq.m

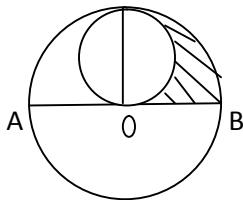
9. A goat is tied to one corner of a field of dimensions 16 m x 10 m with a rope 7 m long. Find the area of the field that the goat can graze.  
 a)  $77 \text{ m}^2$       b)  $3805 \text{ m}^2$       c)  $44 \text{ m}^2$       d)  $58.5 \text{ m}^2$
10. How many bricks are needed to complete a wall  $15 \text{ m} \times 12 \text{ m} \times 10 \text{ cm}$  using bricks  $24 \text{ cm} \times 25 \text{ cm} \times 10 \text{ cm}$  thick, if  $\frac{2}{3}$  rd of the wall is already built?  
 a) 1200      b) 1000      c)  $1233\frac{1}{3}$       d)  $1133\frac{1}{3}$
11. P is a parallelogram. T is a triangle. Both P and T have a common base. The third vertex of T lies on the side of P opposite to the base. The area of T is 40 sq cm. Find the area of P (in sq.cm).  
 a) 160      b) 120      c) 40      d) 80
12. A wire when bent to form a circle encloses an area of 154 sq cm. If the same wire is bent to form a square, then what will be the length of the side of the square?  
 a) 11 cm      b) 44 cm      c) 7 cm      d) 22 cm
13. The length and breadth of a rectangular field are 45 m and 30 m respectively. If a path of uniform width 1.5 m is laid around and outside the field, what is the area of the path? (in sqm).  
 a) 214      b) 234      c) 254      d) 294
14. A play ground has dimensions of 60 m x 40 m. A pit of dimensions 6 m x 5 m x 4 m was dug outside the ground and the mud was spread all over the ground uniformly. Find the rise in the level of the ground (in cm).  
 a) 6      b) 7      c) 5      d) 8
15. The perimeter of an isosceles trapezium is 24 cm and its two parallel sides are 10 cm and 4 cm. Find the distance between the parallel sides.  
 a) 2 cm      b) 3 cm      c) 4 cm      d) 5 cm
16. A conical tent has a base radius of 18 m and a height of 24 m. What is the length of the canvas required to cover the conical portion, if the width of the canvas is 11 m?  
 a) 105      b) 140 m      c)  $154\frac{2}{7} \text{ m}$       d)  $133\frac{1}{7} \text{ cm}$
17. A solid metallic cube of a side 154 cm is melted to form a wire. If the length of the wire is 23716 cm, what is the radius of the cross-section of the wire?  
 a) 14 cm      b) 7 cm      c) 10.5 cm      d) 21 cm
18. In a triangle ABC, right angled at B, AB = 12 cm and AC = 20 cm. If a perpendicular is drawn from B to AC at point D, what is the ratio of the area of the triangle ABD to that of BCD?  
 a) 3 : 4      b) 16 : 25      c) 9 : 25      d) 9 : 16
19. A solid sphere exactly fits in a cylinder of base radius 14 cm and height 28 cm. What is the ratio of the volume of the sphere to that of the cylinder?  
 a) 1 : 4      b)  $2 : \sqrt{5}$       c)  $\sqrt{3} : 2$       d) 2 : 3
20. AB and CD are two intersecting lines. 'O' is the point of intersection and  $\angle DOB = 30^\circ$ ,  $\angle BOC$  is divided into four equal angle. What is the measure of each angle?  
 a)  $41.25^\circ$       b)  $75^\circ$       c)  $37.5^\circ$       d)  $45^\circ$

21. In the given figure  $AD = 4$  cm,  $AE = 5$  cm,  $DB = 12$  cm and  $EC = 15$  cm.  $ABC$  is right angled triangle. What is the area of the quadrilateral  $BCED$ ?



- a) 96 sq.cm      b) 72 sq.cm      c) 64 sq.cm      d) 90 sq.cm
- 22. In triangle  $ABC$ ,  $AD$  is the angle bisector of  $\angle CAB$ . If  $AC = 12$  cm and  $AB = 8$  cm, then what is the ratio of  $CD$  and  $BD$ ?
  - a) 5 : 4      b) 5 : 2      c) 3 : 2      d) 2 : 1
- 23. A solid sphere made of iron is melted and recast into small spherical balls each of radius 0.5 cm. If the diameter of the solid sphere is 40 cm, how many small spherical balls are formed?
  - a) 516000      b) 208000      c) 124000      d) 64000
- 24. The area of the base of a right circular cone is  $300\pi$  sq.cm. If the height of the cone is 45 cm, what is its volume in cu.cm?
  - a)  $13500\pi$       b)  $9000\pi$       c)  $6000\pi$       d)  $4500\pi$
- 25. A regular octagon is inscribed in a circle of radius 16 cm. What is the perimeter of the octagon.(in cm)?
  - a)  $256 \sin 22\frac{1}{2}^\circ$       b) 256      c)  $128\sqrt{2}$       d)  $128 \sin 22\frac{1}{2}^\circ$
- 26. A metal cone, with a semi-vertical angle  $\alpha$  has a base radius of 3 cm. What is the value of  $\alpha$ . If the volume of the cone is 30 cu.cm?
  - a)  $\sin^{-1}\left(\frac{10}{3\pi}\right)$       b)  $\cos^{-1}\left(\frac{3\pi}{10}\right)$       c)  $\cot^{-1}\left(\frac{3\pi}{10}\right)$       d)  $\tan^{-1}\left(\frac{3\pi}{10}\right)$
- 27. The perimeter of a triangle is 225 cm. The radius of the circle inscribed in it is 15 cm. What is the area (in'sq.cms) of the triangle?
  - a) 3375      b) 1687.5      c) 6750      d) 1912.5
- 28. A sector of angle  $144^\circ$  is cut from a circular plate of radius 7 cm and the two cut edges are joined. Find the area of the base of the solid formed. (approx).
  - a)  $28\pi/25$  cm<sup>2</sup>      b)  $8\pi$  cm<sup>2</sup>      c)  $28\pi/5$  cm<sup>2</sup>      d)  $196\pi/5$  cm<sup>2</sup>
- 29. A cylindrical rod is desired to be made with its height and its radius being in the ratio 12 : 1. How many spherical balls having the same radius as that of the rod have to be melted and casted into it?
  - a) 6      b) 12      c) 18      d) 9
- 30. What is the difference between the maximum and the minimum number of pieces into which a square paper can be cut using six straight lines?
  - a) 18      b) 15      c) 12      d) 14

31. In the given, O is the centre of the circle and AB is the diameter of the circle of length 14 cm. Find the area of the shaded portion.



- a)  $38.5 \text{ cm}^2$       b)  $9.625 \text{ cm}^2$       c)  $19.25 \text{ cm}^2$       d) None of these
32. A square room has a side of 8 m. How many metres of a carpet 16 cm wide, will be required to cover the floor of the room. If the cost of the carpet is ₹10/metre have to be paid for carpeting, what will be the total cost of carpeting the floor?
- a) 400 m; ₹84,000    b) 400 m; ₹42,000    c) 200 m; ₹84,000    d) 200 m; ₹42,000
33. Find the area of a square inscribed in a circle of radius  $5/\sqrt{2}$  cm.
- a)  $100 \text{ cm}^2$       b)  $25 \text{ cm}^2$       c)  $50\sqrt{2} \text{ cm}^2$       d)  $50 \text{ cm}^2$
34. Find the ratio of the area of a square inscribed in a semi-circle of radius  $3r$  units to the area of another square inscribed in a circle of radius  $r$  units.
- a)  $9 : 5$       b)  $5 : 9$       c)  $18 : 5$       d)  $5 : 18$
35. The supplement of an angle is  $7/3$  times the angle. Find the complement of the angle.
- a)  $27^\circ$       b)  $46^\circ$       c)  $36^\circ$       d)  $54^\circ$
36. If two circles have exactly 3 common tangents which of the following is true, about the two circles?
- a) They are concentric.  
b) They are intersecting and non enclosing.  
c) They are externally touching.  
d) They touch internally.
37. Find the number of diagonals in a polygon with 9 sides.
- a) 18      b) 36      c) 27      d) 42
38. The sum of the interior angles of a convex polygon is  $900^\circ$ . Find the number of sides of the polygon.
- a) 7      b) 9      c) 8      d) 6
39. Sita, Gita and Rita started from a point with the same speed. Sita and Gita are travelling in opposite directions and Rita is travelling perpendicular to the path of Sita and Gita. If their speeds are uniform and an hour later, the displaced positions of Sita, Gita and Rita are joined to form a triangle, then what type of triangle is that?
- a) Equilateral  
b) Isosceles scales  
c) Right Angled  
d) Isosceles Right Angled

40. What is the maximum number of identical coins which are in the shape of a regular hexagon that can be placed around a similar coin such that every coin touches the middle coin and two adjacent coins?
- a) 7                    b) 6                    c) 5                    d) 4
41. What is the difference between the maximum and the minimum number of pieces into which a square piece can be cut using eight straight lines?
- a) 16                    b) 32                    c) 28                    d) 30
42. An equilateral triangle is inscribed in a circle of radius 8 cm. Find the area of the triangle (in sq.cm).
- a)  $16\sqrt{3}$             b)  $34\sqrt{3}$             c)  $24\sqrt{3}$             d)  $48\sqrt{3}$
43. A pair of adjacent sides of a parallelogram is respectively equal to the length and breadth of a rectangle. If the angle between the adjacent to that of the parallelogram.
- a)  $2 : \sqrt{3}$             b)  $3 : 4$                     c)  $4 : 3$                     d)  $\sqrt{3} : 2$
44. In a rhombus with one angle equal to  $60^0$ , the shorter diagonal is 2 cm. What is the volume of the remaining solid in terms of r?
- a)  $3\sqrt{3}\text{ cm}^2$             b)  $4\text{ cm}^2$                     c)  $4\sqrt{2}\text{ cm}^2$             d)  $2\sqrt{3}\text{ cm}^2$
45. From a right circular cylinder, whose height is equal to the radius 'r' of the base, the biggest possible right circular cone is cut out. What is the volume of the remaining solid in terms of r?
- a)  $\frac{2}{3}\pi r^3$                     b)  $\frac{1}{3}\pi r^3$                     c)  $\frac{4}{5}\pi r^3$                     d)  $\frac{2}{5}\pi r^3$
46. A rectangular sheet of paper is folded into a cylinder. If the dimensions of the paper are 44 cm x 10 cm, then find the volume of the cylinder. The height of the cylinder is 10 cm.
- a)  $1520\text{ cm}^3$                     b)  $1680\text{ cm}^3$                     c)  $1420\text{ cm}^3$                     d) None of these
47. If two adjacent sides of a parallelogram are 8 units and 6 units and one of its diagonals is 10 units, then find its area.
- a) 72 sq. units                    b) 64 sq. units                    c) 48 sq. units                    d) None of these
48. The area of a square remains unaltered if one pair of opposite sides increase by 2 cm and the other decrease by  $1\frac{1}{3}$  cm. find the side of the square.
- a) 2 cm                    b) 3 cm                    c) 4 cm                    d) 5 cm
49. If the total surface area of a right triangular prism is  $72\text{ cm}^2$  and the base is a right-angled triangle with the perpendicular side equal to 3 cm and 4 cm, find the height of the prism.
- a) 4 cm                    b) 5 cm                    c) 6 cm                    d) 8 cm
50. The volume of a right circular cone is equal to the volume of a right circular cylinder. The area of the base of the cone is twice the area of the base of the cylinder. What is the ratio of the heights of the cone and the cylinder?
- a) 3 : 4                    b) 4 : 3                    c) 2 : 3                    d) 3 : 2

## **KEY**

- |     |   |     |   |     |   |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|
| 1.  | b | 2.  | c | 3.  | b | 4.  | d | 5.  | c | 6.  | a |
| 7.  | d | 8.  | a | 9.  | b | 10. | b | 11. | b | 12. | a |
| 13. | b | 14. | c | 15. | c | 16. | c | 17. | b | 18. | d |
| 19. | d | 20. | c | 21. | d | 22. | c | 23. | d | 24. | d |
| 25. | a | 26. | d | 27. | b | 28. | b | 29. | d | 30. | b |
| 31. | c | 32. | a | 33. | a | 34. | c | 35. | c | 36. | c |
| 37. | c | 38. | a | 39. | d | 40. | b | 41. | c | 42. | d |
| 43. | a | 44. | d | 45. | a | 46. | d | 47. | c | 48. | c |
| 49. | b | 50. | d |     |   |     |   |     |   |     |   |

# 19. PROBABILITY

1. If an unbiased coin is tossed 6 times, what is the probability of getting exactly 2 heads?  
a)  $\frac{21}{64}$       b)  $\frac{15}{64}$       c)  $\frac{24}{64}$       d)  $\frac{28}{45}$
2. Three cards are drawn at random from a pack of well shuffled cards. What is the probability that all the three are black cards?  
a)  $\frac{5}{51}$       b)  $\frac{6}{53}$       c)  $\frac{3}{17}$       d)  $\frac{2}{17}$
3. A bag contains five apples and four oranges. If two fruits are randomly drawn from it find the probability that both are not of the same variety.  
a)  $\frac{4}{9}$       b)  $\frac{2}{9}$       c)  $\frac{5}{9}$       d)  $\frac{1}{9}$
4. Three letters are selected at random from the English alphabet. What is the probability that  
  - i) all are consonants  
a)  $\frac{25}{132}$       b)  $\frac{163}{260}$       c)  $\frac{33}{65}$       d)  $\frac{133}{260}$
  - ii) One is a consonant and the other two are vowels?  
a)  $\frac{7}{180}$       b)  $\frac{33}{65}$       c)  $\frac{21}{260}$       d)  $\frac{133}{260}$
5. The probability that a square selected at random from a  $8 \times 8$  chessboard is of size  $3 \times 3$  is  
a)  $\frac{8}{51}$       b)  $\frac{14}{17}$       c)  $\frac{3}{17}$       d)  $\frac{25}{204}$
6. A bag contains 18 fruits of which four are rotten. Two fruits are picked at random. What is the probability that atleast one fruit is good?  
a)  $\frac{49}{51}$       b)  $\frac{50}{51}$       c)  $\frac{2}{51}$       d) None of these
7. Basket I contains 4 mangoes and 5 apples. Basket II contains 8 mangoes and 7 apples. If Rajesh selects a basket and picks up a fruit from it, the probability that he picks up a mango is \_\_\_\_\_.  
a)  $\frac{23}{45}$       b)  $\frac{22}{45}$       c)  $\frac{26}{45}$       d)  $\frac{28}{45}$
8. Two cards are picked up at random from a pack of cards. The probability that both are ace cards or both are red cards is \_\_\_\_\_.  
a)  $\frac{57}{221}$       b)  $\frac{1}{221}$       c)  $\frac{55}{221}$       d) None of these
9. Five digit numbers are formed using all the digits 2, 3, 4, 5 and 6 without repetition. When a number is selected randomly from them find the probability that it lies between 30,000 and 50,000.  
a)  $\frac{1}{5}$       b)  $\frac{3}{5}$       c)  $\frac{2}{5}$       d)  $\frac{4}{5}$
10. Find the probability that in a non leap year, February has 5 Mondays.  
a)  $\frac{2}{7}$       b) 0      c)  $\frac{1}{7}$       d)  $\frac{3}{7}$
11. Two numbers are selected at random from the set of numbers {1, 2, 3... 100}. Find the probability that their product is even.  
a)  $\frac{151}{198}$       b)  $\frac{1}{2}$       c)  $\frac{149}{198}$       d)  $\frac{147}{198}$

12. A house-wife buys a dozen eggs of which two turnout to be bad. If she chooses 4 eggs at random from the dozen to scramble for breakfast, the probability that she chooses

- a) All good eggs is  
(i)  $\frac{1}{33}$       (ii)  $\frac{14}{33}$       (iii)  $\frac{13}{33}$       (iv)  $\frac{1}{11}$   
b) Two good eggs and two bad eggs is  
(i)  $\frac{17}{33}$       (ii)  $\frac{16}{33}$       (iii)  $\frac{3}{11}$       (iv)  $\frac{1}{11}$   
c) atleast one bad egg is  
(i)  $\frac{17}{33}$       (ii)  $\frac{4}{11}$       (iii)  $\frac{19}{33}$       (iv)  $\frac{3}{11}$   
d) atleast one good egg is  
(i)  $\frac{13}{22}$       (ii)  $\frac{1}{1}$       (iii)  $\frac{11}{33}$       (iv)  $\frac{14}{33}$

13. Two balls are drawn, one after the other, from a bag containing 8 pink and 6 orange balls.

The probability of drawing pink and orange balls in succession in that order. When the ball that is drawn first is

- (i) not replaced is  
(a)  $\frac{24}{91}$       (b)  $\frac{12}{49}$       (c)  $\frac{7}{13}$       (d)  $\frac{19}{91}$   
(ii) replaced is  
(a)  $\frac{6}{49}$       (b)  $\frac{20}{91}$       (c)  $\frac{12}{49}$       (d)  $\frac{13}{49}$

14. Sridhar throws a dice. He is promised an amount twice the value of the number showing up if the number showing up is odd and an amount thrice the value of the number showing up is even. What is the maximum amount that Sridhar is willing to pay each time to throw the dice if in the long run he wants to make an average profit of ₹6 per throw?

- a) ₹4      b) ₹2.60      c) ₹3      d) ₹3.50

15. Sanjay throws a biased coin on which the head appears in 70% of the situation. In a game involving this coin, if Sanjay is paid ₹20 per head and he has to pay ₹25 for a tail, then in the long run, per game Sanjay makes an average

- a) Profit ₹6.50      b) loss ₹6.50      c) profit ₹3.50      d) loss ₹3.50

16. The probability that two particular persons do not have their birthdays on the same day (where they were born in a non-leap year) is \_\_\_\_\_.

- a)  $\frac{2}{365}$       b)  $\frac{263}{365}$       c)  $\frac{1}{365}$       d)  $\frac{364}{365}$

17. A and B pick a card from pack cards one after the other replacing every time. The person who picks a heart first wins an amount 70. What are the expectations of A and B, if A starts the game?

- a) 20,40      b) 30, 20      c) 40, 30      d) None of these

18. Arun and Varun start playing a game by picking up a card from a well shuffled pack of cards. Whoever picks up a numbered card is declared the winner. If varun starts the game, what is the probability that Arun wins the game?

- a)  $\frac{13}{17}$       b)  $\frac{10}{17}$       c)  $\frac{7}{17}$       d)  $\frac{4}{17}$

19. Find the probability that a number between 1 to 25 selected at random is divisible by either 2 or 7.

a)  $\frac{15}{23}$

b)  $\frac{14}{25}$

c)  $\frac{14}{23}$

d)  $\frac{3}{5}$

20. A committee of 5 members is to be formed from a group of 6 men and 7 women. Find the possibility that the committee contains only men.

a)  $\frac{1}{429}$

b)  $\frac{2}{429}$

c)  $\frac{1}{1287}$

d)  $\frac{4}{429}$

21. Arun speaks truth in 70% of cases while Bhargav speaks truth in 65% of cases. The probability that they will contradict each other while stating the same fact is

a) 0.44

b) 0.72

c) 0.47

d) 0.86

22. Three balls are drawn at random from an urn containing 7 green, 6 black and 2 pink balls. What is the probability that

(i) The three balls are of the same colour?

a)  $\frac{80}{91}$

b)  $\frac{33}{56}$

c)  $\frac{56}{455}$

d)  $\frac{11}{91}$

(ii) Two of them are of same colour and the third is of a different colour?

a)  $\frac{141}{455}$

b)  $\frac{403}{455}$

c)  $\frac{316}{455}$

d)  $\frac{217}{455}$

(iii) The three balls are of different colours?

a)  $\frac{53}{65}$

b)  $\frac{43}{65}$

c)  $\frac{1}{5}$

d)  $\frac{12}{65}$

23. Three mountaineers Akil, Dikil and Sunil are climbing up a mountain with their respective probability of reaching the summit being  $\frac{2}{3}$ ,  $\frac{5}{8}$  and  $\frac{4}{7}$  respectively. What is the probability that:

(i) None of them reach the summit?

a)  $\frac{1}{14}$

b)  $\frac{3}{56}$

c)  $\frac{5}{56}$

d)  $\frac{3}{14}$

(ii) Exactly two of them reaches the summit?

a)  $\frac{37}{84}$

b)  $\frac{5}{12}$

c)  $\frac{37}{84}$

d)  $\frac{19}{28}$

(iii) Atleast two of them reaches the summit?

a)  $\frac{5}{21}$

b)  $\frac{3}{56}$

c)  $\frac{37}{84}$

d)  $\frac{19}{28}$

24. What is the probability that a non leap year has 53 Sundays or 53 Mondays?

a)  $1/7$

b)  $2/7$

c)  $3/7$

d)  $4/7$

25. A task is given to a group of three students. The probabilities of them completing, it individually, are  $\frac{1}{2}$ ,  $\frac{1}{3}$  and  $\frac{1}{4}$ . The probability that the task is successfully completed is

a)  $\frac{5}{6}$

b)  $\frac{1}{2}$

c)  $\frac{23}{24}$

d)  $\frac{3}{4}$

26. A bag contains 4 five rupees coins, 7 two rupees coins and 9 one-rupee coins. If three coins are drawn at random from the bag, then find the odds against drawing the minimum possible amount.

a) 95 : 88

b) 7 : 88

c) 88 : 95

d) 88 : 7

27. Eight unbiased coins are tossed together. The probability that the number of heads is equal to the number of tails is

- a)  $\frac{1}{64}$       b)  $\frac{1}{128}$       c)  $\frac{35}{64}$       d)  $\frac{35}{128}$

28. If four dice are thrown together, then the probability that the product of the numbers showing up on them is a prime number is

- a)  $\frac{1}{54}$       b)  $\frac{1}{108}$       c)  $\frac{1}{432}$       d) 0

29. There are 10 fruits in a bag out of which 2 are rotten. If 3 fruits are selected at random, find the probability that the number of good fruits is more than that of the rotten ones.

- a)  $\frac{1}{15}$       b)  $\frac{13}{15}$       c)  $\frac{14}{15}$       d)  $\frac{11}{15}$

30. A number is selected from a set of numbers {1, 2, ..., 100} at random. Find the probability that the number is divisible by 3 or 5?

- a)  $\frac{1}{2}$       b)  $\frac{53}{100}$       c)  $\frac{47}{100}$       d)  $\frac{1}{15}$

31. If three cards are drawn at random, from a well shuffled pack of cards, then what is the probability that

(i) All of them are from the same suit?

- a)  $\frac{4(\binom{13}{3})}{\binom{52}{3}}$       b)  $\frac{(\binom{13}{3})^3}{\binom{52}{3}}$       c)  $\frac{4(\binom{13}{3})^3}{\binom{52}{3}}$       d)  $\frac{\binom{13}{3}}{\binom{52}{3}}$

(ii) All of them are from different suits?

- a)  $\frac{13}{\binom{52}{3}}$       b)  $\frac{4(\binom{13}{3})^3}{\binom{52}{3}}$       c)  $\frac{\binom{39}{3}}{\binom{52}{3}}$       d)  $\frac{(\binom{13}{3})^4}{\binom{52}{3}}$

32. There are 10 fruits in a bag out of which 2 are rotten. If 3 fruits are selected at random, find the probability that the number of good fruits is more than that of the rotten ones. There are 10 fruits in a bag out of which 2 are rotten. If 3 fruits are selected at random, find the probability that the number of good fruits is more than that of the rotten ones.

- a)  $\frac{1}{15}$       b)  $\frac{13}{15}$       c)  $\frac{14}{15}$       d)  $\frac{11}{15}$

33. Three students are selected from a class of 10 boys and 15 girls. Find the probability that all the students picked are of the same gender?

- a)  $1/5$       b)  $1/3$       c)  $1/2$       d)  $1/4$

34. A bag contains 5 white balls and 3 red balls. If 3 balls are drawn at random, the probability that the 3 balls are red and the rest are white is

- a)  $\frac{175}{198}$       b)  $\frac{175}{396}$       c)  $\frac{35}{132}$       d)  $\frac{221}{396}$

35. A bag contains 7 green and 8 white balls. If two balls are drawn simultaneously, the probability that both are of the same colour is

- a)  $8/15$       b)  $7/15$       c)  $17/84$       d)  $23/84$

36. The odds against Arun solving a problem are 5 : 7 and the odds in favor of Prasant solving the same problem are 4 : 3. The probability that only one of them can solve the problem is
- 13/84
  - 41/84
  - 17/84
  - 23/84
37. Three balls are drawn at random, from a bag containing 6 white, 5 green and 4 red balls. What is the probability that the three balls are different colour's?
- $\frac{67}{91}$
  - $\frac{5}{91}$
  - $\frac{1}{455}$
  - $\frac{24}{91}$
38. Seven letters are to be placed in seven addressed envelopes. If the letters are placed at random into the envelopes, the probability that
- All of them are placed in the corresponding envelopes is  
 (i) 1      (ii)  $\frac{1}{6!}$       (iii)  $\frac{1}{7!}$       (iv)  $\frac{1}{7^7}$
  - Exactly six letters are placed in their corresponding envelopes is  
 (i)  $1 - \frac{1}{7!}$       (ii)  $\frac{1}{7!}$       (iii) 1      (iv) 0
39. Avinash picks a number from the numbers 1 to 25 and found it to be an even number. What is the probability that the number is 12?
- $\frac{1}{13}$
  - $\frac{12}{25}$
  - $\frac{1}{12}$
  - $\frac{1}{6}$
40. A box contains six red sketches, five black sketches and four blue sketches. If two sketches are selected at random, the probability that both the sketches are of the same colour is
- $\frac{31}{105}$
  - $\frac{32}{105}$
  - $\frac{1}{35}$
  - $\frac{11}{35}$
41. A square selected at random from a  $8 \times 8$  chess board then the probability that it is of size  $4 \times 4$  is
- $\frac{3}{68}$
  - $\frac{25}{204}$
  - $\frac{49}{204}$
  - $\frac{3}{17}$
42. Ten people are to be seated in a row. The probability that two particular persons never sit together is \_\_\_\_\_.
- $\frac{4}{5}$
  - $\frac{2}{3}$
  - $\frac{2}{5}$
  - $\frac{3}{5}$
43. There are 3 black balls and 2 green balls in a bag. If three balls are picked from the bag randomly, find the probability that the number of black balls picked is more than that of the green balls picked?
- $\frac{4}{5}$
  - $\frac{1}{2}$
  - $\frac{7}{10}$
  - $\frac{9}{10}$
44. A, B and C together go to a shop in which there are 10 different brands of soap. Each of them picks a brand of soap. Find the probability that they pick different brands of soaps.
- $\frac{7}{10}$
  - $\frac{16}{25}$
  - $\frac{18}{25}$
  - $\frac{14}{25}$
45. If the probability of A telling the truth is 0.8 and the probability of B telling a lie is 0.4, then find the probability that either of them is telling the truth.
- 0.72
  - 0.78
  - 0.92
  - 0.52

46. A bag contains 6 five rupee coins, 5 two rupee coins and 4 one rupee coins. If 5 coins are selected at random from the bag, then find the odds in favor of the draw yielding the minimum possible amount.

- a) 1 : 3002      b) 5 : 2998      c) 2 : 3003      d) 5 : 3003

47. From a box containing 24 bulbs of which exactly  $\frac{3}{4}$  of them are good. Three bulbs are chosen at random to fit into the bulb holders in a room. The probability that the room is lighted is

- a)  $\frac{248}{253}$       b)  $\frac{4}{507}$       c)  $\frac{5}{506}$       d)  $\frac{501}{506}$

48. Rahul picks up a card at random from a set of cards numbered from 201 to 350. If the number on the card that he picks up is a multiple of 8, he wins ₹ 15. If it is a multiple of 13, he wins ₹ 40, and if it is a multiple of both 8 and 13, he wins ₹ 80. In the long run, what is the approximate amount that Rahul will gain on an average if he has to pay ₹ 2 as a participation fee for each draw?

- a) ₹8.67      b) ₹3.06      c) ₹5.67      d) ₹6.34

49. There are people and 6 chairs in a row. Find the probability that a particular person sits in a chair at one of the ends.

- a)  $\frac{2}{3}$       b)  $\frac{1}{6}$       c)  $\frac{1}{3}$       d)  $\frac{1}{4}$

50. Horses A, B and C run a race. The odds in favor of horse to win is 1 : 5, the odds in favor of horse B to win is 1 : 6, the odds in favor of horse C to win is 1 : 7. Find the probability that two horses finish the race simultaneously.

- a)  $\frac{107}{236}$       b)  $\frac{107}{336}$       c)  $\frac{105}{336}$       d)  $\frac{109}{336}$

51. A speaks truth in 60% cases. B speaks truth in 40% cases. Find the probability that both speak a lie at the same time.

- a) 0.48      b) 0.24      c) 0.4      d) 0.6

52. A puzzle in logic was given to 3 students A, B and C whose chances of solving it are  $1/2$ ,  $3/4$  and  $1/4$  respectively. The probability that the problem is solved is

- a)  $29/32$       b)  $31/32$       c)  $1/8$       d)  $7/8$

53. If six persons sit around a table, the probability that some specified three of them are always together is

- a)  $1/20$       b)  $3/10$       c)  $1/5$       d)  $4/5$

54. When a biased dice is rolled the probability of getting an even number is thrice the probability of getting an odd number. If that dice is rolled twice, then find the probability that the sum of the two numbers is odd.

- a)  $\frac{3}{8}$       b)  $\frac{2}{5}$       c)  $\frac{1}{8}$       d)  $\frac{5}{8}$

55. Anil throws a biased coin on which heads appears in 70% of the trials. In a game involving this coin, if Anil receives ₹20 for a head and if he has to pay ₹25 for a tail, then in the long run per game, Anil makes an average

- a) Loss of ₹6.50      b) profit of ₹10.90      c) profit of ₹6.50      d) loss of ₹10.50

56. Five digit numbers are formed using the digits 0 to 5 without repetition. The probability that the number so formed is divisible by 5 is

- a)  $\frac{4}{15}$       b)  $\frac{3}{25}$       c)  $\frac{1}{5}$       d)  $\frac{5}{8}$

57. Three persons Shiva, Japan and Rohit aim at a target. Their respective probabilities of hitting the target are  $2/3$ ,  $5/7$  and  $3/8$ . What is probability that at least two of them hit the target?

- a)  $\frac{9}{14}$       b)  $\frac{107}{168}$       c)  $\frac{77}{168}$       d)  $\frac{79}{84}$

### KEY

1.	b	2.	d	3.	c	4.	(i)	d	(ii)	c	5.	c
6.	a	7.	b	8.	c	9.	c	10.	b	11.	c	
12.	(a)	ii	(b)	iv	(c)	iii	(d)	ii				
13.	(i)	a	(ii)	c	14.	c	15.	a	16.	d	17.	c
18.	d	19.	c	20.	b	21.	a					
22.	(i)	d	(ii)	c	(iii)	d						
23.	(i)	b	(ii)	a	(iii)	d						
24.	b	25.	d	26.	d	27.	d	28.	b	29.	c	
30.	c	31.	(i)	a	(ii)	b	33.	d	34.	b		
35.	b	36.	c	37.	d	38.	d	39.	c	40.	a	
41.	b	42.	a	43.	c	44.	c	45.	c	46.	b	
47.	d	48.	b	49.	c	50.	c	51.	b	52.	a	
53.	b	54.	a	55.	c	56.	d	57.	b			

## 20. PERMUTATIONS & COMBINATIONS

1. In how many ways can the letters of the word FREQUENT be arranged so that all the vowels are together?  
a) 2720                    b) 2600                    c) 2160                    d) 2800
2. How many 6-letter words with distinct letters can be formed using the letters of the word INDEPENDENT?  
a) 720                    b) 120                    c) 600                    d) 500
3. How many words can be formed using all the letters of the word EDUCATION such that no two consonants come together?  
a)  $6! \times {}^6P_4$             b)  $5! \times {}^6P_4$             c)  $6! \times {}^5P_4$             d) None of these
4. Find the number of words that can be formed using all the letters of the word PROJECT such that they start with R and never end with P.  
a) 600                    b) 800                    c) 640                    d) 900
5. A cinema hall has a capacity of 100 seats – 40 seats in the balcony and 60 seats on the ground floor. In how many ways can 100 viewers be accommodated, if 10 of them want to be in the balcony and 15 other refuse to be in the balcony?  
a)  $\frac{75!}{45!}$                     b)  $75! \cdot 40! \cdot 60!$             c)  $\frac{75!}{30!}$                     d)  $\frac{75!}{45!30!}$
6. How many 5 – digit numbers can be formed using the digits 0, 2, 3, 4, 5, 8 and 9, if repetition of the digits is not allowed?  
a) 2160                    b) 2560                    c) 180                            d) 1260
7. A boat is to be manned by eight men of whom 2 can only row on bow side and 1 can only row on stroke side. In how many ways can the crew be arranged?  
a) 2880                    b) 5760                    c) 3080                    d) 5460
8. How many different arrangements can be made by using all the letters of the word “INDEPENDENCE” if D’s come together?  
a)  $\frac{11!}{3!4!}$                     b)  $\frac{11!}{3!4!} \times 5!$                     c)  $\frac{11!}{3!} \times 5!$                     d)  $\frac{11!}{5!3!4!}$
9. In how many ways can six girls and six boys be seated in a row such that no two girls sit together?  
a)  $6! \times 6!$                     b)  $6! \times 6! \times 2$                     c)  $7! \times 7!$                     d)  $6! \times 7!$
10. In how many ways can six boys and six girls be seated in a row such that boys and girls sit alternately?  
a)  $2! \times 6! \times 6!$                     b)  $7! \times 6!$                     c)  $6! \times 6!$                     d)  $\frac{7!}{2!}$
11. A group of friends reserve two circular tables in a restaurant for a dinner. One table has 4 chairs and the other has 6 chairs. In how many ways can the group seat themselves for the dinner?  
a)  $\frac{10!}{4!6!}$                     b)  $\frac{10!}{4!}$                     c) 10!                            d) 3! 5!

12. In how many ways can 4 letters be selected from the letters of the word ADDRESSEE?
- a) 126                    b) 28                    c) 30                    d) 120
13. How many arrangements can be made by taking 4 letters from the word in the previous question?
- a) 9!                    b) 370                    c) 540                    d) 280
14. In how many ways can 10 people be seated on a rectangular dining table 5 on each sides, if three people refuse to sit on side A and two people refuse to sit on side B?
- a)  $5P_3 \times 5P_2$             b)  $5P_3 \times 5!$             c)  $5P_3 \times 5P_2 \times 5!$             d)  $[5P_3]^2 \times 5!$
15. In how many ways can 10 prizes be distributed to 4 students if each student has to receive at least one prize?
- a) 12                    b) 84                    c) 7                            d) 91
16. In how many ways can 20 distinct books be divided equally
- (i) among 4 girls?
- a)  $\frac{20!}{(4!)^5}$             b)  $\frac{20!}{(5!)^4 4!}$             c)  $\frac{20!}{4! 5!}$                     d)  $\frac{20!}{(5!)^4}$
- (ii) into 4 parcels?
- a)  $\frac{20!}{(4!)^5}$             b)  $\frac{20!}{(5!)^4 4!}$             c)  $\frac{20!}{4! 5!}$                     d)  $\frac{20!}{(5!)^4}$
17. How many ten – digit numbers can be formed using all the digits of 1324642119 such that the even digits appear only in odd places?
- a)  $(5!)^2$                     b)  $\frac{(5!)^2}{3!}$                     c)  $5! 3! 2!$                     d)  $\frac{(5!)^2}{(2!) 3!}$
18. The letters of the word TINSEL are permuted in all possible ways and are arranged in a dictionary pattern. The rank of the word LISTEN is
- a) 240                    b) 281                    c) 360                    d) 280
19. A bag contains 5 black balls and 6 green balls. Find the number of ways of picking 5 balls such that the number of black balls picked is more than that of the green balls.
- a) 180                    b) 181                    c) 170                    d) 190
20. A committee of 6 members is to be formed from 8 men and 6 women. In how many ways can it be formed so that at least one man is present in the group?
- a) 2002                    b) 2001                    c) 3002                    d) 3003
21. How many ways can four mathematics books, five science books and three English books can be placed on a shelf such that books belonging to the same subject are always together?
- a)  $(5!)(3!)(4!)(2!)$             b)  $(3!)(5!)(4!)$             c)  $(3!)^2(5!)(4!)$             d) None of these
22. A bag contains 4 red balls, 5 green balls and 7 yellow balls. In how many ways can one or more balls be selected?
- a) 239                    b) 240                    c) 279                    d) 319

23. A certain number of students of a school participated in the chess tournament of their Annual Sport Meet. Each player played 1 game against each of the other player. It was found that in 66 games both the players were girls, and in 240 games one was a girl and the other was a boy. The number of games in which both the players were boys is.
- a) 190                    b) 95                    c) 210                    d) 380
24. Ten points are plotted in a plane such that no three of them lie on a straight line. Out of these points are joined to each of the remaining six points is joined to exactly five points. How many line segments are formed?
- a) 27                    b) 25                    c) 29                    d) 24
25. Twenty people participated in a function. Every person shakes hands with every other person. How many handshakes are exchanged?
- a) 200                    b) 190                    c) 380                    d) 400
26. In how many ways can a group of 4 women and 5 men be selected from 10 couples such that a particular couple is included?
- a)  ${}^{20}C_9$                     b)  ${}^9C_4 \times {}^9C_5$                     c)  ${}^{10}C_4 \times {}^{10}C_5$                     d)  ${}^9C_3 \times {}^9C_4$
27. (i) The number of rectangles in a  $10 \times 10$  square grid is  
 a) 1296                    b) 2025                    c) 3025                    d) 1225  
 (ii) Find the number of squares in a  $8 \times 8$  chess board.  
 a) 203                    b) 2014                    c) 140                    d) 250
28. Which regular polygon has the same number of diagonals as sides?
- a) Hexagon                    b) Pentagon                    c) Decagon                    d) Octagon
29. There are 3 sections in a question paper, each containing 5 questions. A candidate has to solve any 5 questions, choosing at least one question from each section. In how many ways can he make his choice?
- a) 1850                    b) 2250                    c) 1050                    d) 1300
30. In how many ways can a sequence of N digits be formed involving 0's and 1's alone, so that the sequence has at least one non-zero digit.
- a)  ${}^nC_2$                     b)  $2^n$                     c)  $2^n - 1$                     d)  $\frac{n!}{2}$
31. In how many ways can the letters of the word SPECIAL be arranged in a row such that the vowels occupy only the odd places?
- a) 426                    b) 144                    c) 576                    d) 720
32. An advertisement board is to be designed with five vertical stripes using some or all of the colours red, blue and green. In how many ways can the board be designed such that no two adjacent stripes have the same color?
- a) 12                    b) 36                    c) 24                    d) 48
33. How many four-digit numbers, that are divisible by 3, can be formed, using the digits 0, 1, 2, 3 and 8 if no digit is to occur more than once in each number?
- a) 36                    b) 18                    c) 54                    d) 78
34. How many different 6-letter words can be formed using the letters of the word NARESH such that they do not start with N and end with H?
- a) 96                    b) 100                    c) 120                    d) 90

35. In how many ways can ten persons be seated in a row so that our particular persons always occupy the first four positions?
- a) 720      b) 8640      c) 17280      d) None of these
36. How many six-digit numbers can be formed using the digits 0, 1, 2, 3, 4, 5. If every digit is used at most once in each number?
- a) 720      b) 600      c) 120      d) 500
37. The number of words that can be formed by using all the letters of the word “SUPER” which begin with R but not end with S is
- a) 120      b) 24      c) 13      d) 6
38. How many numbers between 4000 and 5000 can be formed with the digits 2, 3, 4, 5, 6, 7?
- (i). with any of the digits occurring any number of times  
 a) 216      b) 60      c) 116      d) 164
- (ii) with no digit repeating?  
 a) 60      b) 116      c) 216      d) 164
39. If the letters of the word ARISE are arranged in a row in all possible ways and the arrangements are listed in alphabetical order as in a dictionary, then the rank of the word RAISE is
- a) 51      b) 75      c) 76      d) 68
40. Let K be an integer such that the sum of the digits of K is 3 and  $10^6 \leq K \leq 10^7$ . How many values can ‘K’ have?
- a) 15      b) 13      c) 27      d) 28
41. In how many ways can 10 post-cards be posted into 6 letter boxes?
- a)  $10^6$       b)  $6^{10}$       c)  ${}^{10}C_6 (10)(9)(8)(7)(6)(5)(4)$       d)  ${}^{10}P_6$
42. In how many ways can 6 girls and 6 boys sit around a circular table so that no two boys sit together?
- a)  $(5!)^2$       b)  $(6!)^2$       c)  $5! \cdot 6!$       d)  $11!$
43. In how many ways can 5 couples be seated around a circular table where Mr. A refuses to sit beside Ms. B?
- a)  $9! \times 4$       b)  $8! \times 7$       c)  $9! \times 6$       d)  $9! \times 8$
44. A number lock has a 4 digit security code whose first digit is not zero. The maximum number of failure attempts a thief can make to open the number5 lock is:
- a) 7999      b) 9000      c) 8499      d) 8999
45. How many words can be formed using all the letters of the word ‘PICASA’ such that .the consonants occupy the odd numbered places?
- a) 9      b) 36      c) 24      d) 18
46. A tea party is arranged for 16 persons of which 5 particular people sit on one side of a rectangular table and 3 particular persons sit on the other side. Find the number of ways of arranging them if there are 8 chairs on either side of the table.
- a)  ${}^{16}C_8 \times 8!$       b)  ${}^{16}P_8 \times 8!$       c)  ${}^8P_5 \times {}^8P_3 \times 8!$       d)  ${}^8C_3 \times {}^8C_5 \times 8!$
47. A storage place contains 3 Nokia phones and 4 Samsung phones. Find the number of ways of arranging them so that no two phones of the same company are together.

a) 120

b) 144

c) 5040

d) 150

48. If the number of diagonals of an n sided regular polygon is 54, then find the value of n.

a) 11

b) 12

c) 13

d) 14

49. In how many ways can 120 delegates be divided into three groups consisting of 20, 40 and 60 delegates?

a)  $20! \cdot 40! \cdot 60!$

b)  $120!$

c)  $20! + 40! + 60!$

d)  $\frac{120!}{20! \cdot 40! \cdot 60!}$

50. Consider the word ANTIBIOTIC.

(i) In how many ways can 4 letters be selected from the word?

a) 68

b) 63

c) 66

d) 72

(ii) How many arrangements can be made by taking 4 letters from the word?

a) 1720

b) 1230

c) 1444

d) 1634

### KEY

1. c

2. a

3. b

4. a

5. 4

6. a

7. b

8. a

9. d

10. a

11. b

12. c

13. b

14. c

15. b

16. (i) d

(ii)

b

17. d

18. b

19. b

20. c

21. c

22. a

23. a

24. a

25. b

26. d

27. (i) c

(ii)

b

28. b

29. b

30. c

31. c

32. d

33. a

34. a

35. c

36. b

37. c

38. (i) a

(ii)

a

39. c

40. d

41. b

42. c

43. b

44. d

45. d

46. c

47. b

48. b

49. d

50. (i) d

(ii)

b

# 21. CLOCK

1. In 3 hours the minute hand of a clock rotates through an angle of  
a)  $60^0$       b)  $90^0$       c)  $1080^0$       d)  $720^0$
2. In  $1 \frac{1}{2}$  hours the hour hand of a clock rotates through an angle of  
a)  $45^0$       b)  $540^0$       c)  $75^0$       d)  $900^0$
3. In 22 minutes the hand gains over the hour hand by  
a)  $121^0$       b)  $132^0$       c)  $112^0$       d)  $123^0$
4. When the hands of a clock shows 5 O' clock, the angle between them is  
a)  $120^0$       b)  $100^0$       c)  $135^0$       d)  $150^0$
5. What is the angle between the two hands of a clock, when the clock shows 10.30  
a)  $100^0$       b)  $112^0$       c)  $120^0$       d)  $135^0$
6. At what angle are the hands of a clock inclined at 40 minutes past 8  
a)  $10^0$       b)  $20^0$       c)  $35^0$       d)  $60^0$
7. The angle between two hour division consecutively is :  
a)  $20^0$       b)  $12^0$       c)  $15^0$       d)  $30^0$
8. If the two hands in a clock are 3 minutes divisions apart, then the angle between them is  
a)  $36^0$       b)  $24^0$       c)  $18^0$       d)  $60^0$
9. At what time between 4 and 5 O' clock are the hands of a clock together  
a) 22 min past 4      b)  $21 \frac{9}{11}$  min past 4      c)  $22 \frac{2}{11}$  min past 4      d)  $22 \frac{4}{11}$  min past 4
10. In between 6 p. m and 7 p. m, when will both the hands be together  
a)  $35 \frac{3}{11}$  min past 6      b)  $32 \frac{8}{11}$  min past 6      c)  $29 \frac{1}{11}$  min past 6      d) None of these
11. Between 12 O' clock and 1 O'clock, when will the hands of a clock be together again  
a) 59 min past 12      b) 45 min past 12      c)  $50 \frac{2}{11}$  min past 12      d) Never happens
12. In between 5 and 6, when will both the hands be 7 minutes spaces apart  
a)  $34 \frac{10}{11}$  min and  $19 \frac{7}{11}$  min past 5      b) 34 min and 19 min past 5  
c)  $34 \frac{10}{11}$  min and  $19 \frac{7}{11}$  min past 6      d) None of these
13. How many minutes past 5'O clock, do the hands of a clock 3 minutes spaces apart?  
a)  $24 \& 32 \frac{4}{11}$       b)  $24 \& 30 \frac{6}{11}$       c)  $24 \frac{3}{11} \& 32 \frac{4}{11}$       d)  $24 \frac{3}{11} \& 30 \frac{6}{11}$

14. The angle between the two hands of a clock is  $60^0$ , when the hour hand is between 2 and 3. What time does the watch show.
- $20 \frac{7}{11}$  min past 2
  - $20 \frac{9}{11}$  min past 2
  - $21 \frac{7}{11}$  min past 2
  - $21 \frac{9}{11}$  min past 2
15. At what time between 5 and 6 O' clock will the minute and the hour hand make an angle of  $34^0$  with each other
- $21 \frac{1}{11}$  min past 5
  - $33 \frac{5}{11}$  min past 5
  - Both 1 and 2
  - None of these
16. At what time between 5' O clock and 6' O clock will the hands of a clock be at right angle for the first time
- $10 \frac{10}{11}$  min past 5
  - $10 \frac{9}{11}$  min past 5
  - $10 \frac{8}{11}$  min past 5
  - $10 \frac{7}{11}$  min past 5
17. At what time are the hands of a clock at right angles between 7'O clock and 8' O clock
- $19 \frac{5}{11}$  min past 7
  - $21 \frac{9}{11}$  min past 7
  - 18 min past 7
  - None of these
18. At what time between 4.30 and 5' O clock will the minute and the hour hand are perpendicular to each other
- $5 \frac{5}{11}$  min past 4
  - $39 \frac{2}{11}$  min past 4
  - $38 \frac{2}{11}$  min past 4
  - None of these
19. At what time between 1.30 p. m and 2 p. m will both the hands of a clock be at right angles
- $21 \frac{9}{11}$  min past 1
  - $54 \frac{6}{11}$  min past 1
  - Can't say
  - None of these
20. How often are the hands of a clock at right angle everyday
- 44 times
  - 40 times
  - 22 times
  - 38 times
21. At what time between 7' O clock and 8' O clock will the minute and the hour hand are on the same straight line but facing opposite directions.
- $5 \frac{5}{11}$  min past 8
  - $5 \frac{5}{11}$  min past 7
  - $5 \frac{2}{11}$  min past 7
  - 5 min past 7
22. At what time between 4.30 and 5 will the hands of a watch point in opposite direction
- $5 \frac{5}{11}$  min past 4
  - $5 \frac{5}{11}$  min past 5
  - Never happens
  - $54 \frac{6}{11}$  min past 4
23. Number of times the hands of a clock are in a straight line everyday is
- 44 times
  - 24 times
  - 22 times
  - 48 times
24. How many times do the hands of a clock point towards each other in a day
- 22 times
  - 12 times
  - 24 times
  - 20 times

25. A boy observes the reflection of a wall clock in a mirror; the time appeared to be 3010.

What is the time shown in the clock when its reflection is not observed in the mirror?

- a) 4.45      b) 7.25      c) 5.55      d) 6.25

26. Venu asks Gopi, I a wall clock shows 10.30, what time does it show in the mirror?

- a) 8.15      b) 1.30      c) 2.45      d) 3.15

27. When the reflection of a wall clock is seen in a mirror, the time appeared to be 3.10.

What is the time shown in the clock when its reflection is not observed in the mirror?

- a) 8.50      b) 7.50      c) 6.50      d) None of these

28. The minute hand of a clock over takes (or coincides) the hour hand at intervals of 65 minutes of correct time. How much does the clock gain or lose in 12 hours?

- a)  $5 \frac{5}{143}$  minutes gain      b)  $5 \frac{5}{143}$  minutes loses  
c)  $10 \frac{10}{143}$  minutes loses      d)  $10 \frac{10}{143}$  minutes gain

29. How much does a watch gain or lose per day, if its hands coincide every 64 minutes

- a)  $32 \frac{8}{11}$  minutes gain      b)  $34 \frac{2}{11}$  minutes gain  
c)  $32 \frac{8}{11}$  minutes loses      d)  $34 \frac{2}{11}$  minutes loses

30. The minute hand of a clock over takes the hour hand at intervals of 66 minutes of correct time. How much does the clock gain or lose in 24 hours.

- a) Loses  $11 \frac{109}{121}$  min      b) loses  $5 \frac{5}{11}$  min      c) gains  $4 \frac{4}{121}$  min      d) gains  $5 \frac{5}{11}$  min

31. A clock is set right at 1 p. m. If it gains 15 minutes an hour, what is the true time when the clock indicates 6 p. m. the same day.

- a) 5 p. m      b) 4 p. m      c) 7 p. m      d) None of these

32. A clock is set right at 5 a.m. The clock loses 16 minutes in 24 hours. What will be the true time when the clock indicates 10 p.m. on the 4<sup>th</sup> day?

- a) 9 a.m.      b) 9 p.m.      c) 11 a.m.      d) 11 p.m

33. A clock gains 10 minutes in 24 hours. It is set right on Monday at 8 a.m. What will be the correct time on the following Wednesday, when the watch indicates 6 p.m.?

- a) 5.36 p. m      b) 5.40 p. m      c) 4.36 p. m      d) None of these

34. A clock is set to show the correct time at 11 a.m. The clock gains 12 minutes in 12 hours.

What will be the true time when the watch indicates 1 p. m on the 6<sup>th</sup> day?

- a) 10 a. m      b) 11 a. m      c) 12 noon      d) None of these

35. A watch which gains 10 seconds in 5 minutes was set right at 9 a. m. When the watch indicated 20 minutes past 7' O clock, the same evening, the true time is  
 a) 7 p. m                    b) 7.40 p. m                    c) 7.10 p. m                    d) 8 p. m
36. The watch which gains uniformly is 2 mins slow at noon on Sunday and is 4 min, 48 sec fast 2 p. m on the following past 7' O clock, the same evening, the true time is  
 a) 2 p. m on Tuesday                    b) 12 noon on Monday  
 c) 1.30 p. m on Tuesday                    d) 12.45 p. m on Monday
37. My watch was 3 minutes slow at 5 p. m Tuesday and it was 5 minutes fast at 11 p. m Wednesday. When did it give correct time?  
 a) Wednesday 4.15 a. m                    b) Wednesday 7.30 a. m  
 c) Tuesday 3.45 p. m                    d) None of these
38. If a clock takes 22 seconds to strike 12, how much time will it take to strike 6.  
 a) 10 sec                    b) 11 sec                    c) 12 sec                    d) 14 sec
39. A clock strikes once at 1' O clock, twice at 2' O clock, thrice at 3' O clock and so on. How many times will it strike in it 12 hours?  
 a) 78                    b) 156                    c) 136                    d) 196
40. A man goes out in between 5 p. m and 6 p. m. When he comes back in between 6 p. m. and 7 p. m., he observes that the two hands of a clock have interchanged their position. Find when the men did go out.  
 a)  $32\frac{4}{13}$  mins past 5    b)  $32\frac{4}{13}$  mins past 6    c)  $32\frac{4}{13}$  mins past 7    d) None of these

### KEY

1. c	2. a	3. a	4. d	5. d	6. b
7. d	8. c	9. b	10. b	11. d	12. a
13. b	14. d	15. c	16. a	17. b	18. c
19. b	20. a	21. b	22. d	23. a	24. a
25. d	26. b	27. a	28. a	29. a	30. a
31. a	32. d	33. a	34. b	35. a	36. a
37. a	38. a	39. a	40. a		

## 22. CALENDAR

1. The number of days from 1947, August 15<sup>th</sup> to 1947, October 2<sup>nd</sup>.  
a) 47                    b) 49                    c) 48                    d) 46
2. The number of days from 1950, January 26<sup>th</sup> to 1950, March 25<sup>th</sup> (both days inclusive)  
a) 59                    b) 58                    c) 57                    d) 56
3. The number of odd days from 1869, October 2<sup>nd</sup> to 1869, November 14<sup>th</sup>  
a) 2                    b) 1                    c) 0                    d) 3
4. I was born on Monday. My brother is 350 days younger to me. On which day of the week was he born.  
a) Sunday                b) Tuesday                c) Saturday                d) Monday
5. I was born on Sunday. My sister is 143 days elder to me. On which day of the week was she born.  
a) Tuesday                b) Friday                c) Wednesday                d) Thursday
6. 22<sup>nd</sup> July, 1985 was Tuesday. The day of the week on 14<sup>th</sup> December, 1985 was  
a) Monday                b) Wednesday                c) Friday                d) Sunday
7. 15<sup>th</sup> May, 1992 was Monday. The day of the week on 25<sup>th</sup> November 1992 was  
a) Sunday                b) Saturday                c) Thursday                d) Friday
8. 29<sup>th</sup> November, 1988 was Tuesday. The day of the week on 18<sup>th</sup> May, 1989 was  
a) Saturday                b) Friday                c) Thursday                d) Sunday
9. 16<sup>th</sup> December, 1999 was Thursday. The day of the week 12<sup>th</sup> July, 1999 was  
a) Sunday                b) Monday                c) Tuesday                d) Friday
10. 20<sup>th</sup> March, 1999 was Saturday. The day of the week on 16<sup>th</sup> October, 1998 was  
a) Friday                b) Thursday                c) Monday                d) Sunday
11. If Tuesday fails on 5<sup>th</sup> April 1988. What was the day of the week on 3<sup>rd</sup> November, 1987  
a) Monday                b) Tuesday                c) Wednesday                d) Sunday
12. 15<sup>th</sup> August 1946 was Thursday. The day of the week on 15<sup>th</sup> August, 1947 was  
a) Wednesday                b) Thursday                c) Friday                d) Saturday
13. January 1<sup>st</sup>, 1992 was Wednesday. What day of the week will it be on January 1<sup>st</sup>, 1995  
a) Monday                b) Tuesday                c) Sunday                d) Friday
14. The day on 8<sup>th</sup> April of a leap year is Wednesday. The day on April 8<sup>th</sup> after 3 years will be  
a) Wednesday                b) Thursday                c) Saturday                d) Sunday

15. Today is October 2<sup>nd</sup>, 1997, the day of week is Thursday. This is not a leap year. Find the day of the week of this date in the coming leap year  
a) Monday      b) Tuesday      c) Wednesday      d) Thursday
16. 29<sup>th</sup> November, 1987 was Sunday. The day of the week on 29<sup>th</sup> November, 1999 was  
a) Sunday      b) Monday      c) Tuesday      d) Wednesday
17. 26<sup>th</sup> January, 1950 was Thursday. The day of the week on 26<sup>th</sup> January, 2000 will be  
a) Tuesday      b) Wednesday      c) Thursday      d) Friday
18. 13<sup>th</sup> December, 1999 was Monday. The day of the week on 13<sup>th</sup> December, 1990 was  
a) Saturday      b) Thursday      c) Wednesday      d) Tuesday
19. 15<sup>th</sup> April, 1988 was Friday. The day of the week on 22<sup>nd</sup> August, 1992 was  
a) Saturday      b) Tuesday      c) Wednesday      d) Thursday
20. 17<sup>th</sup> June, 1999 was Thursday. The day of the week on 10<sup>th</sup> March, 1980 was  
a) Sunday      b) Monday      c) Tuesday      d) Friday
21. Find the day of the week on 30<sup>th</sup> January, 1948  
a) Wednesday      b) Friday      c) Saturday      d) Monday
22. Smt. Indira Gandhi died on 31<sup>st</sup> October 1984. The day of the week was  
a) Tuesday      b) Wednesday      c) Friday      d) Monday
23. P.V. Narasimha Rao was elected party leader on 29<sup>th</sup> May 1991. What was the day of the week  
a) Sunday      b) Friday      c) Wednesday      d) Tuesday
24. On what dates of August 1988 did Fridays fall  
a) 5<sup>th</sup>      b) 12<sup>th</sup>      c) 19<sup>th</sup>      d) All of the above
25. The calendar for the year 2001 is the same as that for the year.  
a) 2007      b) 2012      c) 2029      d) None of these
26. The calendar for the year 1994 is the same as that for the year.  
a) 2005      b) 2000      c) 2001      d) 2002
27. The calendar for the year 1987 is the same as that for the year.  
a) 1991      b) 1992      c) 1993      d) 1998
28. The calendar for the year 1984 is the same as that for the year.  
a) 2004      b) 1987      c) 2012      d) 1988
29. If 1<sup>st</sup> January of a leap year falls on Saturday, how many Sundays are in that year.  
a) 52      b) 53      c) 54      d) None of these

30. Number of times 29<sup>th</sup> day of the months occurs in 400 consecutive years is.

- a) 4497                    b) 4800                    c) 4400                    d) None of these

31. At a certain company, the annual winter party is always held on the second Friday of December. What is the latest possible date for the party?

- a) December 14            b) December 15            c) December 18            d) December 22

**[Puzzle]:** A, B, C, D, E, F and G were seven consecutive year something between 1901 and 1986. It is also that

- i) 24<sup>th</sup> January was a Sunday in the year A.
- ii) New year day was a Friday in year G.
- iii) 16<sup>th</sup> March fell on the same day of the week in the A as 29<sup>th</sup> March fell in the year B.
- iv) 18<sup>th</sup> January fell on the same day of the week in the year C, as 31<sup>st</sup> January in the year D.

A. The leap years among the seven years given are

- a) A & E                    b) B & F                    c) C & G                    d) D alone

B. 15<sup>th</sup> January in the year B was a

- a) Saturday                    b) Tuesday                    c) Thursday                    d) Wednesday

C. 24<sup>th</sup> January in year C was a

- a) Monday                    b) Tuesday                    c) Thursday                    d) Wednesday

### KEY

1.	c	2.	a	3.	b	4.	d	5.	d	6.	d
7.	b	8.	c	9.	b	10.	a	11.	b	12.	c
13.	c	14.	c	15.	a	16.	b	17.	b	18.	b
19.	a	20.	b	21.	b	22.	b	23.	c	24.	d
25.	a	26.	a	27.	d	28.	c	29.	b	30.	d
31.	d										