WORKBOOK OF

ADVANCED ANALYTICAL SKILLS-II

Department of Analytical Skills

Centre for Professional Enhancement

PREFACE

Companies that hire students through campus placements have various rounds to shortlist suitable candidates; these rounds include aptitude tests, group discussions and then personal interview. Most, if not all the companies follow this recruitment pattern.

Almost 90% of the applied candidates don't clear the aptitude test. The aptitude test is used to test the candidate on Quantitative Aptitude, Verbal Ability, and Analytical Ability/Logical Reasoning.

Quantitative Aptitude and Reasoning is very important subject to test your problem solving skills. So, in every competitive written exam they asked questions from this subject, not only in written they may ask some brain storming puzzles in interview also. It is the one of the key concept to qualify written exam almost every students who know basic mathematics can solve most of the questions in the exam but the main problem is that the time management, the recruiters does not give enough time to solve the problems so one who has more practice the model questions before exam can easily solve in the exams.

This book is essential for aptitude exams as all the important topics are discussed in this book. This book explains all the concepts clearly and also covers all the types of the questions.

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UNIT 1

TIME AND WORK (EFFICIENCY)

Work to be considered as one unit. It may be constructing a wall, filling a tank, or eating certain amount of food.

There are some basic assumptions that are made in the problems of time and work. They are taken for granted and are not specified in every problem.

1. If a person does some work in a certain no. of days, we assume that he does the work uniformly i.e. he does the same amount of work every day.

For example, if a man can do a work in 5 days, it means that he does 1/5 work in 1 day and same 1/5 work on second day and so on till the work complete.

2. If there is more than one person carrying out the work, it is assumed that each person unless otherwise specified, does the same amount of work each day. It means they share work equally.

For example, if 4 persons together completes a work in 2 days, it means that one person can do it in 8 days and this means that each person can do 1/8 of the work per day. So basic concept used in solving the problems related to time and work is that

- If a person completes a work in n days, then the work done by that person in one day will be 1/n.
- Similarly, if the work done by a person is one day is 1/k, then he will complete the work in k days.

If A can do a piece of work in p days and B can do it in q days then A and B together can complete the same in pq/p+q days

If A can do a piece of work in p days and B can do it in q days then A and B together can complete the same in LCM (p,q) /(lcm/p+lcm/q) days. This method may also use if the no. of men is more than two.

Examples:

Ex1. – A can do a work in 10 days. B can do the same work in 15 days. In how many days can the work be completed if A and B work together?

Sol: method 1: work done by A in 1 day = 1/10

Work done by B in 1 day = 1/15

Work done by A and B together in 1 day = 1/10 + 1/15= 1/6

They can complete it in 6 days.

Method 2: using formula A and B can do the work in

10x15 / 10+15 = 150/25 = 6 days.

Method 3: calculate LCM (10, 15) = 30

The answer in how days they will complete the work together will be

30/ (30/10 + 30/15) = 6 days.

By the method of LCM the problems in which there are more than 2 persons working can also be solved easily.

Ex2. – If A, B, C and D can complete a piece of work in 10, 15, 20 and 25 days respectively. Find in how many days they will complete the work working together?

Sol: by method third of previous example, we first find LCM (10, 15, 20, 25) i.e. = 300

Now divide this LCM with no. of days in which they complete the work individually

300/10 = 30, 300/15 = 20, 300/20 = 15 and 300/25 = 12

Hence the answer will be 300/(30+20+15+12) = 300/77 days.

Ex3. – A and B together can do a piece of work in 24 days and A alone can complete the work in 36 days. How long will B alone take to complete the work?

Work done by A alone in 1 day = 1/36

Work done by both in 1 day= 1/24

Hence work done by B alone in 1 day = 1/24- 1/36 = 1/72

And hence B will complete the work in 72 days.

Ex4. – A and B together complete a work in 36 days, B and C together completes in 48 days. And A and C completes in 72 days. How long would each take to do the job?

Sol: A+B work in 1 day = 1/36..... (1)

B+C work in 1 day= 1/48..... (2)

A+C work in 1 day = 1/72..... (3) Adding (1) + (2) + (3), we get

2(A+B+C)'s 1 day work = 1/36+1/48+1/72 = 9/144 = 1/16

And hence (A+B+C)'s 1 day work = 1/32

Now 1 day work of A = 1/32 – 1/48 = 1/96 therefore A completes the work in 96 days.

Now 1 day work of B = 1/32 – 1/72 = 5/288 therefore A completes the work in 288/5 days.

Now 1 day work of C = 1/32 – 1/36 = 1/288 therefore A completes the work in 288 days.

Ex5. – A can do in 18 days. When he had work for 2 days, B joined him. If they complete the remaining work in 4 more days. In how many days B alone finish the whole work?

Sol: Work done by A in 1 day= 1/18

Number of days A work = 2+4 = 6 therefore, total work done by A = 6x1/18 = 1/3

The remaining 2/3 work is done by B in 4 days and hence complete work done by B will be 4x(3/2) = 6 days.

Ex6. – Ram completes 60% of a task in 15 days and then takes the help of Rahim and Rachel. Rahim is 50% as efficient as Ram is and Rachel is 50% as efficient as Rahim is. In how many more days will they complete the work?

Ram completes 60% of the task in 15 days.

i.e., he completes 4% of the task in a day.

Rahim is 50% as efficient as Ram is.

Therefore, Rahim will complete 2% of the task in a day.

Rachel is 50% as efficient as Rahim is

Therefore, Rachel will complete 1% of the task in a day.

Together, Ram, Rahim and Rachel will complete 4+2+1 = 7% of the work in a day.

They have another 40% of the task to be completed.

Therefore, they will take 40/7 more days to complete the task.

Ex7. – X can do a piece of work in 20 days working 7 hours a day. The work is started by X and on the second day one man whose capacity to do the work is twice that of X, joined. On the third day another man whose capacity is thrice that of X, joined and the process continues till

the work is completed. In how many days will the work be completed, if everyone works for four hours a day?

Sol: Since X takes 20 days working 7 hours a day to complete the work, the number of day-hours required to complete this work would be 140 day- hours. Like in the two problems above, this is going to be constant throughout. So, W = 140 day-hours.

Amount of work done in the 1st day by X = 1 day x 4 hours = 4 day-hours 2nd day, X does again 4 day-hours of work.

The second person is twice as efficient as X so he will do 8 day-hours of work. Total work done on second day =8+4= 12 day-hours. Amount of work completed after two days= 12+4 = 16 day-hours.

3rd day, X does 4 day- hours of work. Second person does 8 day-hours of work. Third person who is thrice as efficient as X does 12 day-hours of work. Total work done on 3rd day = 4+8+12 = 24 day-hours. Amount of work completed after 3 days = 16+ 24 = 40 day-hours. Similarly on 4th day the amount of work dome would be 4+8=12+16 = 40 day-hours. Work done on the 5th day = 4+12+16+20= 60 day-hours. Total work done after 5 days= 4+12+24+40+60 = 140 day-hours= W. So it takes 5 days to complete the work.

Ex8. – P, Q and R can do a work in 20, 30 and 60 days respectively. How many days does it need to complete the work if P does the work and he is assisted by Q and R on every third day?

Sol: Amount of work P can do in 1 day = 1/20

Amount of work Q can do in 1 day = 1/30

Amount of work R can do in 1 day = 1/60

P is working alone and every third day Q and R is helping him

Work completed in every three days = 2 x (1/20) + (1/20 + 1/30 + 1/60) = 1/5

So work completed in 15 days = 5 x 1/5 = 1

Hence, the work will be done in 15 days

Chain Rules

In order to understand the concept of chain rule first we should recollect the fundamentals on variation (direct and inverse) for example

- If the work increases the number of men required to complete the work in same number of days increases proportionately and vice versa and hence directly proportional.

- If the work remaining constant men and days are inversely proportional i.e., if the number of men increases, the number of days required to complete the same work decreases and vice versa and hence inversely proportional.

In general, we can use a formula in chain rule i.e.,

If M1 no. of men can complete a work in D1 days and M2 no. of men can complete a work in D2 day then M1 x D1 = M2 x D2

If M1 no. of men can complete a work in D1 days working H1 hours per day and M2 no. of men can complete a work in D2 days working H2 hours per day then M1 x D1 x H1 = M2 x D2 x H2

If M1 no. of men can complete a work W1 in D1 days working H1 hours per day and M2 no. of men can complete a work W2 in D2 days working H2 hours per day then

(M1 x D1 x H1)/W1 = (M2 x D2 x H2)/W2

Now we will clear the above concepts with the help of some examples.

Ex1. – 36 men can complete a piece of work in 18 days. In how many days will 27 men complete the same work?

Sol: less men, means more days (indirect proportion)

Let the number of days be x

Then, 27: 36:: 18: x

[Please pay attention, we have written 27:36 rather than 36:27, in indirect proportion, if you get it then chain rule is clear to you :)]

x = (36 x 18)/27

x = 24

So 24 days will be required to get work done by 27 men.

Ex2. – 39 persons can repair a road in 12 days, working 5 hours a day. In how many days will 30 persons, working 6 hours a day, complete the work?

Sol: Let the required number of days be x.

Less persons, more days (indirect proportion)

More working hours per day, less days (indirect proportion)

Person 30:39: : 12: x

Working hours/day 6:5

30 X 6 X **x** = 39 X 5 X 12

x = 13

Ex3. - An industrial loom weaves 0.128 meters of cloth every second. Approximately, how any seconds will it take for the loom to weave 25 meters of cloth?

Sol: Let the time required by x seconds.

Then, more cloth means more time (direct proportion)

So, 0.128: 1: : 25 : x

x = (25 x 1)/0.128

x = 195.31 So time will be approx. 195 seconds

Ex4. – A fort had provision of food for 150 men for 45 days. After 10 days, 25 men left the fort. The number of days

for which the remaining food will last, is:

Sol: After 10 days: 150 men had food for 35 days.

Suppose 125 men had food for x days.

Now, less men, more days (indirect proportion)

125 : 150 :: 35 : x

125 x x = 150 x 35

x = (150 x 35)/125

x = 42.

Ex5. – If 18 binders bind 900 books in 10 days, how many binders will be required to bind 660 books in 12 days?

Sol: Let the required no. of binders be x.

Less books, less binders (direct proportion)

More days, less binders (indirect proportion)

Books 900:600 :: 18 : x

Days 12:10

(900 x 12 x x) = (600 x 10 x 18)

x = 600 x 10 x 18 So, x = 11.

Ex6. – A contractor undertakes to do a piece of work in 40 days. He engages 100 men at the beginning and 100 more after 35 days and completes the work in stipulated time. If he had not engaged the additional men, how many days behind schedule would it be finished?

[(100 x 35) + (100 x 35) + (200 x 5)] men can finish the work in 1day

4500 me can finish the work in 1 day. 100 men can finish it in 4500/100 = 45 days.

This is 5 days behind schedule

All the above examples an also be solved by using formula

(M1 x D1 x H1)/W1 = (M2 x D2 x H2)/W2

The values which are in numerator are those who have indirect proportion with the unknown value and those who have direct proportion with unknown is kept in denominator.

Practice Problems

1) A and B can do a piece of work in 15 days. B and C can do the same work in 10 days and A and C can do the same work in 12 days. Time taken by A, B and C together to do the job is?

A) 4 days B) 9 days C) 8 days D) 5 days

2) A, B and C can complete a work in 10, 12 and 15 days respectively. A left the work 5 days before the work was completed and B left 2 days after A had left. The number of days required to complete the whole work is?

A) 8⅔ days B) 6⅔ days C) 7 days D) 6 days

3) A can complete a piece of work in 10 days, B in 15 days and C in 20 days. A and C worked together for two days and then A was replaced by B. In how many days, altogether, the work was completed?

A) 12 days B) 10 days C) 6 days D) 8 days

4) A can complete a piece of work in 18 days, B in 20 days and C in 30 days. B and C together start the work and are forced to leave after 2 days. The time taken by A alone to complete the remaining work is?

A) 10 days B) 12 days C) 15 days D) 16 days

5) A can do a piece of work in 20 days and B in 30 days. They work together for 7 days and then both leave the work. Then C alone finishes the remaining work in 10 days. In how many days will C finish the full work?

A) 25 days B) 30 days C) 24 days D) 20 days

6) X can do a piece of work in 24 days. When he had worked for 4 days, Y joined him. If complete work was finished in 16 days, Y can alone finish that work in how many days?

A) 18 days B) 27 days C) 36 days D) 42 days

7) A can do a piece of work in 20 days and B in 30 days. They work together for 7 days and then both leave the work. Then C alone finishes the remaining work in 10 days. In how many days will C finish the full work?

A) 25 days B) 30 days C) 24 days D) 27 days

8) A, B and C can do a job in 6 days, 12 days and 15 days respectively. After 1/8 of the work is completed, C leaves the job. Rest of the work is done by A and B together. Time taken to finish the rest of the work is.

A) 5(5/6) days B) 5(1/4) days C) 3(1/2) days D) 3(3/4) days

9) A, B and C can do a piece of work individually in 8, 10 and 15 days, respectively. A and B start working but A quits after working for 2 days. After this, C joins B till the completion of work. In how many days will work be completed?

A) 53/9 days B) 34/7 days C) 85/13 days D) 53/10 days

10) A can do a piece of work in „x" days and B can do the same work 3x days. To finish the work together they take 12 days. What is the value of „x"?

A) 8 B) 10 C) 12 D) 16

11) P can do a work in 24 days. Q can do the same work in 9 days and R can do the same in 12 days. Q and R start the work and leave after 3 days. P finishes the remaining work in-----days.

A) 7 B) 8 C) 9 D) 10

12) P takes twice as much as Q or thrice as much time as R to finish a piece of work. They can finish the work in 2 days if work together. How much time will Q take to do the work alone?

A) 4 B) 5 C) 6 D) 7

13) Anil and Suresh are working on a special assignment. Anil needs 6 hours to type 32 pages on a computer and Suresh needs 5 hours to type 40 pages. If both work together on the two different computers, how much time is needed to type an assignment of 110 pages?

A) 7 hours 15 minutes B) 7 hours 30 minutes C) 8 hour 15 minutes D) 8 hour 30 minutes

14) P is 30% more efficient than Q. P can complete a work in 23 days. If P and Q work together, how much time will it take to complete the same work?

A) 9 B) 11 C) 13 D) 15

15) A, B and C can individually complete a piece of work in 30, 50 and 75 days respectively. They worked on 1 day each with A starting the work followed by B the next day and C the next day. They continued working in this way till the 30th day after which the remaining work is completed by B and C working on alternate days starting with B on 31st day. In how many days was the work completed?

A) 35 B) 40 C) 45 D) 50

16) Some persons can do a piece of work in 12 days. Two times the number of such persons will do half of that work in:

A) 3 days B) 9 days C) 12 days D) 2 days

17) A certain number of men can finish a piece of work in 100 days. If, there were 10 men less, it would take 10 days more for the work to be finished. How many men were there originally?

A) 75 B) 82 C) 100 D) 110

18) If a certain number of workmen can do a piece of work in 25 hours, in how many hours will another set of an equal number of men, do a piece of work, twice as great, supposing that 2 men of the first set can do as much work in a hour, as 3 men of the second set do in an hour?

A) 70 B) 60 C) 30 D) 75

19) A contract is to be completed in 46 days and 117 men were set to work, each working 8 hours a day. After 33 days, 4/7 of the work is completed. How many additional men may be employed so that the work may be completed in time, each man now working 9 hours a day?

A) 80 B) 100 C) 81 D) 120

20) 2 men and 3 boys can do a piece of work in 10 days, while 3 men and 2 boys can do the same work in 8 days. In how many days can 2 men and 1 boy can complete, double of the earlier work in?

A) 12 days B) 20 days C) 24 days D) 25 days

21) A company employed 200 workers to complete a certain work in 150 days. If only one-fourth of the work has been done in 50 days, then in order to complete the whole work in time, the number of additional workers to be employed was?

A) 100 B) 300 C) 600 D) 200

22) A contractor was engaged to construct a road in 16 days. After working for 12 days with 20 workers it was found that only 5/8th of the road had been constructed. To complete the work in stipulated time the number of extra workers required is?

A) 18 B) 10 C) 12 D) 16

23) A contractor employed 30 men to do a piece of work in 38 days. After 25 days, he employed 5 more men more and the work was finished one day earlier. How many days he would have been behind, if he had not employed additional men?

a) 1 days B) 5/4 days C) 7/4 days D) 3/2 days

24) Assume that 20 cows and 40 goats can be kept for 10 days for Rs. 460. If the cost of keeping 5 goats is the same as the cost of keeping 1 cow, what will be the cost for keeping 50 cows and 30 goats for 12 days?

A) Rs. 1104 B) Rs. 1000 C) Rs. 934 D) Rs. 121025) 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) 40 days B) 36 days C) 32 days D) 34 days

26) If 5 men or 10 women or 20 children can do a piece of work in 12 days. In how many days will 3 men and 6 women and 80 children can do the same work?

A) 30/13 B) 12 C) 5 D) none

27) If 12 man and 16 young men can do a bit of work in 5 days; 13 man and 24 young men can do it in 4 days, then the proportion of the everyday work done by a man to that of a kid is:

A) 2:1 B) 3:1 C) 3:2 D) 5:4

28).A and B working separately can do a piece of work in 9 and 12 days respectively. If they work for a day alternatively, A beginning, in how many days the work will be completed?

A)10 (1/4)days B) 10(1/3)days C) 12 days D)None

29).To do a certain work, A and B work on alternate days, with B beginning the work on the first day. A can finish the work alone in 48 days. If the work gets completed in 11(1/3) days, then B alone can finish 4 times the same work in:

A)24 days B)27 days C) 25 days D)30 days

30).A can build a wall in 10 days ,B can destroy the wall in 15 days. If they works in alternate days in how many days they will build the wall?

A)30days B)29days C)55 days D)60days

31) There are two pumps to fill a tank with water. First pump can fill the empty tank in 8 hours, while the second in 10 hours. If both the pumps are opened at the same time and kept open for 4 hours, the part of tank that will be filled up is

A) 2/5 B) 9/10 C) 1/54 D) 1/10

32) Pipes P and Q can fill a tank in 10 and 12 hours respectively and C can empty it in 6 hours. If all the three are opened at 7 a.m., at what time will one-fourth of the tank be filled?

A) 11 p.m. B) 10 a.m. C) 11 a.m. D) 10 p.m.

33) Two pipes A and B can separately 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 tree 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) 80 minutes B) 100 minutes C) 20 minutes D) 25 minutes

34) Three pipes A, B and C can fill a tank in 6 hours, 9 hours and 12 hours respectively. B and C are opened for half an hour, then A is also opened. The time taken by the three pipes together to fill the remaining part of the tank is

A) 2(1/2) hours B) 3 hours C) 3(1/2) hours D) 2 hours

35) There are two taps in a tank A and B, which can fill the tank in 12 hours and 10 hours respectively and a third tap C, can empty the full tank in 15 hours. If tap A is opened at 7:00 am, tap B is opened at 9:00 am and tap C is opened at 10:00 am. On which time the tank will be filled?

A) 4:15 pm B) 2:20 pm C) 3:35 pm D) 1:00 pm

36) Two pipes can fill a cistern separately in 24 minutes and 40 minutes respectively. A waste pipe can drain off 30 litres per minute. If all three pipes are opened, the cistern fills in one hour. The capacity (in litres) of the cistern is–

A) 800 L B) 400 L C) 600 L D) 500 L

37) If two pipes can fill a tank in 24 and 20 minutes respectively and another pipe can empty 3 gallons of water per minute from that tank. When all the three pipes are working together, it takes 15 minutes to fill the tank. What is the capacity of the tank?

A) 100 gallons B) 150 gallons C) 125 gallons D) 120 gallons

38) It takes 6 hours for three pipes, X, Y and Z to fill a tank. When the three worked together for 2 hours, Z was closed and, X and Y filled the remaining tank in 7 hours. How many hours would it take Z alone to fill the tank?

A) 15 hours B) 23 hours C) 12 hours D) 14 hours

39) Two inlet pipes A and B together can fill a tank in 'X' minutes. If A and B takes 81 mins and 49 mins more than X mins respectively to fill the tank. Then they can fill the $5/7^{th}$ of that tank in how many minutes?

A)45mins B)49mins C) 63 mins D)81mins

40). An inlet pipe takes 8 hrs to fill a tank while an outlet pipe takes 6 hrs to drain the tank. A tank full of water is attached with 8 pipes (inlet and outlet), all pipes are opened simultaneously and the total time to drain the tank is 6 hrs then find the number of inlet pipes out of 8 pipes.

A)4 B)5 C) 6 D)3

Company Specific

1) A work was completed by three persons of equal ability, first one doing m hours for m days, second one doing n hours for n days (m and n being integers) and third one doing 16 hours for 16 days. The work could have been completed in 29 days by third person alone with his respective working hours. If all of them do the work together with their respective working hours, then they can complete it in about

A) 12 days B) 13 days C) 14 days D) 15 days

2) Three labourers worked together for 30 days, in the course of work, all of them remained absent for few days. One of them was absent for 10 days more than the second labourer and the third labourer did one-third of the total work. How many days more than the third labourer was the first one absent?

A) 4 B) 5 C) 6 D) None

3) A and B do a work in exactly 16 days, B and C do the same work in exactly 12 days while C and A do the same work in about 10 days. If A, B and C can together do the work in integral number of days, then C does the work alone in

A) 15 days B) 16 days C) 18 days D) none of these

4) Two persons A and B can do a work alone in 29 days. A takes the rest of one day after every 4 days and B takes the rest of one day after every 5 days. If A and B starts working together, then the work will be completed on

A) 15th day B) 16th day C) 17th day D) 18th day

5) 12 men and 16 boys can do a piece of work in 5 days and 13 men and 24 boys can do it in 4 days. Compare the daily work done by a man with that done by a boy.

A) 3 : 2 B) 2 : 1 C) 4 : 7 D) 3 : 1

6) If 5 men and 3 boys can reap 23 hectares in 4 days and if 3 men and 2 boys can reap 7 hectares in 2 days, then how many boys must assist 7 men in order that they may reap 45 hectares in 6 days?

A) 1 B) 2 C) 3 D) 4

7) 10 men and 12 children complete a certain piece of work in 10 days. Each child takes thrice the time taken by a man to complete the work. The time taken by 12 men to finish the same work is

A) 11.66 days B)10 days C) 10.33 days D) 12.16 days

8) To do a certain piece of work, B would take three times as long as A and C together and C twice as long as A and B together. The three men working together can complete the work in 10 days. How long would B take by himself to complete the same piece of work?

A) 24 days B) 30 days C) 40 days D) 36 days

9) Ram can do a piece of work in 20 days which Shyam can do in 30 days. They begin together with the condition that Ram shall leave the job 3 days before the actual completion of work. What is the total number of days required to complete the work?

A) 14 days B) 19 days C) 27 days D) 9 days

10) 25 days of Ram's wages can be paid by a certain sum of money. The same amount of money is sufficient to pay Badri prasad‟s wages for 20 days. The number of days for which the money will be sufficient to pay the wages of both if they work together is

A) 10 days B) 11 days C) 100/9 days D) 110/9 days

11) Two coal loading machines each working 12 hours per day for 8 days handles 9 tons of coal with an efficiency of 90%. While 3 other coal loading machines at an efficiency of 80% set to handle 12 tons of coal In 6 days. Find how many hours per day each should work?

A) 12 hrs/day B) 16 hrs/day C) 20 hrs /day D) 18 hrs/day

12) A drain pipe can drain a tank in 12 hours, and a fill pipe can fill the same tank in 6 hours. A total of n pipes – which include a few fill pipes and the remaining drain pipes – can fill the entire tank in 2 hours. How many of the following values could „n‟ take?

A) 9 B) 7 C) 5 D) 3

13) Pipe A, B and C are kept open and together fill a tank in t minutes. Pipe A is kept open throughout, pipe B is kept open for the first 10 minutes and then closed. Two minutes after pipe B is closed, pipe C is opened and is kept open till the tank is full. Each pipe fills an equal share of the tank. Furthermore, it is known that if pipe A and B are kept open continuously, the tank would be filled completely in t minutes. How long will it take C alone to fill the tank?

A) 18 B) 36 C) 27 D) 24

14) Pipes A, B and C can fill a tank in 30, 60 and 120 minutes respectively. Pipes B and C are kept open for 10 minutes, and then Pipe B is shut while Pipe A is opened. Pipe C is closed 10 minutes before the tank overflows. How long does it take to fill the tank?

A) 40 minutes B) 28 minutes C) 30 minutes D) 36 minutes

15) A cistern of capacity 40 litres has an inlet and an outlet pipe. When both the pipes are opened at once, it takes 8 minutes to fill the cistern. However, if the outflow rate is increased 1.5 times, the cistern never gets filled. Which of the following can be the outflow rate?

A) 8 litres/minute B) 6 litres/minute C) 12 litres/minute D) 9 litres/minute

16) A cistern of 475 litres is completely filled using pipes A and B, with Pipe A being open for 5 more hours than pipe B. If we are to interchange the operating hours of the two pipes than pipe A would have pumped half the water as much as pipe B, then find the time for which pipe B was open. Also, given that if the two pipes were open simultaneously the tank would fill in 19 hours.

A) 10 hrs B) 14 hrs C) 16 hrs D) 20 hrs

17) Two pipes A and B are attached to an empty water tank. Pipe A fills the tank while pipe B drains it. If pipe A is opened at 2 pm and pipe B is opened at 3 pm, then the tank becomes full at 10 pm. Instead, if pipe A is opened at 2 pm and pipe B is opened at 4 pm, then the tank becomes full at 6 pm. If pipe B is not opened at all, then the time, in minutes, taken to fill the tank is

A) 140 B) 120 C) 144 D) 264

18) A tank is emptied every day at a fixed time point. Immediately thereafter, either pump A or pump B or both start working until the tank is full. On Monday, A alone completed filling the tank at 8 pm. On Tuesday, B alone completed filling the tank at 6 pm. On Wednesday, A alone worked till 5 pm, and then B worked alone from 5 pm to 7 pm, to fill the tank. At what time was the tank filled on Thursday if both pumps were used simultaneously all along?

A) 4 : 12 PM B) 4 : 24 PM C) 4 : 48 PM D) 4 : 36 PM

19) A water tank has inlets of two types A and B. All inlets of type A when open, bring in water at the same rate. All inlets of type B, when open, bring in water at the same rate. The empty tank is filled in 30 minutes if 10 inlets of type A and 45 inlets of type B are open, and in 1 hour if 8 inlets of type A and 18 inlets of type B are open. In how many minutes will the empty tank get filled if 7 inlets of type A and 27 inlets of type B are open?

A) 40 minutes B) 48 minutes C) 30 minutes D) 36 minutes

20) A tank is fitted with pipes, some filling it and the rest draining it. All filling pipes fill at the same rate, and all draining pipes drain at the same rate. The empty tank gets filled in 6 hours when 6 filling and 5 draining pipes are on, but this time becomes 60 hours when 5 filling and 6 draining pipes are on. In how many hours will the empty tank get filled when one draining and two filling pipes are on?

A) 10 B) 12 C) 14 D) 26

UNIT 2

TIME, SPEED & DISTANCE

Speed

Speed basically tells us how fast or slow an object moves.

It is described as the distance travelled by an object divided with the time taken to cover that distance.

Speed = Distance/Time

This shows that Speed is directly proportional to distance but inversely proportional to time.

Distance = Speed * Time and,

Time = Distance/Speed

Example: What is the distance covered by a car travelling at a speed of 40 kmph in 15 minutes?

Solution:

Distance= speed* time= 40*15/60=10 km.

Average Speed

Case 1: When Time is Constant

The average speed of travelling at two different speeds for the same time span is just the simple average of two speeds.

Let Speed 1 be x km/hr. Let Speed 2 be y km/hr

Therefore,

Average Speed when time is same = (x+y)/2

Example: A car is travelling at an average speed of 45kmph for the 1st hour and at 65 kmph for the next 1 hour. Calculate his average speed.

Solution: As the time is same, i.e. 1 hour,

Average speed= (45+65)/2= 55 kmph.

Case 2: Average Speed When Distance is Constant

Average Speed = 2ab/(a+b) (where a and b are two speeds)

Example: On his way to office, Big Bull was travelling at 30 kmph and on the return journey, he was travelling at 45kmph. What is Big Bull's average speed?

Solution: 37.5 kmph is incorrect as the time travelled is different in both the cases and only the distances are same.

Let distance = x km

Therefore, Time taken on Big Bull's onward journey =x/30 hours and

Time taken on his return journey=x/45 hours

Therefore, total time = (x/30)+ (x/45) hours.

Total distance = 2x km

Average speed= 36kmph

Problems on Trains

Speed of the Train = Total distance covered by the train / Time taken

If the length of two trains is given, say a and b, and the trains are moving in opposite directions with speeds of x and y respectively, then the time taken by trains to cross each other = {(a+b) / (x+y)}

If the length of two trains is given, say a and b, and they are moving in the same direction, with speeds x and y respectively, then the time is taken to cross each other = {(a+b) / (x-y)}

When the starting time of two trains is the same from x and y towards each other and after crossing each other, they took t1 and t2 time in reaching y and x respectively, then the ratio between the speed of two trains = √t2 : √t1

If two trains leave x and y stations at time t1 and t2 respectively and travel with speed L and M respectively, then distanced from x, where two trains meet is = (t2 – t1) × {(product of speed) / (difference in speed)}

The average speed of a train without any stoppage is x, and with the stoppage, it covers the same distance at an average speed of y, then Rest Time per hour = (Difference in average speed) / (Speed without stoppage)

If two trains of equal lengths and different speeds take t1 and t2 time to cross a pole, then the time taken by them to cross each other if the train is moving in opposite direction = (2×t1×t2) / (t2+t1)

If two trains of equal lengths and different speeds take t1 and t2 time to cross a pole, then the time taken by them to cross each other if the train is moving in the same direction = (2×t1×t2) / (t2-t1)

Boat And Stream

Stream – The moving water in a river is called a stream.

Upstream – If the boat is flowing in the opposite direction to the stream, it is called upstream. In this case, the net speed of the boat is called the upstream speed

Downstream – If the boat is flowing along the direction of the stream, it is called downstream. In this case, the net speed of the boat is called downstream speed

Still Water – Under this circumstance the water is considered to be stationary and the speed of the water is zero

Upstream = (u−v) km/hr, where “u” is the speed of the boat in still water and “v” is the speed of the stream

Downstream = (u+v) Km/hr, where “u” is the speed of the boat in still water and “v” is the speed of the stream

Speed of Boat in Still Water = ½ (Downstream Speed + Upstream Speed)

Speed of Stream = ½ (Downstream Speed – Upstream Speed)

Average Speed of Boat = {(Upstream Speed × Downstream Speed) / Boat’s Speed in Still Water}

Practice Problem

1) A car takes half of the time taken by truck to go from Lucknow to Bombay. A truck takes 20 hours to go for the same journey. What is the speed of the truck, if the speed of the car is 120 km/hr?

A) 40 B) 20 C) 60 D) 30

2) Two men start together to walk a certain distance, one at 4 kmph and another at 3 kmph. The former arrives half an hour before the latter. Find the distance.

A) 6 km B) 9 km C) 8 km D) None of these

3) Shweta when increasing her speed from 24 km/hr to 30 km/hr she takes one hour less than the usual time to cover a certain distance. What is the distance usually covered by Shweta?

A) 140 B) 120 C)160 D) 130

4) A car during its journey travels 30 minutes at a speed of 40 kmph, another 45 minutes at a speed of 60 kmph, and 2 hours at a speed of 70 kmph. The average speed of the car is

A) 63.07 kmph B) 64 kmph C) 62.02 kmph D) None of these

5) A man walks 6 km at a speed of 1 1/2 kmph, runs 8 km at a speed of 2 kmph and goes by bus another 32 km. Speed of the bus is 8 kmph. Find the average speed of the man.

A) 4 (5/6) kmph B) 3 (5/6) kmph C) 5 (7/6) kmph D) None of these

6) Walking at 4/5 of his normal speed, Dewang is 15 minutes late in reaching his club. What is the usual time taken by him to cover the distance?

A) 40 B) 10 C) 60 D) 30

7) Kriplani goes to school at 20 km/hr and reaches the school 4 minutes late. Next time, she goes at 25 km/hr and reaches the school 2 minutes earlier than the scheduled time. What is the distance of her school?

A) 40 B) 10 C) 60 D) 30

8) A car starts from A for B travelling 20 km an hour.1 1/2 hours later another car starts from A and travelling at the rate of 30 km an hour reaches B 2 1/2 hours before the first car. Find the distance from A to B.

A) 280 km B) 260km C) 240km D) None of these

9) A train starts from Delhi at 6:00 a.m. and reaches Meerut at 10 a.m. The other train starts from Meerut at 8 a.m. and reaches Delhi at 11:30 a.m. If the distance between Delhi and Meerut is 200 km, then at what time did the two trains meet each other?

A) 8:56 a.m. B) 8:46 a.m. C) 7:56 a.m. D) 8:30 a.m.

10) A man by motorcycle goes from Delhi to Bharatpur, a distance of 192 km, at an average speed of 32 kmph. Another man starts from Delhi by car 2.5 h after the motorcyclist starts and reaches Bharatpur half an hour late. What is the ratio of person on the motorcycle to the person going by car ?

A) 1:2 B) 2:3 C) 10:27 D) 5:4

11) A tiger is 50m of its own leaps behind a deer. The tiger takes 5 leaps per minutes to deer's 4 leaps. If the tiger and the deer cover 8 m and 5 m per leap respectively, what distance will the tiger have to run before it catches the deer?

A) 600 m B) 700 m C) 800 m D) 1000 m

12). In a linear race of 1000 m, A beats B by 50 m or 5 seconds. What is the difference between the speeds (in m/s) of A and B?

A)1(10/19) B)10/19 C) 9/19 D)None of these

13). In a 400 m race, A can give B 30 m and C 50 m start . In the 1850m race B can give to C a start of?

A).80m B).90m C).85m D).100m

14) Three runners participated in a Circular Race, completes the race in 12 sec, 15 sec and 20 sec respectively. if all the three starts at the same time and the same point then find when all will meet at the first time at starting point?

A).120sec B).80sec C).60sec D).160sec

15) Raju, Ketan and Ritu run around a circular track of length 2400 m with respective speeds 9, 18, 27 kmph. If they started at the same time from the same point and run in the same direction when will they meet for the first time?

A).360 sec B).480 sec C).240 sec D).960 sec

16) A train 150 m long is running with a speed of 54 km per hour. In what time will it pass a telegraph post?

A) 11 s B) 10 s C) 7 s D) 6 s

17) Two trains travelling in the same direction at 40 kmph and 22 kmph completely pass each other in 1 minutes. If the length of first train is 125 m, what is the length of second train?

A) 125 m B) 150m C) 175 m D) 200m

18) A train overtakes two persons walking along a railway track. The first person walks at 4.5 km/hr and the other walks at 5.4 km/hr. The train needs 8.4 and 8.5 seconds respectively to overtake them. What is the speed of the train if both the persons are walking in the same direction as the train?

A) 81 km/hr B) 88 km/hr C) 62 km/hr D) 46 km/hr

19) A train passes a station platform in 36 seconds and a man standing on the platform in 20 seconds. If the speed of the train is 54 km/hr, what is the length of the platform?

A) 120 m B) 240 m C) 300 m D) None of these

20) Two trains start at the same time from Pune and Delhi and proceed towards each other at 80 kmph and 95 kmph respectively. When they meet, it is found that one train has travelled 180 km more than the other. Find the distance between Delhi and Pune.

A) 2100km B) 2000 km C) 1500km D) 1800km

21). From P and Q, two trains start moving towards each other at the same time. Their speeds are 120 km/hr and 100 km/hr, respectively. When the two trains meet each other, one train has covered 40 km more than other train. Find the distance between P and Q?

A)440km B)460km C)400km D)600km

22). Jammu Express is 1.2 km long and is running along the Kerala express at speed of 80km/hr. Kerala express is 2/3rd the length of Jammu express and runs at 60 km/hr. How much time will it take for Jammu express to overtake the Kerala express?

A)4min B)6min C)9min D)10min

23). A starts from X at 9:00 am and reaches Y at 1:00 pm. B starts from Y at 9:00 am and reaches X at 3 pm. At what time do the two meet?

A)11:44am B) 12:20am C)11:24am D)12:00am

24.Trains A and B start traveling at the same time towards each other with constant speeds from stations X and Y, respectively. Train A reaches station Y in 10 minutes while train B takes 9 minutes to reach station X after meeting train A. Then the total time taken, in minutes, by train B to travel from station Y to station X is

A)15 B)10 C)20 D)25

25. Two trains A and B were moving in opposite directions, their speeds being in the ratio 5 : 3. The front end of A crossed the rear end of B 46 seconds after the front ends of the trains had crossed each other. It took another 69 seconds for the rear ends of the trains to cross each other. The ratio of length of train A to that of train B is

A)1:2 B) 2:3 C)2:5 D)3:2

26. Train A trails Train B by 50 meters. Train B travels at 45km/hr. Train C travels from the opposite direction at 54km/hr. Train C is at a distance of 220 meters from Train B. If Train A decides to overtake Train B before Trains B and C cross each other, what is the minimum speed at which Train A must travel?

A)67.5kmph B) 87.5kmph C) 72.5kmph D)None

27. Cities M and N are 600km apart. Train A starts from city M towards N at 9AM and train B starts from city N towards M at the same time. Train A travels the first one-third of the distance at a speed of 40kmph, the second one-third at 50kmph and the third one-third at 60kmph. Train B travels the first one-third of the total time taken at a speed of 40kmph, the second one-third at 50kmph and the third one-third at 60kmph. When and where will the two Trains cross each other?

A)295km from M B) 290km from M C)300 from N D) 250 from N

28.A train X departs from station A at 11.00 a.m. for station B, which is 180 km away. Another train Y departs from station B at 11.00 a.m. for station A. Train X travels at an average speed of 70 kms/hr and does not stop anywhere until it arrives at station B. Train Y travels at an average speed of 50 kms/hr, but has to stop for 15 minutes at station C, which is 60 kms away from station B enroute to station A. Ignoring the lengths of the trains, what is the distance, to the nearest km, from station A to the point where the trains cross each other?

A)110 B)111 C)112 D)115

29. Navjivan Express from Ahmedabad to Chennai leaves Ahmedabad at 6:30 am and travels at 50 km per hour towards Baroda situated 100 km away. At 7 : 00 am Howrah-Ahmedabad Express leaves Baroda towards Ahmedabad and travels at 40 km per hour. At 7 : 30 Mr. Shah, the traffic controller at Baroda realises that both the trains are running on the same track. How much time does he have to avert a head-on collision between the two trains?

A)25mins B)20mins C)30mins D)15mins

30.A train approaches a tunnel AB. Inside the tunnel is a cat located at a point that is 3/8th of the distance AB measured from the entrance A. When the train whistles, the cat runs. If the cat moves to the entrance of tunnel A, the train catches the cat exactly at the entrance. If the cat moves to the exit B, the train catches the cat exactly at the exit. The speed of the train is greater than the speed of the cat by what order?

A)4:1 B)2:1 C) 3:7 D) 4:5

31) A man can row 30 km upstream in 6 hours. If the speed of the man in still water is 6 km/hr, find how much he can row downstream in 10 hours.

A) 70 km B) 140 km C) 200 km D) 250 km

32) A motorboat can travel at 5 km/hr in still water. It travelled 90 km downstream in a river and then returned, taking altogether 100 hours. Find the rate of flow of the river.

A) 3 km/hr B) 3.5 km/hr C) 2 km/hr D) 4 km/hr

33) A man rows 24 km upstream in 6 hours and a distance of 35 km downstream in 7 hours. Then the speed of the man in still water is

A) 4.5 km/hr B) 4 km/hr C) 5 km/hr D) 5.5 km/hr

34) A man rows „k" km upstream and back again downstream to the same point in H hours. The speed of rowing in still water is s km/hr and the rate of stream is r km/hr. Then

A) (s2-r2) =2sk /H B) (r + s) = kH / (r -s) C) rs = kH D) None of the above

35) A boat travels from point A to B, a distance of 12 km. From A it travels 4 km downstream in 15 minutes and the remaining 8 km upstream to reach B. If the downstream speed is twice as high as the upstream speed, what is the average speed of the boat for the journey from A to B?

A) 10(2/3)km/hr B) 9.6 km/hr C) 11.16 km/hr D) 10.44 km/hr

36) A boat makes a return journey from point A to point B and back in 5 hours 36 minutes. One way it travels with the stream and on the return it travels against the stream. If the speed of the stream increases by 2 km/hr, the return journey takes 9 hours 20 minutes. What is the speed of the boat in still water? (The distance between A and B is 16 km.)

A) 5 km/hr B) 3 km/hr C) 7 km/hr D) 9 km/hr

37) If the upstream speed of a boat is 50% less than the downstream speed of the boat and if a object is thrown in the river it covers 100m in 50 sec, then how much distance boat can cover in still water in 5 hours?

A) 900 km B) 100 km C) 120 km D) 108 km

38) Ratio between speed of boat in still water to speed of stream is 5 : 2. If 224 km is travelled by downstream in 4 hours then find the difference between speed of boat in still water and speed of stream?

A) 24 km/hr B) 22 km/hr C) 28 km/hr D) 26 km/hr

39. The ratio of speed of A and B in still water is 3 : 2. A and B start from the same point in the river, A goes upstream and B goes downstream. After 3 hours the stream stops flowing and A starts rowing in the opposite direction to meet B. How much time after the stream stops flowing does A meet B?

A). 16 hrs B). 15 hrs C). 12 hrs D). 18 hrs E). None of these

40. There are 3 points P, Q and R in a straight line, such that point Q is equidistant from points P and R. A man can swim from point P to R downstream in 24 hours and from Q to P upstream in 16 hours. Find the ratio of speed of man in still water to speed of stream?

A). 5 : 1 B). 6 : 1 C). 5 : 3 D). 7 : 1

Company Specific

1) A train overtakes two persons who are walking in the same direction in which the train is going, at the rate of 2 kmph and 4 kmph and passes them completely in 9 seconds and 10 seconds respectively. The length of the train (in metres) is))

A) 45 B) 54 C) 50 D) 72

2) A boat can travel 30 km downstream in 1 hour, if speed of the current is 1/5th of the speed of the boat. Then find how much time will boat take to travel 40 km in upstream?

A) 2 hours B) 4 hours C) 6 hours D) 3 hours

3) Two trains of different length can cross a pole in 10 seconds and when both the trains are running in same direction. First train crosses second train in 20 seconds. If sum of the length of both trains is 840 meters, then find length of both the trains?

A) 650mtr, 190mtr B) 630mtr, 210mtr C) 630mtr,310mtr D) 600mtr,240mtr

4) A train crosses a bridge in 30 seconds and crosses a platform in 45 seconds respectively. If the sum of the length of train and platform is 600 meters, then find the length of the platform and length of the train?

A) 200m, 400m B) 300m, 300m C) 180m, 420m D) 250m, 350m

5) Two trains A and B starts their journey from Goa and Shimla respectively towards each other. The speed of train A is 60 km/hr and speed of train B is 50 km/hr. After crossing each other train B takes 16 hours to reach their destination. Find the time taken by train A to reach their destination after crossing the train B?

A) 26/5 hours B) 25/8 hours C) 23/3 hours D) 25/9 hours 28

6) The total distance between Madurai to Chennai is 960 km. A train starts running with an average speed of 80 km/hr from Madurai to Chennai while another train starts its journey after 2 hour of first train and reaches Chennai one hour before first train. If the first train stops for 6 minutes on each station and second train covers the distance without any stoppage. If the total number of station between Madurai and Chennai are 10. Then find the speed of second train?

A) 80 km/hr B) 85 km/hr C) 96 km/hr D) 90 km/hr

7) The speed of train A is 60% more than the speed of train B. If train B covers 6120 meter in 36 seconds. Then find in how much time train A can cover 8160 meter distance?

A) 40 seconds B) 35 seconds C) 30 seconds D) 25 seconds

8) The distance between Chenai and Rameshwaram is 1580 km. Ashwin starts from Rameshwaram with a certain speed towards Chennai at and Kartik starts travelling from Chennai towards Rameshwaram with a speed of 60 km/hr, 5 hours later than the Ashwin. If Kartik meets Ashwin in 3 hours after starts the journey. Find the speed of Ashwin and also find the distance travelled by Ashwin in 5 hours.

A) 90 km/hr, 450 km B) 80 km/hr, 500 km C) 75 km/hr, 450 km D) 100 km/hr, 550 km

9) A train passes a man standing on the station with a speed of 90 km/hr in y time and an another train passes the station. The length of the station is 120 meter. The time taken by second train in passing the station is 4 times the time taken by first train in passing the man. The speed of the second train is 126 km/hr. If the length of second train is 3 times the length of the first train. Find the sum of the length of the both trains. (upto two point of for decimal).

A) 188.88 meter B) 190 meter C) 184.61 meter D) 175.61 meter

10) Two trains starts from two different cities. The speed of the first train is 45 km/hr and the speed of the second train is 60 km/hr. And both the train are running in the same direction. First train crosses the second train in 120 seconds. The ratio between the length of the first to the length of the second train is 3:2. Then find the length of the first train.

A) 300 meter B) 200 meter C) 150 meter D) 250 meter

11) Three cars leave A for B in equal time intervals. They reach B simultaneously and then leave for Point C which is 240 km away from B. The first car arrives at C an hour after the second car. The third car, having reached C, immediately turns back and heads towards B. The first and the third car meet a point that is 80 km away from C. What is the difference between the speed of the first and the third car?

A) 60 kmph B) 20 kmph C) 40 kmph D) 80 kmph

12) Mr. X decides to travel from Delhi to Gurgaon at a uniform speed and decides to reach Gurgaon after T hr. After 30 km, there is some engine malfunction and the speed of the car becomes (4/5)th of the original speed. So, he travels the rest of the distance at a constant speed (4/5)th of the original speed and reaches Gurgaon 45 minutes late. Had the same thing happened after he travelled 48 km, he would have reached only 36 minutes late. What is the distance between Delhi and Gurgaon?

A) 90 km B) 120 km C) 20 km D) 40 km

13) Two friends A and B leave City P and City Q simultaneously and travel towards Q and P at constant speeds. They meet at a point in between the two cities and then proceed to their respective destinations in 54 minutes and 24 minutes respectively. How long did B take to cover the entire journey between City Q and City P?

A) 60 B) 36 C) 24 D) 48

14) Car A trails car B by 50 meters. Car B travels at 45km/hr. Car C travels from the opposite direction at 54km/hr. Car C is at a distance of 220 meters from Car B. If car A decides to overtake Car B before cars B and C cross each other, what is the minimum speed at which car A must travel?

A) 36 km/hr B) 45 km/hr C) 67.5 km/hr D) 18 km/hr

15) Train A travelling at 63 kmph takes 27 to sec to cross Train B when travelling in opposite direction whereas it takes 162 seconds to overtake it when travelling in the same direction. If the length of train B is 500 meters, find the length of Train A.

A) 400 m B) 810 m C) 500 m D) 310 m

16) Tom, Jerry and Bill start from point A at the same time in their cars to go to B. Tom reaches point B first and turns back and meets Jerry at a distance of 9 miles from B. When Jerry reaches B, he too turns back and meets Bill at a distance of 7 miles from B. If 3 times the speed with which Tom drives his car is equal to 5 times Bill"s speed, what could be the distance between the points A and B?

A) 40 miles B) 24 miles C) 31 miles D) 63 miles

17) Distance between the office and the home of Alok is 100 Km. One day, he was late by an hour than the normal time to leave for the office, so he increased his speed by 5 Km/hr and reached office at the normal time. What is the changed speed of Alok?

A) 25 Km/hr B) 20 Km/hr C) 16 Km/hr D) 50 Km/hr

18) Raj was travelling to his hometown from Mumbai. He met with a small accident 80 Km away from Mumbai and continued the remaining journey at 4/5 of his original speed and reached his hometown 1 hour and 24 minutes late. If he had met with the accident 40 Km further, he would have been an hour late. What is Raj's normal speed?

A) 20 Km/hr B) 15 Km/hr C) 30 Km/hr D) 25 Km/hr

19) Raj was travelling to his hometown from Mumbai. He met with a small accident 80 Km away from Mumbai and continued the remaining journey at 4/5 of his original speed and reached his hometown 1 hour and 24 minutes late. If he had met with the accident 40 Km further, he would have been an hour late. What is the distance between Mumbai and Raj's hometown?

A) 140 Km B) 200 Km C) 220 Km D) 250 Km

20) Two persons A and B start moving at each other from point P and Q respectively which are 1400 Km apart. Speed of A is 50 Km/hr and that of B is 20 Km/hr. How far is A from Q when he meets B for the 22nd time?

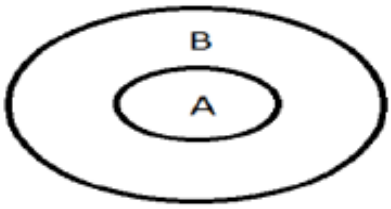
A) 1000 km B) 400 km C) 800 km D) 1400 km

UNIT 3

SYLLOGISM

The term syllogism means inference or conclusion drawn from the statements In syllogism, a statement of certain relation between two or more terms is analogous to a sentence is grammar. The proposition consists of three parts, namely subject, predicate and copula. 1. Subject: The subject is about which something is said. 2. Predicate: The predicate is the part of the proposition denoting which is affirmed or denied about the subject. 3. Copula: The copula is that part of the proposition which denotes the relation between the subject and the predicate. 4. Example: Consider the proposition 'Man is intelligent'. Here the information is given about the man. So 'Man' is the subject. 'Intelligent' is the quality affirmed for this subject. So it is the predicate. 'Is' denotes the relation between the subject and the predicate. So, it is the copula.

CONCEPT 1 – All A is B



The Possible conclusions are:

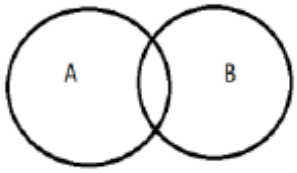
1) All A is B.

2) Some A is B.

3) Some B is A.

CONCEPT 2 - Some A is B.

The Diagram for Some A is B is

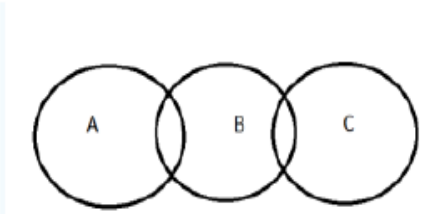


The possible conclusions are:

1) Some A is B

2) Some B is A

CONCEPT 3 – Some A is B and Some B is C



Now the Possible Conclusions are:

Between A and B	Between B and C
Some A is B	Some B is C
Some B is A	Some C is B

There is no DIRECT CONNECTION between A and C.

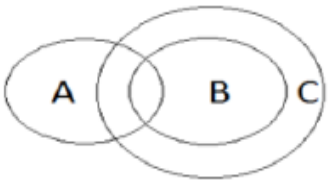
So it is not possible to derive any conclusion between

CONCEPT 4 – All A is B and All B is C

The Conclusions are:

Between A & B	Between B & C	Between A & C
All A is B.	All B is C.	All A is C.
Some A is B.	Some B is C.	Some A is C.
Some B is A.	Some C is B.	Some C is A.

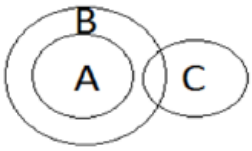
Concept 5 – Some A is B, All B is C.



The possible conclusions are:

Between A&B	Between B&C	Between A&C
Some A is B	All B is C	Some A is C
Some B is A	Some B is C	Some C is A
	Some C is B	

Concept 6 – All A is B and Some B is C



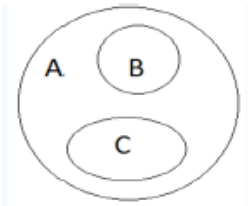
The possible conclusions are:

Between A and B	Between B and C
All A is B	Some B is C
Some A is B	Some C is B
Some B is A	

There is no DIRECT CONNECTION between A and C.

So it is not possible to derive any conclusion between A and C.

Concept 7 – All B is A and All C is A



The Possible Conclusions are:

Between A and B	Between A and C
All B is A	All C is A
Some B is A	Some C is A
Some A is B	Some A is C

There is no DIRECT CONNECTION between B and C.

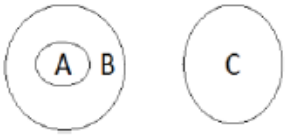
So it is not possible to derive any conclusion between B and C.

Concept 8 – No A is B

The Possible Conclusions are:

- No A is B
- No B is A
- Some A is not B
- Some B is not A

Concept 9 – All A is B and No B is C



The Possible Conclusions are:

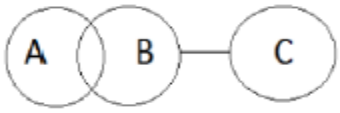
Between A & B	Between B & C	Between A & C
All A is B	No B is C	No A is C
Some A is B	No C is B	Some A is Not C
Some B is A	Some B is not C	

Concept 10 – All A is B and No A is C

The Possible Conclusions are:

Between A&B	Between A & C	Between B & C
All A is B	No A is C	Some B is not C
Some A is B	No C is A	
Some B is A	Some A is not C	

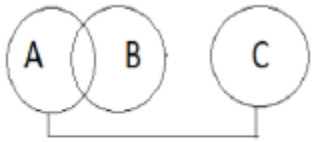
Concept 11 – Some A is B; No B is C



The Possible Conclusions are:

Between A & B	Between B & C	Between A & C
Some A is B	No B is C	Some A is not C
Some B is A	No C is B	
	Some B is not C	
	Some C is not B	

Concept 12 – Some A is B; No A is C



The Possible Conclusions are:

Between A & B	Between A & C	Between B & C
Some A is B	No A is C	Some B is not C
Some B is A	No C is A	
	Some A is not C	
	Some C is not A	

Practice Problem

Directions for Q1 to Q7: In each question below are two statements followed by conclusions numbered 1 and 2. Read all the conclusions and then decide which of the given conclusions logically follows from the statements.
Give answer: A. if only (A) conclusion follows
B. if only (B) conclusion follows
C. if either (A) or (B) follows
D. if neither (A) nor (B) follows
E. if both (A) and (B) follow.

1.Statements:All books are magazines.
No magazine is a newspaper.
Conclusions: I. No book is a newspaper.
II. Some magazines are books.

2. Statements: Some mobiles are telephones.
All telephones are pagers.
No pager is a camera.
Conclusions: I. Some mobiles are definitely not cameras.
II. No mobile is a camera.

3. Statements: Some mobiles are telephones.
All telephones are pagers.
No pager is a camera.
Conclusions: I. All telephones are cameras.
II. All mobiles being telephones is a possibility.

4. Statements: No cube is a cuboid.
Some cuboids are rectangles.
All squares are cubes.
Conclusions: I. No cuboid is a square.
II. All cubes being rectangle is a possibility.

5. Statements: No cube is a cuboid.
Some cuboids are rectangles.
All squares are cubes.
Conclusions: I. No rectangle is a square.
II. No cube is a rectangle.

6. Statements: All fruits are vegetables.
Some vegetables are pulses.
Some pulses are not cereals.
Conclusions: I. Some vegetables are not cereals.
II. All vegetables being fruits is a possibility.
7. Statements: All schools are colleges
All schools are universities
No university is a campus.
Conclusions: I. All colleges are universities
II. All schools being campus is a possibility.

Directions (8-10): In each question below are three statements followed by two conclusions numbered I and II. You have to take the three given statements to be true even if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follows from the three statements disregarding commonly known facts. Give answer.
A. If only Conclusion I follows.
B. If only Conclusion II follows.
C. If either Conclusion I or Conclusion II follows.
D. If neither Conclusion I nor Conclusion II follows.
E. If both Conclusions I and II follow.

8.Statements: Only Planets are stars.
Only Moons are planets.
No moon is a sun.
Conclusions: I. All stars are both sun & Moon.
II. Some moon being not a star is possibility.

9.Statements: Some computers are keyboards.
Some keyboards are wires.
Some wires are switches.
Conclusions: I. Some computers are switches.
II. Some wires are computers.

10.Statements: No cap is a hat.
All hats are feathers.
All feathers are papers.
Conclusions: I. All hats are papers.
II. All feathers are caps.

Directions (11-15): In each question there are three statements followed by two conclusions numbered I and II. You have to take the three given statements to be true even if they seem to be at variance with commonly known facts and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

11.Statements: All railways are trains.
No train is a station.
Some stations are platforms.
Conclusions: I. All railways being platforms is a possibility.
II. No railway is a station.
(A) Only conclusion I follows
(B) Only conclusion II follow
(C) Both conclusions I and II follow.
(D) Either conclusion I or II follows
(E) Neither conclusion I nor II follows.

12.Statements: All erasers are sharpeners.
All sharpeners are pencils.
Some pencils are pens.
Conclusions: I. No eraser is a pen.
II. All pencils are sharpeners.
(A) Only conclusion I follows
(B) Only conclusion II follows
(C) Either conclusion I or II follows
(D) Neither conclusion I nor II follows.
(E) Both conclusions I and II follow.

13. Statements: All winters are summers.
Some summers are springs.
No spring is an autumn.
Conclusions: I. At least some winters are springs.
II. Some autumns being summers is a possibility.
(A) Either conclusion I or II follows
(B) Both conclusions I and II follow
(C) Only conclusion I follows
(D) Neither conclusion I nor II follows
(E) Only conclusion II follows

14. Statements: All erasers are sharpeners.
All sharpeners are pencils.
Some pencils are pens.

Conclusions: I. At least some sharpeners are pens.
II. No sharpener is a pen.

(A) Either conclusion I or conclusion II follows
(B) Both conclusions I and II follow
(C) Only conclusion I follows
(D) Neither conclusion I nor II follows
(E) Only conclusion II follows.

15. Statements: All winters are summers
Some summers are springs
No spring is an autumn
Conclusions: I. All summers can never be autumns.
II. At least some summers are winters.

(A) Either conclusion I or II follows
(B) Both conclusions I and II follows
(C) Neither conclusion I nor II follows
(D) Only conclusion I follows
(E) Only conclusion II follows

Directions (16-20): In each of the questions below are given three statements followed by three conclusions numbered I, II and III. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

16. Statements: a. Some hills are rivers.
b. Some rivers are deserts.
c. All deserts are roads.
Conclusions : I. Some roads are rivers.
II. Some roads are hills.
III. Some deserts are hills.

(A) None follows
(B) Only I follows
(C) Only II and III follow
(D) Only I and II follow
(E) All follow

17. Statements: a. Some chairs are flowers.
b. All flowers are trees.
c. Some trees are leaves.
Conclusions: I. Some trees are chairs.
II. Some leaves are flowers.
III. No chair is a leaf.

(A) None follows
(B) Only I follows
(C) Only II follows
(D) Only I and III follow
(E) All follow

18. Statements: a. All buildings are mountains.
b. All glasses are mountains.
c. Some mountains are windows.
Conclusions: I. Some windows are glasses.
II. Some buildings are windows.
III. Some mountains are glasses.
(A) Only I follows (B) Only II follows
(C) Only III follows (D) None follows
(E) All follow

19. Statements: a. Some houses are tables.
b. Some tables are gardens.
c. All lanterns are gardens.
Conclusions: I. Some lanterns are tables.
II. Some gardens are houses.
III. Some lanterns are houses.
(A) None follows (B) Only I follows
(C) Only II follows (D) Only III follows
(E) All follow

20. Statements: a. All trains are buses.
b. No room is a bus.
c. All boats are rooms.
Conclusions: I. No boat is a train.
II. No bus is a boat.
III. No train is a room.
(A) None follows (B) Only I and II follow
(C) Only II and III follow (D) Only I and III follow
(E) All follow

Number Ranking Test

21.In a row of trees, one tree is fifth from either end of the row. How many trees are there in the row?

A. 8 B. 9 C. 10 D. 11

22.In a queue Amrita is 10th from the front while Mukul is 25th from behind and Mamta is just in the middle of the two If there be 50 persons in queue. What position does Mamta occupy from the front?

A. 20th B. 19th C. 18th D. 17th

23.Raman ranks sixteenth from the top and forty ninth from the bottom in a class. How many students are there in the class?

A. 64 B. 65 C. 66
D. Can"t be determined E. None of these

24. Sanjeev ranks seventh from the top and twenty eight from the bottom in a class. How many students are there in the class ?

A. 37 B. 36 C. 35 D. 34

25. If Atul finds that he is twelfth from the right in a line of boys and fourth from the left, how many boys should be added to the line such that there are 28 boys in the line ?

A. 12 B. 13 C. 14 D. 20
E. None of these

26. Aruna ranks twelfth in a class of forty-six. What will be her rank from the last?

A. 33 B. 34 C. 35 D. 37
E. None of these

27.Ravi is 7 ranks ahead of Sumit in a class of 39. If Sumit`s rank is seventeenth from the last, what is Ravi`s rank from the start ?

A. 14^{th} B. 15^{th} C. 16^{th} D. 17th

28.Kailash remembers that his brother Deepak`s birthday falls after 20th May but before 28th May, while Geeta remembers that Deepak`s birthday falls before 22nd May but after 12th May. On what date Deepak`s birthday falls?

A. 20th May B. 21st May C. 22nd May

D. Cannot be determined E. None of these

29. Standing on a platform, Amit told Sunita that Aligarh was more than ten kilometers but less than fifteen kilometers from there. Sunita knew that it was more than twelve but less than fourteen kilometers from there. If both of them were correct, which of the following could be the distance of Aligarh from the platform?

A. 11 km B. 12 km C. 13 km D. 14 km E. 15km

30. Ashish leaves his house at 20 minutes to seven in the morning, reaches Kunal`s house in 25 minutes, if finish their breakfast in another 15 minute and leave for their office which takes another 35 minutes, At what time do they leave Kunal house to reach their office ?

A. 7.40 a.m. B. 7.20 a.m. C. 7.45 a.m. D. 8.15 a.m.

E. 7.55 a.m.

31.Reaching the place of meeting on Tuesday 15 minutes before 08.30 hours, Anuj found himself half an hour earlier than the man who was 40 minutes late. What was the scheduled time of the meeting?

A. 8.00 hrs B. 8.05 hrs C. 8.15 hrs D. 8.45 hrs

32.The priest told the devotee, "The temple bell is rung at regular intervals of 45 minutes. The last bell was rung five minutes ago. The next bell is due to be rung at 7.45 a.m." At what time did the priest give this information to the devotee?

A. 7.40 a.m. B. 7.05 a.m. C. 7.00 a.m. D. 6.55 a.m.

E. None of these

33. Which is the third number to left of the number which is exactly in the middle of the following sequence of numbers? 1 2 3 4 5 6 7 8 9 2 4 6 8 9 7 5 3 1 9 8 7 6 5 4 3 2 1

A. 3 B. 4 C. 5 D. 6

E. 7 43

34.How many 3's are there in the following sequence which are neither preceded by 6 nor immediately followed by 9? 9 3 6 6 3 9 5 9 3 7 8 9 1 6 3 9 6 3 9

A. One B. Two C. Three D. Four

E. None of these

35. Count each 7 which is not immediately preceded by 5 but is immediately followed by either 2 or 3. How many such 7's are there? 5 7 2 6 5 7 3 8 3 7 3 2 5 7 2 7 3 4 8 2 6 7 8

A. 2 B. 3 C. 4 D. 5

Logarithms

36. Express $7^3 = 343$ in logarithm form.

A) $Log_7 343 = 3$ B) $Log_3 343 = 7$ C) $Log_{343} 7 = 3$ D) None of these

37. Find the log of 64 to the base 8.

A) 2 B) 4 C) 64 D) 8

38. Find x if $\log_7(x-11) = 1$.

A) 18 B) 7 C) 121 D) 4

39. If $\log_y a = b$, express y^{b-1} in terms of y and a.

A) a/y B) y/b C) y*a D) y+a

40. Find the value of x, if log(x+7)+log(x-7)=4log2+2log3

A) $191^{1/2}$ B) 96 C) 14 D) None of these

41. Solve for x, if (log 900/log30) = log x

A) 100 B) 30 C) 900 D) None of these

42. Which of the following statements is not correct?

A) log (2 + 3) = log (2 x 3)

B) $\log_{30} 1 = 0$

C) log (1 + 2 + 3) = log 1 + log 2 + log 3

D) All are correct

43. If log 2 = 0.3010 and log 3 = 0.4771, the value of $\log_5 512$ is:

A) 3.876 B) 2.874 C) 3.954 D) None of these

44. If log 81 = 1.730, then the value of log 9 is:

A) 0.865 B) 3.460 C) 1.730 D) None of these

45. If $\log_{10} 5 + \log_{10} (5x + 1) = \log_{10} (x + 5) + 1$, then x is equal to:

A) 3 B) 4 C) 5 D) 2

Company Specific

Q1. Statements: Some bags are pockets. No pocket is a pouch.

Conclusions: I. No bag is a pouch. II. Some bags are not pouches III. Some pockets are bags. IV. No pocket is a bag.

A. Only either I or IV follows B. Only II and III follow C. Only I and III follow D. All follow

Q2. Statements: Some thorns are jackets. Some jackets are boat. Conclusions: I. No thorns are boats. II. All jackets are boats. III. Some boats are thorns. IV. No jackets are thorns.

A. Either conclusions I or IV follow B. Either conclusions I or II follow C. Either conclusions I or III follow D. No conclusion is correct.

Q3. Statements: No fruit is tree. All trees are stones. Conclusions: I. No stone is fruit. II. No tree is fruit. III. Some stones are trees. IV. Some stones are fruits.

A. Only II and III follow B. Only either I or IV and II and III follows C. Only either I or III follow D. Only I or III follows

Q4. Statements: Some shirts are tables. No table is chair. Conclusions: I. No shirt is chair. II. Some tables are shirts. III. No chair is shirt. IV. Some chairs are not shirts.

A.All follow B. Only II follow C. Only II and IV follow D. Only III follow

Q5. Statements: All cows are hens. All cats are hens.

Conclusions: I. All hens are cows. II. All hens are cats. III. Some hens are cows. IV. Some hens are cats.

A. Only I and II follow B. Only III follow C. Only IV follows D. Only III and IV follow

Q6. Statements: All arrows are bows. All bows are swords. Some swords are daggers. All daggers are knives.

Conclusions: I. All knives are bows. II. Some swords are knives III. All bows are arrows. IV. All arrows are swords.

A. Only II follows B. Only II and IV follow C. Only III and IV follow D. Only I and III follow

Q7. Statements: Some airplane is helicopters. All helicopters are gliders. All gliders are kites. All kites are balloons.

Conclusions: I. Some helicopters are balloons. II. All kites are airplanes III. All balloons are gliders. IV. All helicopters are kites.

A. Only IV follows B. Only either II or III follow C. Only III follows D.Only I and IV follows

Q8. Statements: All kings are warriors. All soldiers are warriors. All sentries are warriors. Some sentries are soldiers.

Conclusions: I. some sentries are kings. II. All warriors are soldiers. III. Some warriors are sentries. IV. Some soldiers are kings.

A. Only I follows B. Only II follows C. Only II and III follow D. None of these

Q9. Statements: All clouds are storms. Some storms are cyclones. All cyclones are thunders. Some thunders are lightening.

Conclusions: I. Some lightening are cyclones. II. No lightening is cyclone. III. Some cyclones are clouds.

A. Only I follows B. Only II follows C. Only III follows D. Only either I or II follows

Q10. Statements : Some pins are needles. Some needles are handles. Some handles are locks. Some locks are keys.

Conclusions: I. Some keys are handles. II. Some handles are pins. III. Some pins are keys.

A. None follows B. Only I and II follows C. Only II and III follow D. Only I and II follow

Q11. Statements: All hills are mountains. All mountains are dams. Some dams are rivers. All rivers are lakes.

Conclusions: I. Some hills are lakes. II. Some dams are lakes. III. Some dams are hills.

A. Only I and II follow B. Only II and III follow C. Only I and III follow D. All follow

Q12. Statements: Some receipts are challans. Some challans are papers. Some papers are books. All books are files.

Conclusions: I. some papers are files. II. Some books are receipts. III. No book is receipt.

A. Only I follow B. Only I and II follow C. Only I & either II or III follow D. Only I and III follow

Q13. Statements: All bottles are jars. All jars are containers. All containers are lids. All lids are caps. Conclusions: I. All bottles are lids. II. All containers are jars. III. Some lids are jars.

A. Only I and II follow B. Only II and III follow C. Only I and III follow D. None follow

Q14. Statements: Some ships are boats. All boats are submarines. Some submarines are yachts. Conclusion: I. Some yachts are boats. II. Some submarines are boats. III. Some submarines are ships. IV. Some yachts are ships

A. All follow B. Only II and III follow C. Only III follows D. Only IV follows

Q15. Statements: All Carrots are birds. Some telephones are Carrots. All bedsheets are telephone. Conclusion: I. All bedsheet are birds. II. Some bedsheets are birds III. Some birds are telephone IV. All telephone are birds

A. Only I follows B. Only II follows C. Only I and III follow D. Only III follows

Q16. Statements: Most CPUs are keyboards. No keyboard is a Mouse. All Mouses are CPU. Conclusion: I. Some keyboards are CPU II. All CPU"s are Mouse III. No Mouse is a keyboard IV. Some Mouse are keyboard

A. Only I follows B. Only II and III follow C. Only I and III follow D. Only II follows

Q17.Series: 5 1 4 7 3 9 8 5 7 2 6 3 1 5 8 6 3 8 5 2 2 4 3 4 9 6 How many odd numbers are there in the sequence which are immediately followed by an odd number?

A. 1 B. 2 C. 3 D. 4 E. More than 4

Q18.In the following series, how many such odd numbers are there which are divisible by 3 or 5, then followed by odd numbers and then also followed by even numbers?

12, 19, 21, 3, 25, 18, 35, 20, 22, 21, 45, 46, 47, 48, 9, 50, 52, 54, 55, 56

A. Nil B. One C. Two D. Three E. None of these

Q19.Nitin was counting down from 32. Sumit was counting upwards the numbers starting from 1 and he was calling out only the odd numbers. What common number will they call out at the same time if they were calling out at the same speed?

A. 19 B. 21 C. 22 D. They will not call out the same number E. None of these

Q20.If the position of the first and the sixth digits of the sequence of numbers 8 9 0 3 2 1 4 6 7 5 are interchanged, the second and the seventh and so on. Which number would be seventh from the right end?

A. 2 B. 6 C. 7 D. 8 E. 9

UNIT 4

Surface Area and Volume

Mensuration is defined as the study of the measurement of various 2D and 3D geometric shapes involving their surface areas, volumes, etc.

Difference between mensuration and geometry

Mensuration refers to the calculation of various parameters of shapes like the perimeter, area, volume, etc. whereas; geometry deals with the study of properties and relations of points and lines of various shapes.

2D mensuration deals with the calculation of various parameters like the area and perimeter of 2-dimensional shapes like squares, rectangles, circles, triangles, etc.

3D mensuration is concerned with the study and calculation of surface area, lateral surface area, and volume of 3-dimensional figures like a cube, sphere, cuboid, cone, cylinder, etc.

Important Formulas

Formula for 2D figures

1) Rectangle

Perimeter of a Rectangle = 2(Length + Breadth)

Area of a Rectangle = Length × Breadth

2) Square

Area of a Square= $Side^2$

Perimeter of a Square= 4(Side)

3) Circle

Diameter of a Circle = 2 × Radius

Circumference of a Circle = π × Diameter or 2 × π × Radius

Area of a Circle = $\pi \times Radius^2$

4) Triangle

Area of a Triangle = ½ × b × h

5) Parallelogram

Perimeter of a Parallelogram = 2 (a+b)

Area of a Parallelogram = b × h

Formula for 3D Figures

1) Cube

Volume of a Cube = $Side^3$ cubic units.

Lateral Surface Area of a Cube= 4 × $side^2$ sq.units.

Total Surface Area of a Cube= 6× $side^2$ sq. units.

2) Cuboid

Volume of a Cuboid = (length * width * height) cubic units.

Lateral Surface Area of a Cuboid = 2×height (length + width) sq. units.

Total Surface Area of a Cuboid = 2(length × width + length × height + height × width) sq. Units.

Diagonal length of a Cuboid = Square root ($length^2$ + $breadth^2$ + $height^2$) units.

3) Cone

Volume of a Cone = 1/3 × π × $radius^2$ × height cubic units.

Total Surface Area of the Cone = πr (slant height + radius)

4) Sphere

Volume of a Sphere = 4/3 x π x $radius^3$ cubic units.

Surface Area of a Sphere = 4x π x $radius^2$ sq. units.

4) Hemi-Sphere

Volume of a Hemi-Sphere = 2/3 x π x $radius^3$ cubic units.

Surface Area of a Hemi-Sphere = 3x π x $radius^2$ sq. units.

CALENDAR

Odd Days: We are supposed to find the day of the week on a given date. For this, we use the concept of 'odd days.

In a given period, the number of days more than the complete weeks are called odd days.

Leap Year:

(i) Every year divisible by 4 is a leap year, if it is not a century.

(ii) Every 4th century is a leap year and no other century is a leap year.

Note: A leap year has 366 days.

Examples:

i. Each of the years 1948, 2004, 1676 etc. is a leap year.

ii. Each of the years of 400, 800, 1200, 1600, 2000 etc. is a leap year.

iii. None of the years 2001, 2002, 2003, 2005, 1800, 2100 is a leap year.

Ordinary year: The year which is not a leap year is called an ordinary year. An ordinary year has 365 days.

Counting of odd days:

a. 1 ordinary year = 365 days = (52 weeks + 1 day) 1 ordinary year has 1 odd day

b. 1 leap year = 366 days = (52 weeks + 2 days) 1 leap year has 2 odd days.

c. 100 years = 76 ordinary years + 24 leap years

= (76 x 1 + 24 x 2) odd days = 124 odd days.

= (17 weeks + 5 days)

= 5 odd days.

Number of odd days in 100 years = 5.

Number of odd days in 200 years = (5 x 2) = 3 odd days.

Number of odd days in 300 years = (5 x 3) = 1 odd day.

Number of odd days in 400 years = (5 x 4 +1) = 0 odd day.

Similarly, each one of 800 years, 1200 years, 1600 years, 2000 years etc. has 0 odd days.

CLOCK

The face or dial of a watch is a circle whose circumference is divided into 60 equal parts, called minute spaces.

A clock has two hands; the smaller one is called the hour hand or short hand while the larger one is called the minute hand or long hand.

i. In 60 minutes, the minute hand gains 55 minutes on the hour hand.

ii. In every hour, both the hands coincide once.

iii. The hands are in the same straight line when they are coincident or opposite to each other.

iv. When the two hands are at right angles, they are 15-minute spaces apart.

v. When the hands are in opposite directions, they are 30-minute spaces apart.

vi. Angle traced by hour hand in 12 hrs = 360°.

vii. Angle traced by minute hand in 60 min. = 360°.

viii. Too fast and too slow: if a watch or a clock indicates 8.15, when the correct time, 8 is said to be 15 minutes too fast.

On the other hand, if it indicates 7.45, when the correct time is 8, it is said to be 15 minutes too slow.

Practice Problem

1) What is the area of the rectangle whose two adjacent side are 12 and 16 cm?

A) 192 cm B) 194 Cm C) 172 Cm D) 174 Cm

2) What is the Perimeter of the circle whose area is equal to the sum of the areas of two circles whose radii are 20 cm and 15 cm?

A) 50pi m B) 28pi m C) 29pi m D) 30pi m

3) The perimeter of a rectangular table is 68 cm. If the legs of the table are removed and its upper flat surface is cut in to two parts parallel to its breadth such that first part is rectangular in shape with length and breadth ratio as 7:5 and second part is a square in shape. Find the area of rectangular table.

A) 236 cm^2 B) 196 cm^2 C) 180 cm^2 D) 240 cm^2

4) Nilimp has spent 5440 Rs in fencing his rhombus shaped cashew garden along its perimeter and 2400 Rs in fencing along its longest diagonal. If the rate of fencing is 80 Rs/meter, then find area of his cashew garden.

A) 240 Sq. meter B) 260 Sq. meter C) 272 Sq. meter D) 320 Sq. meter

5) The perimeter of a rectangular table is 68 cm. If the legs of the table are removed and its upper flat surface is cut in to two parts parallel to its breadth such that the first part is rectangular in shape with length and breadth in the ratio of 7:5 and the second part is a square in shape. Find the difference of area of two parts formed.

A) 36 cm^2 B) 96 cm^2 C) 80 cm^2 D) 40 cm^2

6) A square, whose one side is given 60 cm and a rectangle, whose length is 80 cm have the same perimeter who has the bigger area?

A) Square B) Rectangle C) Both have same area. D) None of these

7) Suraj has a square plot with the side 40m. He wants to construct a house in the middle of the plot whose dimension is 20m x 30m. A garden is developed around the house. Find the total cost of developing a garden around the house at the rate of Rs. 35 per m^2.

A) 35,000 Rs B) 35,575 Rs C) 35,875 Rs D) 36,875 Rs

8) A quadrilateral having a diagonal of length 10 cm, which divides the quadrilateral into two triangles and the heights of triangles with diagonals as the base, are 4 cm and 6 cm. Find the area of the quadrilateral.

A) 40 Sq. cm B) 50 Sq.cm C) 22 Sq. cm D) 30 Sq. cm 51

9) A rhombus having diagonals of length 10 cm and 16 cm, respectively. Find its area?

A) 40 Sq. cm B) 80 Sq.cm C) 22 Sq. cm D) 30 Sq. cm

10) Anil grows tomatoes in his backyard which is in the shape of a square. Each tomato takes 1 cm^2 in his backyard. This year, he has been able to grow 131 more tomatoes than last year. The shape of the backyard remained a square. How many tomatoes did Anil produce this year?

A) 4225 B) 4096 C) 4356 D) Insufficient Data

11) A hollow cylindrical tube is made of plastic is 3 cm thick. If the external Radius is 7 cm and length of the tube is 42 cm, then find the volume of the plastic?

A) 1038 cm^3 B) 4356 cm^3 C) 4403 cm^3 D) 4445 cm^3

12) A goldsmith has golden necklaces which contains 70 spherical beads of 12 mm diameter. He melted the necklace and formed N identical cuboid shape biscuits of dimensions 20mm x 6mm x 3mm. Find N.

A) 176 B) 132 C) 147 D) 154

13) A circular pipe of diameter 90 mm is discharging oil at the rate of 20 cm/sec. This oil is filled in cylindrical container of diameter 60 cm. If the container is filled in 160 seconds what is the height of container?

A) 90 cm B) 72 cm C) 77 cm D) 56 cm

14) To manufacture an insulated circular cylindrical shaped bottle 198 cm^3 of material is used. The difference between its outer and inner surface area is 72 cm^2 and height of the bottle is thrice of its outer diameter. Find the sum of inner and outer radius of bottle.

A) 4.5 cm B) 5.5 cm C) 6 cm D) 9 cm

15) A hemispherical bowl of internal radius 16 cm contains Vanaspati ghee. The Vanaspati ghee is filled in small cylindrical vessels of internal radius 4 cm and internal height 8 cm. What is the number of vessels used to empty the bowl?

A) 22 B) 23 C) 34 D) 35

16) A hollow spherical Rod is made of a metal of density 4.8 g/cm^3 . If its internal and external radii are 10 cm and 12 cm respectively, then what is the mass of the shell?

A) 1772 g B) 1322 g C) 1464 g D) 1544 g

17) A rectangular piece of paper 11 cm × 4 cm is folded without overlapping to make a cylinder of height 4 cm. Find the volume of the cylinder?

A) 38.5 cm^3 B) 43. 56 cm^3 C) 44. 03 cm^3 D) 44.45 cm^3

18) The base radius and slant height of a conical vessel is 3 cm and 6 cm respectively. Find the volume of sufficient water in the vessel such that when a sphere of radius 1 cm is placed into it, water just immersed it

A) 5/4 pie B) 7/3 pie C) 5/3 pie D) 3/2 pie

19) Initially the diameter of a balloon is 28cm. it can explode when the diameter becomes 5/2 times of the initially diameter Air is blown at 156cc/sec. is known that shape of a balloon remains spherical. In how many seconds the balloon will explode

A) 1078 s B) 1368 s C)1087 s D) none of these

20)The radius of a cylindrical tank is 3 m less than the radius of a conical tank. Total time taken to fill water in cylindrical tank and in conical tank at 54 m3 per second and 66m3 are 297 seconds and 144 seconds, respectively. If the height of the cylindrical tank is same as the height of the conical tank then find the height of the each tank

A) 62m B) 63m C)65m D) none of these

21. The time in a clock is 20 minute past 2. Find the angle between the hands of the clock?

A) 60 degrees B) 80 degrees C) 30 degrees D) 50 degrees

22. What is the angle between the two hands of the clock at 3: 15 P.M?

A) 15/2 degree B) 15/4 degree C) 10 degree D) 11 degrees

23. How many times in 48 hours do the hands of the clock overlap each other?

A) 48 times B) 46 times C) 44 times D) 42 times 64

24. How many times in 12 hours do the hands of a clock overlap each other?

A) 12 times B) 11 times C) 13 times D) none of these

25. At what time after 4 pm would the two hands of the clock overlap each other?

A) 21 3/11 min B) 21 9/11 min C) 21 5/11 min D) 21 3/11 min

26. What are the two times (in minutes) past 10 am and between 10 am and 11 am when the hands are perpendicular to each other?

A) 60/11 min, 410/11 min B) 60/11 min, 210/11 min C) 60/11 min, 420/11 min D) 60/11 min, 205 min

27. When do the hands of a clock coincide between 4 & 5?

A) 4: 20 8/11 min B) 4:20 6/11 min C) 4:21 8/11 min D) 4:21 9/11 min

28). A clock is found to be slow by 5 minute at 8 AM on Sunday. It started gaining time and was found to be 5 minutes fast at 8 PM on Monday. When was it correct?

A) 8 PM, Monday B) 8 AM, Monday C) 2 AM, Monday D) 6 AM, Monday

29) A clock is set right at 8 a.m. The clock gains 10 minutes in 24 hours will be the true time when the clock indicates 1 p.m. on the following day?

A) 48 min. past 12. B) 46 min. past 12. C) 45 min. past 12. D) 47 min. past 12.

30). 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 4th day?

A) 12pm B) 11pm C) 1pm D) 2pm

31. 6th March 2005 is Monday, what was the day of the week on 6th march, 2004?

A) Monday B) Sunday C) Wednesday D) Thursday

32. 01- Jan-2007 was Monday. What day of the week lies on 01-Jan-2008? (Wipro)

A) Tuesday B) Wednesday C) Monday D) Friday

33. If today is Monday, what will be the day one year and 50 days from now?

A) Sunday B) Friday C) Monday D) can"t be determined

34. Today is Friday, after 126 days, it will be?

A) Sunday B) Monday C) Wednesday D) Friday

35. What day of week was it on 5th November, 1989 if it was Monday on 4th April, 1988?

A) Friday B) Wednesday C) Monday D) Sunday

36. Today is Thursday. The day after 59 days will be?

A) Friday B) Sunday C) Wednesday D) Monday

37). 1.12.91 is the first Sunday. Which is the fourth Tuesday of December 91?

A) 25.12.91 B) 22.12.91 C) 20.12.91 D) 24.12.91

38). If the first day of a year (other than leap year) was Friday, then which was the last day of that year?

A) Friday B) Thursday C) Sunday D) Monday

39. What was the day of the week on 7th October, 2003?

A) Tuesday B) Sunday C) Wednesday D) Monday

40. What was the day of the week on, 16th July, 1776?

A) Friday B) Monday C) Wednesday D) Tuesday

Company Specific

1. At what angle the hands of a clock are inclined at 15 minutes past 5?

a) 58 1/2degree b) 64 degree c) 67 1/2 degree d) 72 1/2 degree

2. The reflex angle between the hands of a clock at 10.25 is:

a) 180 degree b) 192 1/2degree c) 195 degree d) 197 1/2degree

3. How many times do the hands of a clock coincide in a day?

a) 20 b) 21 c) 22 d) 24

4. How many times in a day, the hands of a clock are straight?

a) 22 b) 24 c) 44 d) 48

5. How many times are the hands of a clock at right angle in a day?

a) 22 b) 24 c) 44 d) 4

6. Which of the following is not a leap year?

a) 700 b) 800 c) 1200 d) 2000

7. How many days are there in x weeks x days?

a) 7x2 b) 8x c) 14x d) 1x4

8. It was Sunday on Jan 1, 2006. What was the day of the week on Jan 1, 2010?

a) Sunday b) Saturday c) Friday d) Wednesday

9. On 8th Feb, 2005 it was Tuesday. What was the day of the week on 8th Feb, 2004?

a) Tuesday b) Monday c) Sunday d) Wednesday

10. January 1, 2007 was Monday. What day of the week lies on Jan 1, 2008?

a) Monday b) Tuesday c) Wednesday d) Sunday

11) A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour, how much water (in litres) will fall to into the sea in a minute?

A) 4,00,000 m^3 B) 40,00,000 m^3 C) 40,000 m^3 D) 4,000 m^3

12) A plate of square base made of brass is of length x cm and thickness 1 mm. The plate weights 4725 gm. If 1 cubic cm of brass weighs 8.4 gram, then the value of x is?

A) 76 B) 72 C) 74 D) 75

13) The base of a right prism is a right-angled triangle whose sides are 5 cm, 12 cm and 13 cm. If the total surface area of the prism is 360 cm^2, then its height (in cm) is?

A) 10 B) 12 C) 9 D) 11

14) Water flows into a tank 200 m x 160 m through a rectangular pipe of 1.5m x 1.25 m @ 20 kmph. In what time (in minutes) will the water rise by 2 meters?

A) 92min B) 93min C) 95min D) 96min

15) A monument has 50 cylindrical pillars each of diameter 50 cm and height 4 m, what will be the labour charges for getting these pillars cleared at the rate of 50 paise per m^2 (Use π = 3.14)?

A) Rs. 237 B) Rs. 157 C) Rs. 257 D) Rs. 353

16) Sixteen cylindrical cans, each with a radius of 1 unit, are placed inside a cardboard box four in a row. If the cans touch the adjacent cans and or the walls of the box, then which of the following could be the interior area of the bottom of the box in square units?

A) 16 B) 32 C) 64 D) 128

17) A hemispherical bowl is 176 cm round the brim. Supposing it to be half full, how many persons may be swerved from it in hemispherical glasses 4 cm in diameter at the top?

A) 1372 B) 1272 C) 1172 D) 1472

18) The base of a prism is a regular hexagon. If every edge of the prism measures 1 metre and height is 1 metre, then volume of the prism is?

(a) $3\sqrt{2}/2$ cu. m B) $3\sqrt{3}/2$ cu.m C) $6\sqrt{2}/5$ cu. M D) $5\sqrt{3}/2$ cu. m

19) An oil funnel made of tin sheet consists of a 10 cm long cylindrical portion attached to 22 cm, diameter of the cylindrical portion is 8 cm and the diameter of the top of the funnel is 18 cm, find the area of the tin sheet required to make a funnel?

A) 728.57 cm^3 B) 782.57 cm^3 C) 872.57 cm^3 D) 827.57 cm^3

20) A conical tent is to accommodate 10 persons, each person must have 6 m^2 space to sit and 30m^3 of air to breadth. What will be the height of the cone?

A) 37.5 m B) 150 m C) 75 m D) None of these

UNIT 5

Applications of Trigonometry

To calculate the angle of elevation or depression we can use the following formula:

Sinθ = Perpendicular/Hypotenuse.

Cosθ = Base/Hypotenuse

Tanθ = Perpendicular/Base

Here, θ is either the angle of elevation or depression.

Terms Related to Height and Distance

1) Line of Sight: It is the straight line that is drawn from the eye of an observer to the point of an object which is to be viewed.

2) Horizontal Level: It is the horizontal line drawn from the eye of the viewer.

3) The angle of elevation: It is the angle formed between the line of sight and horizontal level if the object is above the horizontal level.

4) The Angle of Depression: It is the angle formed between the line of sight and the horizontal level if the object is below the horizontal level.

5) Pythagorean Theorem

Since height and distance involve a right-angled triangle so Pythagoras theorem can be used to find the length of the sides. Pythagoras theorem states that the square of the hypotenuse of a right-angled triangle is equal to the sum of the square of its base and height.

(Hypotenuse)2=(Base)2 + (Perpendicular)2

If the length of the base, perpendicular and hypotenuse of a right-angle triangle is a, b and c respectively.

Then, $a^2 + b^2 = c^2$.

Thus, if the length of any two sides is known then the length of the third side can be found by using the Pythagoras theorem which is also called the Pythagorean triple.

	0°	30°	45°	60°	90°
$\sin(\theta)$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos(\theta)$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$\tan(\theta)$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	undefined

INEQUALITIES

S.NO	SYMBOL	MEANING
1.	$>$	First element is Greater than the Second element.
2.	$<$	First element is Smaller than the Second element.
3.	$=$	First element is Equal to the Second element.
4.	$\geq$	First element is Greater than or Equal to the Second element.
5.	$\leq$	First element is Smaller than or Equal to the Second element.
6.	$\neq$	First element is either greater than or smaller than the Second element.

Practice Problems

1) An observer 1.5m tall is 28.5 m away from a chimney. The angle of elevation of the top of the chimney from her eyes is 45 degrees. What is the height of the chimney?

A) 40m B) 30m C) 28m D) 34m

2) From a point P on the ground, the angle of elevation of the top of a 10m tall building is 30degree. A flag is hoisted at the top of the building and the angle of elevation of the top of flagstaff from P is 45 degrees. Find the length of the flagstaff and the distance of the building from point P?

A) 8.40m B) 7.32m C) 6.28m D)9.34m

3) On the level ground, the angle of elevation of the top of a tower is 30°.on moving 20 meters nearer, the angle of elevation is 45°.Then the height of the tower is

A) 10 B) $\sqrt{3}$ C) $10\sqrt{3}$ D) $10(\sqrt{3}+1)$

4) The angles of elevation of the tops of two vertical towers as seen from the middle point of the lines joining the foot of the towers are 45° & 60°.The ratio of the height of the towers is

A) $\sqrt{3}:2$ B) $\sqrt{3}:1$ C) $2:\sqrt{3}$ D) 2:1

5) The heights of two towers are 90 meters and 45 meters. The line joining their tops make an angle 450 with the horizontal then the distance between the two towers is

A) 22.5 m B) 45 m C) 60 m D) 30 m

6) The Top of a 25 meter high tower makes an angle of depression of 450 with the bottom of an electric pole and angle of elevation of 30 degree with the top of pole. Find the height of the electric pole.

A) $25\sqrt{3}$ B) $(25((\sqrt{3}-1))/(\sqrt{3})$ C) $25/(\sqrt{3})$ D) $25\ (1-\sqrt{3})/(\sqrt{3})$

7) A person standing on the bank of a river observes that the angle of elevation of the top of a tree on the opposite bank is 45 degree. When he moves 20m away from the bank, he finds the angle of elevation to be 30 degree. Find the height of the tree.

A) $10(\sqrt{3}+1)$m B) $15\sqrt{3}$m C) $200(\sqrt{3}+1)$m D) $10(\sqrt{3}-1)$m

8) A man is watching form the top of the tower a boat speeding away from the tower. The boat makes the angle of depression of 45° with the man's eye when at a distance of 60 meters from the tower. After 5 seconds the angle of depression becomes 30°. What is the approximate speed of the boat, assuming that it is running in still water?

A) 31.62 kmph B) 34 kmph C) 24 kmph D) 19.8 kmph

9) The horizontal distance between two towers is 90 m. The angular depression of the top of the first as seen from the top of the second which is 180 m high is 450.Then the height of the first is

A) 90√3 m B) 45 m C) 90 m D) 150 m

10) From the top of a building 60m high, the angle of elevation and depression of the top and the foot of another building are α and β respectively. Find the height of the second building.

A) 60(1+ tan α tanβ) B) 60(1+ cot α tanβ)

C) 60(1+ tan α cotβ) D) 60(1- tan αcotβ)

11) The angles of elevation of the top of a tower from two points on the same side of the tower are α and β (α >β). If the distance between the two points is 40m, find the height of the tower.

A) 40cotαcotβ/(tanα + tanβ) B) 40cotαtanβ/(tanα - tanβ)

C) 40tanαtanβ/(tanα - tanβ) D) 40tanαtanβ/(tanα + tanβ)

Directions (12-14): In these questions, relationship between different elements is show in the statements. The Statements are followed by conclusions. Study the conclusions based on the given Statements and select the appropriate answer from the given options:

A] If only conclusion I follows.

B] If only conclusion II follows.

C] If either conclusion I or II follows

D] If neither conclusion I nor II follows.

E] If both conclusions I and II follow.

12. Statements: A > E ≥ T ≥ Y; E ≤ W < R; W ≥ Z > B

Conclusions: I. R < B II. T = B

13. Statements: A ≥ D ≤ Z; P ≤ D; R > Q = D

Conclusions: I. R > A II. P ≤ Z

14. Statements: C > B > L, Q = E > P = C

Conclusions: I. Q > B II. L < E

15. Statements: S > A = N > D; A > L > E; M < L < O

Conclusions: I. S > E II. A < O

A] Both conclusions I and II follows

B] Only conclusion II follows

C] Only conclusion I follows

D] Either conclusion I or II follows

E] Neither conclusion I nor II follows

16. Statements: W < Q > R; R = T; T < S

Conclusions: I. Q < T II. S > W

A] Only conclusions I follows

B] Only conclusions II follows

C] Either conclusions I or II follows

D] Neither conclusions I nor II follows

E] Both conclusions I and II follows

Directions (17-20): In these questions # , ?, $ and % is used with different meaning as follows:

'A @ B' means 'A is smaller than B'.

'A # B' means 'A is either smaller than or equal to B'.

„A ? B „ means 'A is equal to B'.

'A $ B' means 'A is greater than B'.

'A % Q' means 'A is either greater than or equal to B'.

In each of the following questions assuming the given Statements to be follows, find which of the two conclusions I and II given below them is/are definitely follows and select the answer from the given options:

A] Only conclusion I follows

B] Only conclusion II follows

C] Either conclusion I or conclusion II follows

D] Neither conclusion I nor II follows

E] Both conclusions I and II follows

17. Statements: Q ? H @ L @ F

Conclusions: I. Q @ F II. H @ F

18. Statements: D $ E, E % I, I % K

Conclusions: I. D % I II. E % K

19. Statements: V @ W, W # U, U @ R

Conclusions: I. V @ R II. W @ R

20. Statements: M $ K, K ? H, H % L

Conclusions: I. M $ L II. M @ H

Directions: In each question two equations numbered I and II are given. You have to solve both the equations and mark the answer

21. I. $4x^2 - (8 + \sqrt{10})x + 2\sqrt{10} = 0$

II. $2y^2 - (4 + 3\sqrt{11})y + 6\sqrt{11} = 0$

A. if $x > y$ B. if $x \geq y$

C. if $x < y$ D. if $x \leq y$ E. if $x = y$ or the relation between x and y can't be determined

22. I. $x^3 \times 14 = x^2 \times 98$

II. $y^{1/3} \times 12 = 108 \div y^{2/3}$

A. if $x > y$ B. if $x \geq y$

C. if $x < y$ D. if $x \leq y$ E. if $x = y$ or the relation between x and y can't be determined

23. I. $x^2 - 12x + 32 = 0$

II. $2y^2 - 9y + 10 = 0$

A. if $x > y$ B. if $x \geq y$

C. if $x < y$ D. if $x \leq y$ E. if $x = y$ or the relation between x and y can't be determined

24. I. $x2 + 3\sqrt{2x} - 80 = 0$

II. $y2 - 5\sqrt{2y} - 100 = 0$

A. if $x > y$ B. if $x \geq y$

C. if $x < y$ D. if $x \leq y$ E. if x = y or the relation between x and y can't be determined

25. I. $x^2 - 4\sqrt{3x} - 36 = 0$

II. $y^2 - 5\sqrt{2y} - 72 = 0$

A. if $x > y$ B. if $x \geq y$

C. if $x < y$ D. if $x \leq y$

E. if x = y or the relation between x and y can't be determined

26. I. $x^2 - 13x + 40 = 0$

II. $y^2 - 21y + 110 = 0$

A. if $x > y$ B. if $x \geq y$

C. if $x < y$ D. if $x \leq y$

E. if x = y or the relation between x and y can't be determined

27. I. $x = (208 - 142) - 32$

II. $y = 83 - (212 \div 3) - 360$

A. if $x > y$ B. if $x \geq y$

C. if $x < y$ D. if $x \leq y$

E. if x = y or the relation between x and y can't be determined

28. I. $x^2 = 30 - x$

II. $y^2 - 13y + 40 = 0$

A. if x > y

B. if x ≥ y

C. if x < y

D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

29. I. 35x2 – 39x + 10 = 0

II. 30y2 + 2 = 17y

A. If x > y

B. if x ≥ y

C. if x < y

D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

30. I. 18x2 – 39x + 20 = 0

II. 9y2 – 51y + 52 = 0

A. if x > y

B. if x ≥ y

C. if x < y

D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

Direction(31-32): Eight people J, K, L, M, N, O, P and Q are sitting around a circular table, facing the centre, not necessarily in the same order. O is sitting third to the right of M. There is only one person sitting between M and J. There are only three people between J and K. P is an

immediate neighbour of J. There are only three people between P and L. N is second to the right of P.

31. Which of the following is true regarding the given arrangement?

a) M is an immediate neighbour of K.

b) N is an immediate neighbour of J.

c) P is second to the left of O.

d) There are four people between N and O.

e) None is true

32. Four of the following five are alike in a certain way based on their seating positions in the above arrangement and so form a group. Which does not belong to the group?

A) PQ B) KL C) MN D) KO

Direction(33-34): A, B, C, D, E, F, G, H and K are sitting around a circle facing the centre. F is 4th to the right of A who is 3rd to the right of B. K is 4th to the left of B and 3rd to the right of D. C is 2nd to the right of H, who is immediate neighbour of A. E is 2nd to the left of G.

33. Who is to the immediate right of F?

A) B B) G C) E D) Data inadequate

34. Who is 3rd to the right of F?

A) F B) E C) G D) Data inadequate

Direction(35-37): Study the following information carefully and answer the questions given beside.

A group of five boys viz. Saurabh, Vinod, Ramesh, Yogi and Raj and a group of five girls viz. Soniya, Madhu, Poonam, Gomti and Kusha are standing in two separate rows facing each other but not necessarily in the same order. The group of boys is facing north.

Raj is not at any of the ends. Ramesh is to the immediate right of Vinod and Yogi is to the immediate left of Saurabh, who is facing Soniya. There are as many girls between Soniya and Madhu as between Poonam and Gomti. Saurabh is second to the left of Vinod, Gomti and Poonam are not facing either Vinod or Yogi.

35. Which one of the following is third to the right of Yogi?

A) Ramesh B) Raj C) Vinod D) Cannot be determined

36. Four of the following five are alike in a certain way and thus form a group. Which one of the following does not belong to that group?

A) Yogi – Saurabh B) Madhu – Gomti C) Poonam – Madhu D) Kusha – Poonam

37. Which one of the following is positioned in front of Vinod?

A. Madhu B. Kusha C. Poonam D. Gomti

Directions(38-40): Read the following information carefully and answer the questions given beside.

Certain number of persons (that does not exceed 15) are standing in a straight linear row facing towards the north. 5 persons stand between B and E, who is third to the left of A. U is to the right of A. Not more than 3 persons stand between U and T. B is third to the left of U. I is fifth to the right of T. 2 persons stand between E and F, who is sitting at the extreme left end of the row.. Three persons stand between A and L, who is towards the right of E.

38. How many persons are standing between F and I?

A.8 B.10 C.11 D.12

39. How many persons are standing in the row?

A.15 B.13 C.14 D.12

40. Who is standing 10th to the right of F?

A) L B) B C) U D) T

Company Specific

Directions (1-8): In these questions, relationship between different elements is show in the statements. The Statements are followed by conclusions. Study the conclusions based on the given Statements and select the appropriate answer from the given options:

A] Only conclusion I follows

B] Only conclusion II follows

C] Either conclusion I or II follows

D] Neither conclusion I nor II follows

E] Both conclusions I and II follow

1. Statements: D > H ≥ N; S > I ≤ H

Conclusions: I. N ≤ S II. N < D

2. Statements: P ≤ O < I; P > Y > W

Conclusions: I. Y ≤ I II. O > W

3. Statements: A < J = N; H ≥ Y ≥ I > S = N

Conclusions: I. S = J II. S > J

4. Statements: T ≥ J ≥ F; U < J ≥ H= S

Conclusions: I. S > F II. T ≥ H

5. Statements: Y ≥ U ≥ H = Q; R ≥ U = M

Conclusions: I. M > Q II. M = Q

6. Statements A < J = N; H ≥ Y ≥ I > S = N

Conclusions: I. S = J II. S > J

7. Statements: Y ≥ U ≥ H = Q; R ≥ U = M

Conclusions: I. M > Q II. M = Q

8. Statements: L ≤ F = G < W; H < S ≤ L

Conclusions: I. S ≤ G II. W > H

Study the information given below and answer the questions based on it. Six tables which are kept in a horizontal line. Each table costs a different amount. The tables are of different colors viz. Brown, Black, Golden, Silver, Red and Grey. Two tables are of circular shape and two are of square shape. While one each is of rectangular and oval shape.

The golden table is kept at one of the extreme ends. Both the circular tables are kept together. The silver table is neither circular in shape nor it is the costliest. The oval table is grey in color and it is neither the costliest nor the cheapest. The rectangular table lies to the immediate left of one of the square tables. The red table is cheaper than only one table and kept at the farthest possible distance from the oval table. None of the circular tables lies at the extreme ends. The black table is costlier than only two tables. The brown table is neither rectangular nor circular in shape. The golden table is the third costliest among all and is kept third to the right of the brown table.

9. Which is the cheapest and the costliest table respectively?

A] Silver and Black B] Rectangular and Brown

C] Oval and Silver D] Black and Golden

10. Which of the following is correct regarding rectangular table?

A] It is kept between square tables. B] It is the cheapest of all.

C] It is brown in color. D] It is kept to the right of the circular tables.

11. What is the correct order of the table arrangement from left to right?

A] Grey, Silver, Brown, Black, Golden, Red B] Silver, Grey, Brown, Red, Black, Golden

C] Grey, Silver, Brown, Black, Red, Golden D] Silver, Brown, Grey, Black, Golden, Red

12. Which are the two circular tables?

A] The second and fifth costliest. B] The brown and red colored

C] The golden and red colored D] The fourth and second costliest.

13. Which are the square tables?

A] The golden and silver ones. B] The brown and black ones.

C] The costliest and golden ones. D] The third costliest and silver ones.

14) A pole is broken by the storm of wind and its top struck the ground at an angle of 45° and at 25 m from the foot of the pole. The height of the pole before it was broken was?

A) $25\sqrt{2}$ m B) $25(1+\sqrt{2})$ m C) $20\sqrt{3}$ m D) $(25\sqrt{3})/3$ m

15) A boy standing in the middle of a field, observes a flying bird in the north at an angle of elevation of 60° and after two minutes, he observes the same bird in the south at an angle of elevation of 45°. If the bird flies all along in a straight line at a height of $40\sqrt{3}$ m, then its speed in km/hr is?

A) 3.276 B) 3 C) 2.985 D)3.50

16) The angles of elevation of the top of a tower standing on a horizontal plane from two points on a line passing through the foot of the tower at a distance 12 ft & 27ft respectively are complimentary angles. Then the height of the tower is

A) 16 ft B) 12 ft C) 18 ft D) 14.4 ft

17) A ladder is lying/resting on a 10 m high wall. If it makes an angle of 60° with horizontal then the distance between foot of ladder & wall is –

A) $10/\sqrt{3}$ m B) $(20\sqrt{3})/3$ m C) $10\sqrt{3}$ m D) $20\sqrt{3}$ m

18) A man standing at the top of tower of height 200 m observes a car at an angle of depression of 60°. After a while the angle of depression becomes 30°. The distance travelled by the car during this period is –

A) $200\sqrt{3}$ m B) $(400\sqrt{3})/3$ m C) $(100\sqrt{3})/3$ m D) $200\sqrt{3}$ m

19) A fountain is 100 meter from the base of a pole. Angle of depression of the fountain from 2/3 rd of the pole's height is 30°. What is the height of the pole ?

A) 150 m B) 150/√3 m C) 50/√3 m D) 50√3 m

20) Walking towards the foot of a tower, at a certain distance Rana observes that the angle of elevation of the cliff of tower changes from 30° to 45° in 10 minutes. How much time will Rana take to reach the tower from the point where the angle of elevation is 45°?

A) 4(√3-1) m B) 5(√3+1) m C) 10(√3+1) m D) 10(√3-1) m

UNIT 6

DATA INTERPRETATION

Directions (Q1 to Q5): Study the following table and answer the questions based on it

Expenditures of a Company (in Lakh Rupees) per Annum Over the given Years.

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

Q1. What is the average amount of interest per year which the company had to pay during this period?

(a) 32.43 Lakhs (b) 33.43 Lakhs (c) 34.12 Lakhs (d)36.66 Lakhs

Q2. The total amount of bonus paid by the company during the given period is approximately what percent of the total amount of salary paid during this period?

(a) 0.1 % (b) 0.25 % (c) 1% (d) 1.25%

Q3. Total expenditure on all these items in 1998 was approximately what percent of the total expenditure in 2002?

(a) 62% (b) 66% (c) 69% (d) 71%

Q4. The total expenditure of the company over these items during the year 2000 is?

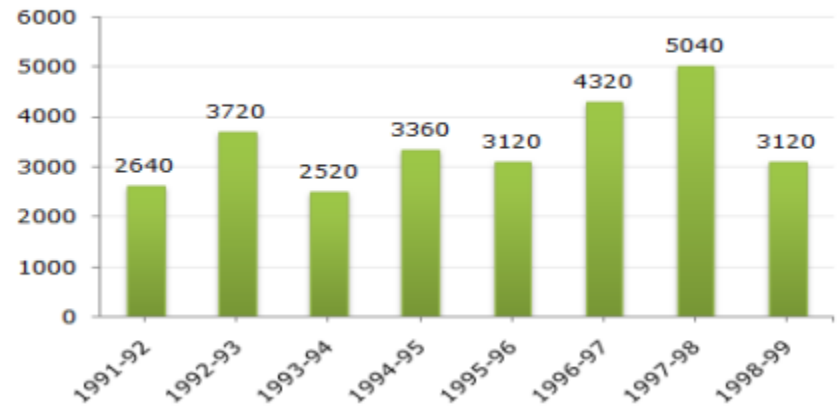
(a) 544.44 Lakhs (b) 546.44 Lakhs (c) 578.44 Lakhs (d) 560 Lakhs

Q5. The ratio between the total expenditure on Taxes for all the years and the total expenditure on Fuel and Transport for all the years respectively is approximately?

(a) 4:7 (b) 10:13 (c) 15:18 (d) 5:8

Directions (Q6 to Q10): The bar graph given below shows the foreign exchange reserves of a country (in million US $) from 1991 - 1992 to 1998 - 1999. Foreign Exchange Reserves of a Country (in million US $).

Foreign Exchange Reserves of a Country (in million US $).



Q6. The ratio of the number of years, in which the Foreign exchange reserves are above the average reserves, to those in which the reserves are below the average reserves is?

(a) 2:6 (b) 3:4 (c) 3:5 (d) 4:4

Q7. The foreign exchange reserves in 1997-98 were how many times that in 1994-95?

(a) 0.7 (b) 1.2 (c) 1.4 (d) 1.5

Q8. For which year, the percent increase of foreign exchange reserves over the previous year, is the highest?

(a) 1998-1999 (b) 1993-1994 (c) 1994-1995 (d) 1992-1993

Q9. The foreign exchange reserves in 1996-97 were approximately what percent of the average foreign exchange reserves over the period under review?

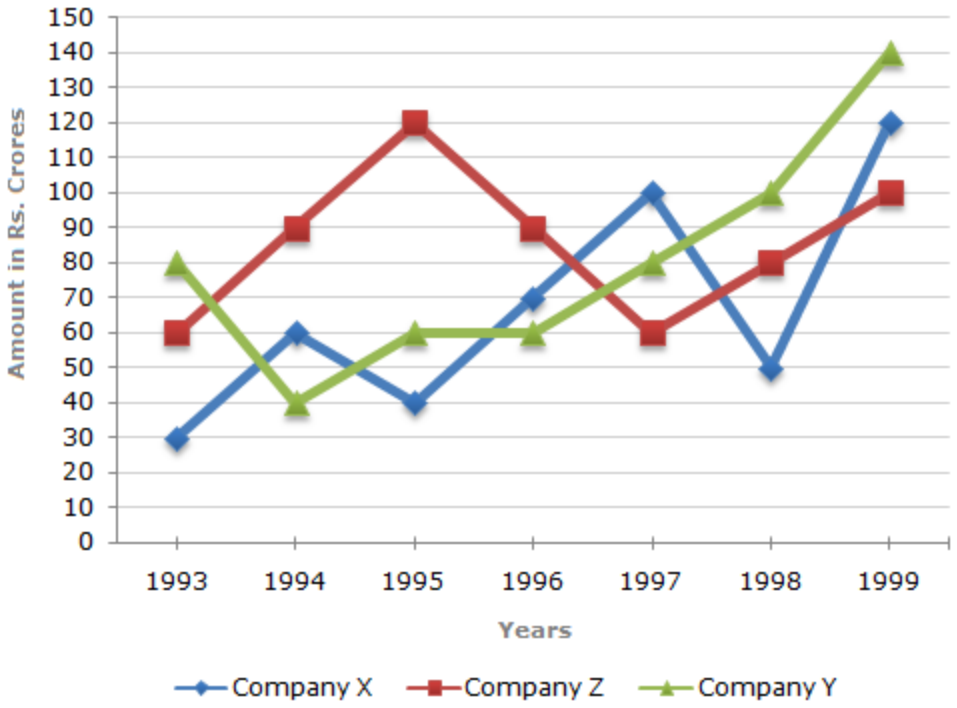
(a) 95% (b) 110% (c) 115% (d) 125%

Q10. What was the percentage increase in the foreign exchange reserves in 1997-98 over 1993-94?

(a) 300 (b) 150 (c) 100 (d) 200

Directions (Q11 to Q15): Study the following line graph and answer the questions Exports from Three Companies over the Years (in Rs. crores)

Exports from Three Companies over the Years (in Rs. crores)



Q11. For which of the following pairs of years the total exports from the three Companies together are equal?

(a) 1995 & 1998 (b) 1996 & 1998 (c) 1997 & 1998 (d) 1995 & 1996

Q12. Average annual exports during the given period for Company Y is approximately what percent of the average annual exports for Company Z?

(a) 87.12% (b) 89.64% (c) 91.21% (d) 93.33%

Q13. In which year was the difference between the exports from Companies X and Y the minimum?

(a) 1994 (b) 1995 (c) 1996 (d) 1997

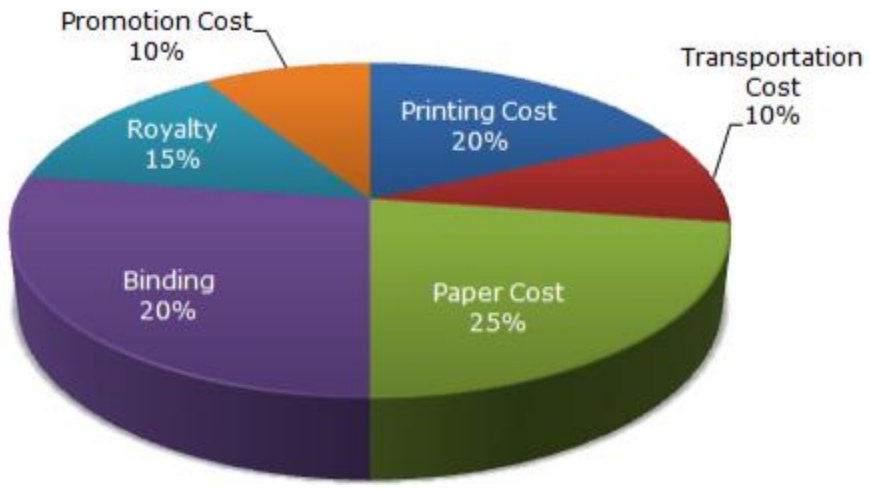
Q14. What was the difference between the average exports of the three Companies in 1993 and the average exports in 1998?

(a) Rs. 15 crores (b) Rs. 18 crores (c) Rs. 20 crores (d) Rs. 22 crores

Q15. In how many of the given years, were the exports from Company Z more than the average annual exports over the given years?

(a) 2 (b) 3 (c) 4 (d) 5

Directions (Q16 to Q20): The following pie-chart shows the percentage distribution of the expenditure incurred in publishing a book. Study the pie-chart and the answer the questions based on it. Various Expenditures (in percentage) Incurred in Publishing a Book



Q16. If for a certain quantity of books, the publisher has to pay Rs. 30,600 as printing cost, then what will be amount of royalty to be paid for these books?

(a) Rs. 19,450 (b) Rs. 21,200 (c) Rs. 22,950 (d) Rs. 26,150

Q17. What is the central angle of the sector corresponding to the expenditure incurred on Royalty?

(a) 15 (b) 24 (c) 54 (d) 48

Q18. The price of the book is marked 20% above the C.P. If the marked price of the book is Rs. 180, then what is the cost of the paper used in a single copy of the book?

(a) Rs. 36 (b) Rs. 37.50 (c) Rs. 42 (d) Rs. 44.25

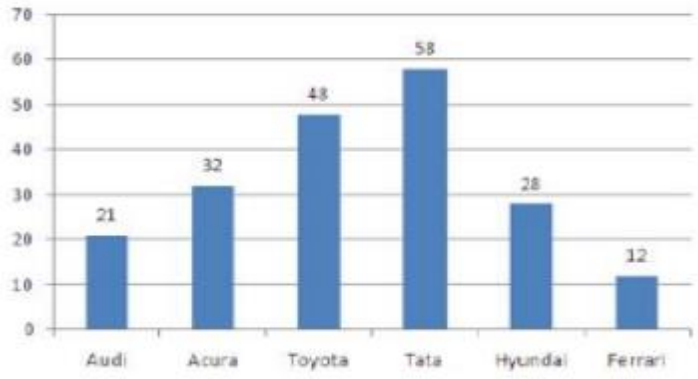
Q19. If 5500 copies are published and the transportation cost on them amounts to Rs. 82500, then what should be the selling price of the book so that the publisher can earn a profit of 25%?

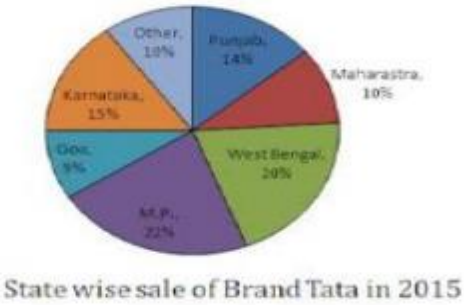
(a) Rs. 187.50 (b) Rs. 191.50 (c) Rs. 175 (d) Rs. 180

Q20. Royalty on the book is less than the printing cost by?

(a) 5% (b) 33.33% (c) 20% (d) 25%

Directions (Q21 to Q25): The bar graph shows the sales of six different car-manufacturers in 2015 (in thousands of units) in India. The pie-chart shows the break-up of sales of Brand TATA in 2015 in different states of India. Note→ All manufactured cars are sold in these given 7 states.





State wise sale of Brand Tata in 2015

Q21. What is the difference between the sales of Tata in West Bengal and that in Goa?

(a) 50600 (b) 6380 (c) 6567 (d) 6220

Q22. By what percent should the sales of brand Tata is increased so that it sales volume in Punjab becomes 15000, while the volume of sales in all other state remains the some (approximately)?

(a) 10% (b) 9% (c) 7% (d) 12%

Q23. If in 2016, the total sale of Brand Tata increase by 12%, while its sale in Maharashtra is increased by 34% and in M.P. by 22%, what is the approximate sales increase in the rest of the states?

(a) 7000 (b) 6500 (c) 8000 (d) 10,000

Q24. Total sale of Audi, Acura and Toyota in 2015 is what percent of the total sales of Tata in all states together in that year 2015 (approximately)?

(a) 100% (b) 113% (c) 190% (d) 175%

Q25. If total sale of all brands together increases by 20% in 2016 and sale of Tata in West Bengal increase by 10% keeping % percentage distribution of Tata in these seven states same as previously then, what is the total sale of all cars in 2016 of all brands except brand Tata?

(a) 1,75,000 (b) 1,50,000 (c) 2,00,000 (d) 1,00,000

Directions (Q26 to Q30): Read the given information and answer the following questions.
Krishna distributed 10-acre land to Gopal and Ram who paid him the total amount in the ratio 2: 3. Gopal invested a further Rs. 2 lakh in the land and planted coconut and lemon trees in the ratio 5: 1 on equal areas of land. There were a total of 100 lemon trees. The cost of one coconut was Rs. 5. The crop took 7 yr to mature and when the crop was reaped in 1997, the total revenue generated was 25% of the total amount put in by Gopal and Ram together. The revenue generated from the coconut and lemon trees was in the ratio 3: 2 and it was shared equally by Gopal and Ram as the initial amounts spent by them were equal.

Q26. What was the ratio of yield per acre of land for coconuts and lemons (in terms of number of lemons and coconuts)?

(a) 3: 2 (b) 2: 3 (c) 1: 1 (d) Can"t say

Q27. What was the value of output per tree for coconuts?

(a) Rs 36 (b) Rs 360 (c) Rs 3,600 (d) Rs 240

Q28. What was the amount received by Gopal in 1997?

(a) Rs. 1.5 lakh (b) Rs. 3 lakh (c) Rs. 6 lakh (d) Rs. 4 lakh

Q29. What was the value of output per acre of the lemon tree planted (in lakh/acre)?

(a) 0.24 (b) 2.4 (c) 24 (d) Can't say

Q30. What was the total output of coconuts?

(a) 24,000 (b) 36,000 (c) 18,000 (d) 48,000

DATA SUFFICIENCY

31. How is P related to Q?

I. P is the mother-in-law of R who is the father of Q.

II. S is the grandfather of Q and also the husband of P.

A) If the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.

B) If the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.

C) If the data either in statement I alone or in statement II alone are sufficient to answer the question.

D) If the data even in both statements I and II together are not sufficient to answer the question.

E) If the data in both statement I and II together are necessary to answer the question.

32. Seven persons X, Y, Z, A, B, C and D are belonging to the same family and it is a family of three-generation and there are two married couples in the family. How is C related to D?

I. B is brother of C and son of A. A is mother-in-law of Z and grandmother of D. Z is not married to C.

II. C is daughter of A and sister of Y. B is son of X and brother-in-law of Z. Z is father of D. Z is not married to C.

A) The data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question

B) The data even in both statements I and II together are not sufficient to answer the question

C) The data either in statement I alone or in statement II alone are sufficient to answer the question

D) The data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question

E) The data in both statements I and II together are necessary to answer the question

33. A has how many daughters?

I. B is husband of C and father-in-law of A who has three Children.

II. D"s father E is husband of A. F and G are sisters of D.

III. E has three children out of which only one is a boy.

A) Only statement I is required

B) Only statement II is required

C) Both I and III required

D) Both II and III required

E) Question cannot be answered even with all the statements together.

34. How is M related to N?

I. P, who has only two kids, M & N, is the mother-in-law of Q, who is sister-in-law of N.

II. R, the sister-in-law of M, is the daughter-in-law of S, who has only two kids, M & N.

A) Data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.

B) Data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.

C) Data either in Statement I alone or in Statement II alone are sufficient to answer the question.

D) Data in both the Statements I and II together are not sufficient to answer the question.

E) Data in both the Statements I and II together are necessary to answer the question.

35. Seven persons P, Q, R, S, T, U and V are belonging to the same family. It is a three-generation family and two married couples are there in the family. How is U related to V?

I. T is brother of U and son of S. S is mother-in-law of R and grandmother of V. R is not married to U.

II. U is daughter of S and sister of Q. T is son of P and brother-in-law of R. R is father of V. R is not married to U.

A) The data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question

B) The data even in both statements I and II together are not sufficient to answer the question

C) The data either in statement I alone or in statement II alone are sufficient to answer the question

D) The data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question

E) The data in both statements I and II together are necessary to answer the question

36. In which month (of the same year) did Ram visit Goa?

I. Ram's mother correctly remembers that Ram visit Goa after June, but before October and that month had less than 31 days.

II. Ram's father correctly remembers that Ram visit Goa after August, but before December and the month had only 30 days.

A) The data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question

B) The data even in both statements I and II together are not sufficient to answer the question

C) The data either in statement I alone or in statement II alone are sufficient to answer the question

D) The data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question

E) The data in both statements I and II together are necessary to answer the question

37. In which year was Sugan born?

I. Sugan"s present age is 20 years more than his child

II. Sugan"s have two children. First child was born in 1993?

A) Only I B) Only II C) Both I and II D) Either I or II E) Neither I or II

38. On which day of the week did Priya arrive?

I. Her sister, Anu, correctly remembers that she did not arrive on Monday.

II. Her friend, Bala, correctly remembers that she arrived before Friday.

III. Her mother correctly mentions that she arrived before Friday but after Tuesday.

A) Only I and II B) Only II and III C) Only I and III

D) All I, II and III E) Data inadequate

39. How is „Go" written in a given language?

I. „go to school" is written as „ fa la da" and „on the way" is written as „ni da ka"

II. „way for market" is written as „ sh da pi" and „way to School" is written as „ ma la fa"

A) Only I B) Only II C) Both I and II D) Either I or II E) Neither I or II

40. How many days did Rahul take to complete his assignment?

I. Mohan correctly remembers that Rahul took more than 3 days but less than 9 days to complete his assignment.

II. Mithun correctly remembers that Rahul took more than 6 days but less than 11 days to complete his assignment.

A) Only I B) Only II C) Both I and II D) Either I or II E) Neither I or II

41. In the question below consists of two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements. Question: Which train did Aman catch to go to office ?

Statements: I. Aman missed his usual train of 10.25 a.m. A train comes in every 5 minutes. II. Aman did not catch the 10.40 a.m. train or any train after that time.

A) I alone is sufficient while II alone is not sufficient

B) II alone is sufficient while I alone is not sufficient

C) Either I or II is sufficient

D) Neither I nor II is sufficient

E) Both I and II are sufficient

42. In the question below consists of two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements. Question: What time did the train leave today ?

Statements: I. The train normally leaves on time.

II. The scheduled departure is at 14 : 30.

A) I alone is sufficient while II alone is not sufficient

B) II alone is sufficient while I alone is not sufficient

C) Either I or II is sufficient

D) Neither I nor II is sufficient

E) Both I and II are sufficient

Directions for Q43-45

A. Statement 1 ALONE is sufficient, but statement 2 alone is not sufficient to answer the question asked.
B. Statement 2 ALONE is sufficient, but statement 1 alone is not sufficient to answer the question asked.
C. BOTH statements (1) and (2) TOGETHER are sufficient to answer the question asked, but NEITHER statement ALONE is sufficient.
D. EACH statement ALONE is sufficient to answer the question asked.
E. Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data specific to the problem are needed.

43. What is the present time in the clock?

1. The angle between the hour hand and the minute hand is 100

2. The mirror reflection of the clock shows the time 7:40

44. Find the time shown in a wall clock?

1. The angle between the two hands is 180.

2. The hour hand of the clock is between 7 and 8 on the dial .

45. What is the angle between the hour hand and the minute hand of the clock?

1. The two hands are 503 minute spaces apart.

2. The minute hand is on 8, and the hour hand is between 4 and 5.

46. What is the code for „smart" in the code language?

I. In the code language, „Ram is smart" is written as „Ab Bc De"

II. In the same language, „Smart people are intelligent" is written as „Bc Cd Ef Gh"

III. In the same language, „Riya is intelligent" is written as „Ab Cd Fg"

A) All the statements are needed to answer the question.

B) Only statements I and III are sufficient.

C) Only statements I and II are sufficient.

D) Only statements II and III are sufficient.

E) Question cannot be answered even with the information in all the statements.

47. Which of the following will indicate colour of clear sky in a coding system?

I. „Indigo" means „Grey", „Grey" means „Black", Black" means „Blue" in that system.

II. „Black" means „Blue", „Blue" means „Orange"; Orange" means „Green" in that system.

A) Data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.

B) Data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.

C) Data either in Statement I alone or in Statement II alone are sufficient to answer the question.

D) Data in both the Statements I and II together are not sufficient to answer the question.

E) Data in both the Statements I and II together are necessary to answer the question.

48. How is „ home‟ written in a given language?

I. “go to home” is written as “sa la da” and “on the way” is written as “ni da ka”

II. “way for market” is written as “sh da pi” and “way to home” is written as “da pi ma”

A) Only I B) Only II C) Both I and II D) Either I or II E) Neither I or II

49. What does „ Zee‟ represent in a code language?

I. In that code language „ ah koj zee pig‟ mean „ can you take that ‟

II. In that code language „et zee lin ter‟ means „ you may come now‟

A) Only I B)Only II C) Both I and II D) Either I or II E) Neither I or II

50. Find the length of the diagonal of square G.

I. The area of G is 169 fathoms squared.

II. The side length of G is 13 fathoms.

A) Each statement alone is enough to solve the question.

B) Neither statement is sufficient to solve the question. More information is needed.

C) Statement 2 is sufficient to solve the question, but statement 1 is not sufficient to solve the question.

D) Statement 1 is sufficient to solve the question, but statement 2 is not sufficient to solve the question.

E) Both statements taken together are sufficient to solve the problem.

51. The circle with center F is inscribed in square ABCD. What is the length of diagonal AC

I. The area of the circle is 16π.

II. The side of the square is 8.

A) Both statements together are sufficient.

B) Statements 1 and 2 together are not sufficient.

C) Statement 2 alone is sufficient.

D) Each statement alone is sufficient.

E) Statement 1 alone is sufficient.

52. On your college campus there is a square grassy area where people like to hang out and enjoy the sun. While walking with some friends, you decide to take the shortest distance to the corner of the square opposite from where you are. Find the distance you travelled.

I. The perimeter of the square is 60 meters.

II. The square covers an area of 225 square meters.

A) Statement II is sufficient to answer the question, but statement I is not sufficient to answer the question.

B) Neither statement is sufficient to answer the question. More information is needed.

C) Both statements are needed to answer the question.

D) Statement I is sufficient to answer the question, but statement II is not sufficient to

53. Find the length of the diagonal of square A if the diagonal of square B is 82–√in.

1. The perimeter of square B is 32in.

2. The area of square A is 16in2.

A) Statement 2 alone is sufficient, but statement 1 alone is not sufficient to answer the question.

B) Both statements taken together are sufficient to answer the question, but neither statement alone is sufficient.

C) Statement 1 alone is sufficient, but statement 2 alone is not sufficient to answer the question.

D) Statements 1 and 2 are not sufficient, and additional data is needed to answer the question.

E) Each statement alone is sufficient to answer the question.

54. What is the length of the diagonal of the square?

1. The area of the square is 64cm2.

2. The perimeter is 32cm.

A) Statements 1 and 2 are not sufficient, and additional data is needed to answer the question.

B) Both statements taken together are sufficient to answer the question, but neither statement alone is sufficient.

C) Statement 2 alone is sufficient, but statement 1 alone is not sufficient to answer the question.

D) Each statement alone is sufficient to answer the question.

E) Statement 1 alone is sufficient, but statement 2 alone is not sufficient to answer the question.

55. Jiminy wants to paint one of his silos. One gallon of this paint covers about 300 square feet. How many gallons will he need?

I) The radius of the silo is 14π feet.

II) The height is 12π times longer the radius.

A] Statement II is sufficient to answer the question, but statement I is not sufficient to answer the question.

B] Either statement alone is sufficient to answer the question.

C] Both statements are necessary to answer the question.

D] Statement I is sufficient to answer the question, but statement II is not sufficient to answer the question.

E] Neither I nor II is sufficient to answer the question. More information is needed.

56. A tin can has a volume of $375\pi in^3$.

I)The height of the can is 15 inches.

II) The radius of the base of the can is 5 inches. What is the surface area of the can? (Assume it is a perfect cylinder) Options :

A] Neither statement is sufficient to answer the question. More information is needed.

B] Both statements are needed to answer the question.

C] Either statement is sufficient to answer the question.

D] Statement II is sufficient to answer the question, but statement I is not sufficient to answer the question.

E] Statement I is sufficient to answer the question, but statement II is not sufficient to answer the question.

57. The tank of a tanker truck is made by bending sheet metal and then welding on the ends. If the length of the tank is 10 meters, what is its radius?

I) The volume of the tank is 250m3.

II) It takes 150π square meters of metal to build the tank.

A] Both statements are needed to answer the question.

B] Statement II is sufficient to answer the question, but statement I is not sufficient to answer the question.

C] Neither statement is sufficient to answer the question. More information is needed.

D] Statement I is sufficient to answer the question, but statement II is not sufficient to answer the question.

E] Either statement is sufficient to answer the question.

58. Of Cylinder 1 and Cylinder 2, which, if either, has the greater surface area?

Statement 1: The sum of the height of Cylinder 1 and the radius of one of its bases is equal to the sum of the height of Cylinder 2 and the radius of one of its bases.

Statement 2: The bases of Cylinder 1 and Cylinder 2 have the same circumference.

A] Statement 2 ALONE is sufficient to answer the question, but Statement 1 ALONE is NOT sufficient to answer the question.

B] BOTH statements TOGETHER are insufficient to answer the question.

C] EITHER statement ALONE is sufficient to answer the question.

D] BOTH statements TOGETHER are sufficient to answer the question, but NEITHER statement ALONE is sufficient to answer the question.

E] Statement 1 ALONE is sufficient to answer the question, but Statement 2 ALONE is NOT sufficient to answer the question.

59. Give the surface area of a cylinder.

Statement 1: The circumference of each base is 14π.

Statement 2: Each base has radius 7.

A] BOTH statements TOGETHER are sufficient to answer the question, but NEITHER statement ALONE is sufficient to answer the question.

B] Statement 1 ALONE is sufficient to answer the question, but Statement 2 ALONE is NOT sufficient to answer the question.

C] EITHER statement ALONE is sufficient to answer the question.

D] BOTH statements TOGETHER are insufficient to answer the question.

E] Statement 2 ALONE is sufficient to answer the question, but Statement 1 ALONE is NOT sufficient to answer the question.

60. Which of Cylinder 1 and Cylinder 2, either, has the greater lateral area?

Statement 1: The product of the height of Cylinder 1 and the radius of one of its bases is less than the product of the height of Cylinder 2 and the radius of one of its bases.

Statement 2: The product of the height of Cylinder 2 and the radius of one of its bases is equal to the product of the height of Cylinder 1 and the diameter of one of its bases.

A] Statement 1 ALONE is sufficient to answer the question, but Statement 2 ALONE is NOT sufficient to answer the question.

B] BOTH statements TOGETHER are sufficient to answer the question, but NEITHER statement ALONE is sufficient to answer the question.

C] Statement 2 ALONE is sufficient to answer the question, but Statement 1 ALONE is NOT sufficient to answer the question.

D] EITHER statement ALONE is sufficient to answer the question.

E] BOTH statements TOGETHER are insufficient to answer the question.

Company Specific

1. Which of Cylinder 1 and Cylinder 2, if either, has the greater volume?

Statement 1: The height of Cylinder 1 is equal to the radius of the base of Cylinder 2.

Statement 2: The height of Cylinder 2 is equal to twice the radius of the base of Cylinder 1.

A] Statement 1 ALONE is sufficient to answer the question, but Statement 2 ALONE is NOT sufficient to answer the question.

B] Statement 2 ALONE is sufficient to answer the question, but Statement 1 ALONE is NOT sufficient to answer the question.

C] BOTH statements TOGETHER are sufficient to answer the question, but NEITHER statement ALONE is sufficient to answer the question.

D] EITHER statement ALONE is sufficient to answer the question.

E] BOTH statements TOGETHER are insufficient to answer the question

2. How many identical cans can be packed in a certain box?

1. The box is 50 centimeters wide and 30 centimeters high.

2. Each can is 5 centimeters high.

A] BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient

B] Statements (1) and (2) TOGETHER are not sufficient

C] Statement (1) ALONE is sufficient, but statement (2) ALONE is not sufficient

D] Statement (2) ALONE is sufficient, but statement (1) ALONE is not sufficient

3. Jenkins has a poster tube which he is using to carry his posters to college.

I. The poster tube has a volume of 46in3.

II. The poster tube is 23 inches long. What is the radius of the poster tube?

A] Neither I nor II are sufficient to answer the question. More information is needed.

B] Either statement alone is sufficient to answer the question.

C] Statement I is sufficient to answer the question, but statement II is not sufficient to answer the question.

D] Statement II is sufficient to answer the question, but statement I is not sufficient to answer the question.

E] Both statements are necessary to answer the question.

4. How much water, in cubic feet, can a cylindrical water tank whose bases have radius 6 feet hold?

Statement 1: The lateral area of the tank is 125.66 square yards.

Statement 2: The tank is 30 feet high.

A] BOTH statements TOGETHER are insufficient to answer the question.

B] Statement 2 ALONE is sufficient to answer the question, but Statement 1 ALONE is not sufficient to answer the question.

C] Statement 1 ALONE is sufficient to answer the question, but Statement 2 ALONE is not sufficient to answer the question.

D] EITHER statement ALONE is sufficient to answer the question.

E] BOTH statements TOGETHER are sufficient to answer the question, but NEITHER statement ALONE is sufficient to answer the question.

5. What is the length of the edge of a cube?

I. Its volume is 1,728 cubic meters.

II. Its surface area is 864 square meters

A] Statement 1 ALONE is sufficient, but Statement 2 alone is not sufficient.

B] BOTH statements TOGETHER are sufficient, but neither statement ALONE is sufficient.

C] EACH statement ALONE is sufficient.

D] Statement 2 ALONE is sufficient, but Statement 1 alone is not sufficient.

E] Statements 1 and 2 TOGETHER are not sufficient.

6. A sphere is inscribed inside a cube. What is the volume of the sphere?

Statement 1: The surface area of the cube is 216.

Statement 2: The volume of the cube is 216.

A] Statement 2 ALONE is sufficient to answer the question, but Statement 1 ALONE is NOT sufficient to answer the question.

B] Statement 1 ALONE is sufficient to answer the question, but Statement 2 ALONE is NOT sufficient to answer the question.

C] BOTH statements TOGETHER are sufficient to answer the question, but NEITHER statement ALONE is sufficient to answer the question.

D] BOTH statements TOGETHER are insufficient to answer the question.

E] EITHER statement ALONE is sufficient to answer the question.

7. Find out the total distance covered by both the hands?

I. A clock the long hand is of 8cm

II. The short hand is of 7cm. if the clock runs for 4 days

A. I alone is sufficient while II alone is not sufficient

B. II alone is sufficient while I alone is not sufficient

C. Either I or II is sufficient

D. Neither I nor II is sufficient

E. Both I and II are sufficient

8 On the planet Oz, Find the approximate angle between the hands of a clock on Oz when the time is 12:40 am.

I. There are 8 days in a week, Sunday to Saturday and another day called Oz day. There are 36 hours in a day and each hour has 90 minutes while each minute has 60 seconds.

II. As on earth, the hour hand covers the dial twice every day.

A. I alone is sufficient while II alone is not sufficient

B. II alone is sufficient while I alone is not sufficient

C. Either I or II is sufficient

D. Neither I nor II is sufficient

E. Both I and II are sufficient

9 What time will it at 10 A.M. on Tuesday if the watch is set right at 3 A.M. on Sunday?

I. watch gains 12 seconds every 3 hours,
II. watch gains 15 sec in 5 hrs

A] I alone is sufficient while II alone is not sufficient

B] II alone is sufficient while I alone is not sufficient

C] Either I or II is sufficient

D] Neither I nor II is sufficient

E] Both I and II are sufficient

10 What will be the time in watch when the actual time is 8 p.m.?

I: For each hour a watch is going slow by ¼ of its hour hand .

II: For each hour a watch is going slow by 30 seconds. Now the time is 8 a.m., when the clock is set right.

a) I alone is sufficient while II alone is not sufficient

b) II alone is sufficient while I alone is not sufficient

c) Either I or II is sufficient

d) Neither I nor II is sufficient

e) Both I and II are sufficient

Directions (Q11 to Q15): In the following table, the Investment and profit of three Companies in different countries is given. Note: Some values are missing. You have to calculate these values as per data given in the questions.

Investment (in mn $.)				Profit (in mn $.)		
State	TCS	Infosys	Accenture	TCS	Infosys	Accenture
Singapore	15000	—	25000	—	8000	12500
UK	—	7000	8000	—	—	14000
UAE	4000	5000	4500	—	—	—
Qatar	9000	10000	—	4500	6000	—
Malaysia	—	—	17000	20000	30000	40000

Q11. If TCS invested his amount in SINGAPORE state for 9 years and Accenture invested his amount in the same country for 10 years then find the total profit made by all of them from SINGAPORE?

(a) 29250 mn $ (b) 24250 mn $ (c) 27250 mn $ (d) 31200 mn $

Q12. If the total profit earned from UK by all of them is mn $ 32375 and each invested for 9 years then find the ratio of investment of TCS in UK to the profit of Infosys from SINGAPORE?

(a) 16 : 7 (b) 7 : 16 (c) 8 : 13 (d) 13 : 8

Q13. If TCS, Infosys and Accenture invested in UAE for 5 years, 8 years and 6 years respectively then profit earned by Accenture from UAE is what % of the profit earned by TCS and Infosys together from the same Country, if total profit earned by all of them from UAE state is 8700 mn $?

(a) 45% (b) 50% (c) 55% (d) 40%

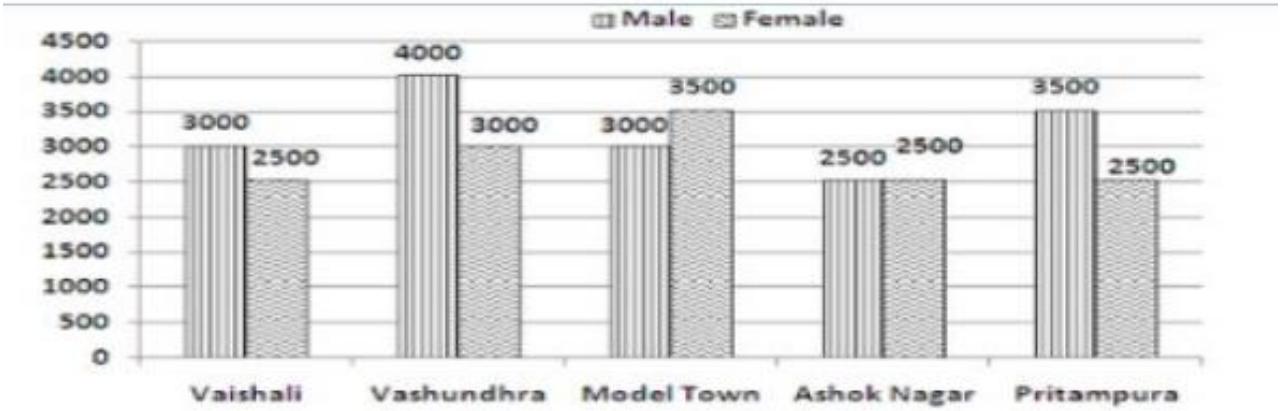
Q14. In Malaysia state total Investment of TCS and Infosys is 85000 mn $, while TCS and Infosys invested their amount for 4 years and 6 years respectively in the same country, then find the number of years that Accenture invested his amount?

(a) 8 years (b) 9 years (c) 20 years (d) Can't say

Q15. Average Investment made by all of them in Qatar is 10,000 mn $ and average profit earned by all of them from the same state is $ 6000 mn , then profit earned by Accenture in the same country is what percent more/less than the amount invested by Accenture in the same state?

(a) 35 1/3 % (b) 37 6/7 % (c) 32 7/11 % (d) 31 9/11 %

Directions (Q16 to Q20): Study the following graph carefully to answer the questions that follow.



Q16. What is the average number of females from all the organizations together?

(a) 2700 (b) 2500 (c) 2800 (d) 2900

Q17. The total number of males from organization Vaishali and Vashundhra together is approximately what percent of the total number of females from organization Vaishali, Vashundhra and Model Town together?

(a) 33% (b) 55% (c) 66% (d) 78%

Q18. What is the difference between the total number of females and the total number of males from organization Vaishali, Vashundra, Model Town and Ashok Nagar together?

(a) 900 (b) 800 (c) 700 (d) 1000

Q19. What is the ratio of the number of females from organization Vashundra to the number of females from organization Pritampura?

(a) 6 : 5 (b) 5 : 6 (c) 6 : 7 (d) 7 : 6

Q20. The number of males from organization Vashundhra is approximately what percent of the total number of males from all the organizations together?

(a) 23.42% (b) 21.42% (c) 25% (d) 26%

ANSWER KEYS

Unit 1 : Efficiency/Inlet outlet pipe							
Q.No.	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**
1	C	11	D	21	A	31	B
2	C	12	C	22	D	32	D
3	C	13	C	23	A	33	B
4	C	14	C	24	A	34	A
5	C	15	D	25	A	35	C
6	C	16	A	26	A	36	C
7	C	17	D	27	A	37	D
8	C	18	D	28	A	38	D
9	D	19	C	29	B	39	A
10	D	20	D	30	C	40	A

Company Specific			
Q.No.	**Answer**	**Q.No**	**Answer**
1	B	11	B
2	B	12	A
3	B	13	D
4	D	14	C
5	B	15	C
6	B	16	C
7	A	17	C
8	C	18	B
9	A	19	A
10	C	20	A

Unit 2: TSD/Relative Speed/Objects on moving body							
Q.No.	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**
1	C	11	C	21	A	31	A
2	A	12	B	22	B	32	D
3	B	13	A	23	C	33	A
4	A	14	C	24	A	34	A
5	D	15	D	25	D	35	B
6	C	16	B	26	A	36	C
7	B	17	C	27	A	37	D
8	C	18	A	28	C	38	A
9	A	19	B	29	B	39	B
10	B	20	A	30	A	40	D

Company Specific			
Q.No.	**Answer**	**Q.No**	**Answer**
1	C	11	A
2	A	12	B
3	B	13	A
4	A	14	C
5	D	15	D
6	C	16	D
7	C	17	A
8	A	18	D
9	C	19	C
10	A	20	C

Unit 3: Syllogism/Logarithm/Time Sequence and ranking test									
Q.No.	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**
1	E	11	C	21	B	31	B	41	D
2	A	12	D	22	C	32	B	42	A
3	B	13	E	23	A	33	B	43	D
4	E	14	A	24	D	34	B	44	A
5	D	15	B	25	B	35	A	45	A
6	B	16	B	26	C	36	A		
7	D	17	B	27	C	37	A		
8	B	18	C	28	B	38	A		
9	D	19	A	29	C	39	A		
10	A	20	E	30	B	40	D		

Company Specific			
Q.No.	**Answer**	**Q.No**	**Answer**
1	B	11	B
2	C	12	C
3	B	13	C
4	B	14	B
5	D	15	D
6	B	16	C
7	D	17	E
8	D	18	C
9	D	19	D
10	A	20	C

Unit 4: Surface Area and Volume/Clock/Calendar							
Q.No.	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**
1	A	11	B	21	D	31	B
2	A	12	A	22	A	32	A
3	D	13	B	23	C	33	D
4	A	14	B	24	B	34	D
5	D	15	A	25	B	35	D
6	C	16	C	26	C	36	B
7	A	17	A	27	D	37	D
8	B	18	C	28	C	38	A
9	B	19	A	29	A	39	A
10	C	20	B	30	B	40	D

Company Specific			
Q.No.	**Answer**	**Q.No**	**Answer**
1	C	11	D
2	D	12	D
3	C	13	A
4	A	14	D
5	C	15	B
6	A	16	C
7	B	17	A
8	C	18	B
9	C	19	B
10	B	20	D

Unit 5 Trigonometry/Seating Arrangement/Code Inequality							
Q. No.	**Answer**	**Q. No.**	**Answer**	**Q. No.**	**Answer**	**Q. No.**	**Answer**
1	B	11	C	21	D	31	B
2	B	12	D	22	C	32	D
3	D	13	B	23	A	33	C
4	B	14	E	24	E	34	C
5	B	15	A	25	E	35	C
6	B	16	E	26	C	36	D
7	A	17	E	27	C	37	A
8	A	18	B	28	D	38	D
9	C	19	E	29	B	39	C
10	C	20	A	30	D	40	A

Company Specific			
Q. No.	**Answer**	**Q. No.**	**Answer**
1	B	11	C
2	B	12	A
3	A	13	C
4	B	14	B
5	C	15	A
6	A	16	C
7	C	17	A
8	E	18	B
9	B	19	D
10	B	20	B

Unit 6 DI/DS											
Q.No.	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**	**Q.No.**	**Answer**
1	D	11	D	21	B	31	C	41	D	51	D
2	C	12	D	22	D	32	A	42	E	52	B
3	C	13	C	23	C	33	D	43	B	53	A
4	A	14	C	24	D	34	A	44	C	54	D
5	B	15	C	25	A	35	A	45	B	55	C
6	C	16	C	26	D	36	D	46	E	56	C
7	D	17	C	27	B	37	E	47	B	57	E
8	D	18	B	28	A	38	E	48	C	58	D
9	D	19	A	29	A	39	C	49	C	59	D
10	C	20	D	30	B	40	E	50	A	60	E

Company Specific			
Q. No.	**Answer**	**Q. No.**	**Answer**
1	E	11	C
2	B	12	B
3	E	13	A
4	D	14	C
5	C	15	D
6	E	16	C
7	E	17	D
8	A	18	D
9	C	19	A
10	B	20	C