

Infosys Mathematical Ability



1. If the 6 digit numbers formed from the digits 2,3,4,5,6,7 are arranged in the increasing order (repetition is not allowed), then 245th term will be

- a. 45427
- b. 423765
- c. 327456
- d. 423756
- e. 367245

1. If the 6 digit numbers formed from the digits 2,3,4,5,6,7 are arranged in the increasing order (repetition is not allowed), then 245th term will be

- a. 45427
- b. 423765
- c. 327456
- d. **423756**
- e. 367245

2. Find the remainder when 121^{77} is divided by 7?

- a) 3
- b) 4
- c) 5
- d) 6
- e) 1

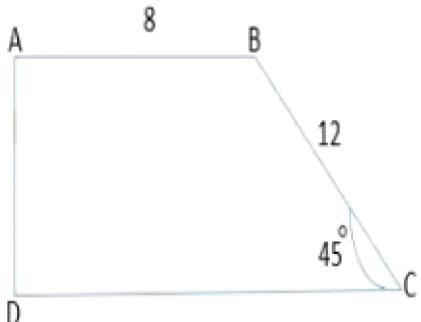
2. Find the remainder when 121^{77} is divided by 7?

- a) 3
- b) 4
- c) 5
- d) 6
- e) 1

3. A 40 litre mixture of juice and water contains juice and water in the ratio 3:2. 10 litres of the mixture is removed and replaced with pure juice and operation is repeated once more. At the end of the two removals and replacement, what is the ratio of the juice and water in the resultant mixture?

- a. 31:9
- b. 17:3
- c. 3:17
- d. 5:3
- e. None of these

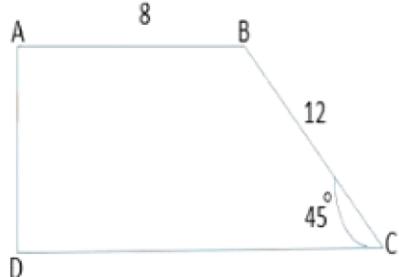
4. Find the area of trapezium ABCD, where AD is perpendicular to DC.



$$\sin 45 - \left(\frac{1}{\sqrt{2}}\right) \cos 45 - \left(\frac{1}{\sqrt{2}}\right)$$

- A. $48\sqrt{2} + 36$
- B. $36\sqrt{2} + 48$
- C. $32\sqrt{2} + 40$
- D. $36\sqrt{2} + 32$
- E. None of these

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$$\sin 45 - \frac{1}{\sqrt{2}} \cos 45 - \frac{1}{\sqrt{2}}$$

- A. $48\sqrt{2} + 36$
- B. $36\sqrt{2} + 48$
- C. $32\sqrt{2} + 40$
- D. $36\sqrt{2} + 32$
- E. None of these

5. How many diagonals does a 29 sided convex polygon have?

- A) 230
- B) 450
- C) 367
- D) 290
- E) None of these

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- A) 230
- B) 450
- C) 367
- D) 290
- E) **None of these**

6. How many 10 digit numbers can be formed using digits 2 and 7?

- a. $10!$
- b. 10^2
- c. 2^{10}
- d. $10 * 10$

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- a. $10!$
- b. 10^2
- c. 2^{10}
- d. $10 * 10$

6. If divya travels on a bicycle at 10 kmph she reaches her home at 4pm. If she travels at 15 kmph she reaches there at 2pm . At what speed she should travel to reach home at 3pm?
- a) 11 kmph
 - b) 12.5 kmph
 - c) 12 kmph
 - d) 13 kmph
 - e) 14 kmph

7. If divya travels on a bicycle at 10 kmph she reaches her home at 4pm. If she travels at 15 kmph she reaches there at 2pm . At what speed she should travel to reach home at 3pm?

- a) 11 kmph
- b) 12.5 kmph
- c) **12 kmph**
- d) 13 kmph
- e) 14 kmph

8. Ramesh, Ramu and Raja decide to race. They are supposed to start from pole A and come back to the sample pole, taking a U-turn at pole B. Ramesh reaches pole B first and on his return journey from B to A he meets Ramu at a distance of 11 km from pole B. when Ramu returns from B, he meets Raja at a distance of 9 km from pole B. if the ratio of speeds of Ramesh and Raja is 9 : 6, find the distance between A and B.
- a) 45
 - b) 90
 - c) 32
 - d) 99
 - e) 100

8. Ramesh, Ramu and Raja decide to race. They are supposed to start from pole A and come back to the sample pole, taking a U-turn at pole B. Ramesh reaches pole B first and on his return journey from B to A he meets Ramu at a distance of 11 km from pole B. when Ramu returns from B, he meets Raja at a distance of 9 km from pole B. if the ratio of speeds of Ramesh and Raja is 9 : 6, find the distance between A and B.

- a) 45
- b) 90
- c) 32
- d) 99
- e) 100

9. How many different can be formed of the same size using letters from the word INFOSYS, such that the two “S” cannot be adjacent to each other?

- a) 2520
- b) 750
- c) 5040
- d) 1800
- e) 1600

9. How many different can be formed of the same size using letters from the word INFOSYS, such that the two “S” cannot be adjacent to each other?

- a) 2520
- b) 750
- c) 5040
- d) 1800
- e) 1600

10. find the remainder when 3^{164} is divided by 324?

- A. 0
- B. 81
- C. 1
- D. 11
- E. None of these

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- A. 0
- B. 81
- C. 1
- D. 11
- E. None of these

11. Find the next item 4,25,121,289,529.....

- a) 841
- b) 900
- c) 961
- d) 784
- e) 1024

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- a) 841
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12. Shakib gets an aggregate of 60% marks in five subjects in the ratio 10 : 9 : 8 : 7 : 6. If the passing marks are 50% of the maximum marks and each subjects has the same maximum marks, in how many subjects did he fail the examination?

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

12. Shakib gets an aggregate of 60% marks in five subjects in the ratio 10 : 9 : 8 : 7 : 6. If the passing marks are 50% of the maximum marks and each subjects has the same maximum marks, in how many subjects did he fail the examination?

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

13. Takul can do a piece of work in 9 days and Raudy can do the same piece work in 10 days. In how many days will they complete 40 parts of the work out of 90 parts if they work alternatively? Assume the Takul will work on the first day.

- a) $21/5$ days
- b) 5 days
- c) 4 days
- d) 6 days
- e) None of these

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- a) 21/5 days
- b) 5 days
- c) 4 days
- d) 6 days
- e) None of these

14. Heera had 6 bags labelled A, B, C, D, E and F. Each bag is to contain either a Black or White toy in such a way that at least 1 bag contains a white toy and the bags containing black toys are consecutively labelled. The total number of ways in which this can be done is:

- a) 21
- b) 25
- c) 23
- d) 31
- e) None of these

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- a) 21
- b) 25
- c) 23
- d) 31
- e) None of these

15. 10 peoples (5 men and 5 women) went to a party. They have to be seated around a circular table such that no 2 men or women sit adjacent to each other. The table consists only 8 seats. How many such arrangements are possible?

- a) 14400
- b) 5040
- c) 576
- d) 3600
- e) 3200

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- b) 5040
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- d) 3600
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16. Mukesh wins twice as often as he loses in a race. What is the probability that in the next 5 races, he wins 4 of them?

- a. $(2/3)^4$
- b. $5*(2/3)^4*1/3$
- c. $5*(1/3)^4*2/3$
- d. $1/5$
- e. $4/5$

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- d. $1/5$
- e. $4/5$

17. If Sid travels on a bike at 10 kmph, he reaches his destination at 2 pm. If he travels at 15kmph, then he reaches there at 11 am. At what speed should he travel to reach there at noon?

- A. 12.06 kmph
- B. 14.5 kmph
- C. 13.06 kmph
- D. 12.86 kmph
- E. 11.44 kmph

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- A. 12.06 kmph
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- C. 13.06 kmph
- D. 12.86 kmph
- E. 11.44 kmph

18. A number is selected at random from first thirty natural numbers. What is the chance that it is a multiple of either 3 or 13?

- a. $17/30$
- b. $2/5$
- c. $11/30$
- d. $4/15$
- e. None of these

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- a. $17/30$
- b. $2/5$
- c. $11/30$
- d. $4/15$
- e. None of these

19. Nishant has 50 kg of pulses, $\frac{2}{5}$ th of which he sells at 8% profit and the rest at 18% profit. How much does he gain on the whole?

- A.12%
- B.16%
- C.14%
- D.13%
- E.None of these

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- B.16%
- C.14%
- D.13%
- E.None of these

20 Mr.kumar started travelling at 8 am. He travelled at an average speed of 100 km/hr, stopping for some time after every 75 km. he reached his destination, when he stopped the 8th time since he had started in the morning, at 4:20 pm on the same day. The time for which Mr. kumar stopped after every 75 km is :

- A)10 min
- B)20 min
- C)50 min
- D)30 min
- E)None of these

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- A)10 min
- B)20 min
- C)50 min
- D)30 min
- E)None of these

21. If Vimal completes half the work and Vikas does the remaining work alone, they take 20 days to complete the job. Vimal and Vikas complete the work in 7.5 days if they work together. If Vimal is more efficient than Vikas, find the time taken by Vikas alone to finish the same work?

- a. 30
- b. 40
- c. 10
- d. 7.5
- e. 15

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- a. 30
- b. 40
- c. 10
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23. 3 out of 10 different caps are to be chosen for the various characters in a high school drama. In how many ways this can be done?

- a. ${}^{10}C_3$
- b. ${}^{10}P_3$
- c. 242.
- d. 340.
- e. None of these.

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- a. ${}^{10}C_3$
- b. ${}^{10}P_3$
- c. 242.
- d. 340.
- e. None of these.

24. In a vessel, the ratio of milk to water is 7:5. If 9L of the mixture is removed and replaced by water, the ratio becomes 7:9. What would have been the ratio if the same amount of mixture had been replaced by milk?

- a) 9:7
- b) 5:7
- c) 11:5
- d) 22:5

24. In a vessel, the ratio of milk to water is 7:5. If 9L of the mixture is removed and replaced by water, the ratio becomes 7:9. What would have been the ratio if the same amount of mixture had been replaced by milk?

- a) 9:7
- b) 5:7
- c) 11:5
- d) 22:5

25. Two concentric circles are given. X is the center of both the circles. DEFG is a square inscribed in the outer circle. DEFG circumscribes the smaller circle, touching it at points Q, R, S and P. what is the ratio of the area of the outer circle to that of polygon PQRS?

- a) $\pi/4$
- b) $\pi/2$
- c) π
- d) $\pi/8$
- e) None of these

25. Two concentric circles are given. X is the center of both the circles. DEFG is a square inscribed in the outer circle. DEFG circumscribes the smaller circle, touching it at points Q, R, S and P. what is the ratio of the area of the outer circle to that of polygon PQRS?

- a) $\pi/4$
- b) $\pi/2$
- c) π
- d) $\pi/8$
- e) None of these

26. An arrangement was to be made for a batch photograph. The 7 women will be sitting in the front row while 18 men will be standing behind the women. The middle two position in the second row is reserved for the two shortest men. In how many ways the arrangement can be done.?

- a. $16! * 7!$
- b. $16! * 5! * 84$
- c. $(18! * 7!) / 2!$
- d. $16! * 5!$
- e. None of the above

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- b. $16! * 5! * 84$
- c. $(18! * 7!) / 2!$
- d. $16! * 5!$
- e. None of the above

27. Two friends Piyush and Dipak run around a circular track of length 430 metres, starting from the same point, simultaneously and in the same direction. Piyush, who runs faster, meets Dipak for the first time in the middle of the 4th round. If Piyush and Dipak were to run a 5 km long race, how much start, in terms of distance, should Piyush give Dipak so that they finish the race in the exactly same time?

- a. 666.67 m
- b. 1428.57 m
- c. 714.285 m
- d. 718.256 m
- e. None of these

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 - b. 1428.57 m
 - c. 714.285 m
 - d. 718.256 m
 - e. None of these

28. What is the angle between minute hand and hour of a clock when the time is 7:36 pm?

- A) 12 degree
- B) 18 degree
- C) 1 degree
- D) 10 degree
- E) 14 degree

28. What is the angle between minute hand and hour of a clock when the time is 7:36 pm?

- A) 12 degree
- B) 18 degree
- C) 1 degree
- D) 10 degree
- E) 14 degree

29. How many 7 digits binary number (first digit is not zero) are divisible by 8 when converted to decimal (base 10) ?

- a) 7
- b) 5
- c) 8
- d) 9
- e) 6

29. How many 7 digits binary number (first digit is not zero) are divisible by 8 when converted to decimal(base 10) ?

- a) 7
- b) 5
- c) 8
- d) 9
- e) 6

30) Three pipes X, Y, and Z can fill a tank from Empty to full in 30 minutes, 20 minutes, and 10 minutes respectively. When the tank is empty, all three pipes are opened. X, Y, and Z discharge chemical solutions P, Q and R respectively. What is the proportion of the solution R in the liquid in the tank after 4 minutes?

- a) 12/22
- b) 10/22
- c) 14/22
- d) 8/11
- e) None of these

30) Three pipes X, Y, and Z can fill a tank from Empty to full in 30 minutes, 20 minutes, and 10 minutes respectively. When the tank is empty, all three pipes are opened. X, Y, and Z discharge chemical solutions P, Q and R respectively. What is the proportion of the solution R in the liquid in the tank after 4 minutes?

- a) 12/22
- b) 10/22
- c) 14/22
- d) 8/11
- e) None of these

31) What is the 8th term in the sequence

A2, C3, F5, J7, O11, U13,

- a) B17
- b) B19
- c) A17
- d) J17
- e) J19

31) What is the 8th term in the sequence

A2, C3, F5, J7, O11, U13,

- a) B17
- b) B19
- c) A17
- d) J17
- e) J19

32) Four dice are thrown simultaneously. Find the number of outcomes in which at most one of the dice shows 5.

- a) 1000
- b) 1125
- c) 1120
- d) 1100
- e) 1150

32) Four dice are thrown simultaneously. Find the number of outcomes in which at most one of the dice shows 5.

- a) 1000
- b) 1125
- c) 1120
- d) 1100
- e) 1150

33) Hans and Bhaskar have salaries that jointly amount to Rs 10,000 per month. They spend the same amount monthly and then it is found that the ratio of their savings is 6:1 respectively. Which of the following can be hans's salary?

- a) Rs 6000
- b) Rs 5000
- c) Rs 4000
- d) Rs 3000

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- a) Rs 6000
- b) Rs 5000
- c) Rs 4000
- d) Rs 3000

34. There are 8 dogs numbered 1 to 8. two friends A and B choose 2 dogs from the dogs numbered 1 to 4. then 3 friends C, D and E choose 3 dogs from the remaining dogs. How many such arrangements are possible?

- A. 120
- B. 1440
- C. 2880
- D. 1200
- E. 720

34. There are 8 dogs numbered 1 to 8. two friends A and B choose 2 dogs from the dogs numbered 1 to 4. then 3 friends C, D and E choose 3 dogs from the remaining dogs. How many such arrangements are possible?

- A. 120
- B. 1440
- C. 2880
- D. 1200
- E. 720

35. There are 12 intermediate stations between two places A and B. find the number of ways in which a train can be made to stop at 4 of these intermediate stations so that no two stopping are consecutive?

- A.108
- B.112
- C.126
- D.140
- E.136

Q35.

There are 12 intermediate stations between two places A and B. find the number of ways in which a train can be made to stop at 4 of these intermediate stations so that no two stopping are consecutive?

- A.108
- B.112
- C.126
- D.140
- E.136

Q36.

In what ratio must a grocer mix two varieties of sugar worth Rs. 60 a kg and Rs. 65 a kg so that by selling the mixture at Rs. 68.20 a kg he may gain 10%?

- A.3:2
- B.3:4
- C.3:5
- D.4:5
- E.None of these

Q36.

In what ratio must a grocer mix two varieties of sugar worth Rs. 60 a kg and Rs. 65 a kg so that by selling the mixture at Rs. 68.20 a kg he may gain 10%?

- A.3:2
- B.3:4
- C.3:5
- D.4:5
- E.None of these

Q37.

Rajesh wants to catch a train. If he walks at the rate of 5 kmph, he misses the train by 5 minute. However, if he walks at a speed of 6 kmph, he reaches 7 minutes early. What should be his approximate speed such that he reaches the station on time?

- A. 5.2
- B. 5.3
- C. 5.4
- D. 5.7
- E. 5.8

Q37.

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- A. 5.2
- B. 5.3
- C. 5.4
- D. 5.7
- E. 5.8

38.

Seven different letters are given. Words of five letters are formed using these 7 letters. The number of words having at least one letter repeating are:

- A. 16587
- B. 16807
- C. 14287
- D. 2520
- E. None of these

38.

Seven different letters are given. Words of five letters are formed using these 7 letters. The number of words having at least one letter repeating are:

- A. 16587
- B. 16807
- C. 14287
- D. 2520
- E. None of these

39.

**Two squares are chosen at random on a chessboard.
What is the probability that they have at least one side in
common?**

- A. $1/18$
- B. $1/9$
- C. $1/64$
- D. $5/18$
- E. None of these

39.

**Two squares are chosen at random on a chessboard.
What is the probability that they have at least one side in
common?**

- A. $1/18$
- B. $1/9$
- C. $1/64$
- D. $5/18$
- E. None of these

40.

Juice contained in a can of capacity 144 liters is diluted by removing same amount of juice twice and adding the same amount of water twice. After the replacement, the ratio of juice to water is 25 : 11. find the quantity of water added each time.

- A. 22
- B. 23
- C. 24
- D. 26
- E. None of these

40.

Juice contained in a can of capacity 144 liters is diluted by removing same amount of juice twice and adding the same amount of water twice. After the replacement, the ratio of juice to water is 25 : 11. find the quantity of water added each time.

- A. 22
- B. 23
- C. 24
- D. 26
- E. None of these

41.

How many unique 4 letter words can be formed using the letters from the word “MEDITERRANEAN” such that the first letter is E and the last letter is R?

- A. 52
- B. 59
- C. 56
- D. 54
- E. None of these

41.

How many unique 4 letter words can be formed using the letters from the word “MEDITERRANEAN” such that the first letter is E and the last letter is R?

- A. 52
- B. 59
- C. 56
- D. 54
- E. None of these

42.

**Find the 15th number in sequence : 1, 2, 5, 8, 11, 16,
21, 26, 31, 36, 43, 50, ...**

- A. 64
- B. 71
- C. 57
- D. 68
- E. 55

42.

Find the 15th number in sequence : 1, 2, 5, 8, 11, 16, 21, 26, 31, 36, 43, 50, ...

- A. 64
- B. 71
- C. 57
- D. 68
- E. 55

43.

The probability that an egg will hatch is $\frac{3}{5}$ and the probability that another egg will hatch is $\frac{1}{3}$. Find the probability that only one of them hatches.

- A. $\frac{7}{15}$
- B. $\frac{8}{15}$
- C. $\frac{4}{15}$
- D. $\frac{11}{15}$
- E. None of these

44.

The probability that an egg will hatch is $\frac{3}{5}$ and the probability that another egg will hatch is $\frac{1}{3}$. Find the probability that only one of them hatches.

- A. $\frac{7}{15}$
- B. $\frac{8}{15}$
- C. $\frac{4}{15}$
- D. $\frac{11}{15}$
- E. None of these

46. The efficiency of A is 50% more than that of B. And the efficiency ratio of B to C is 2 : 1. Then calculate in how much time A complete the whole work. If they together complete the work in 6 days.

- a. 12 days
- b. 7 days
- c. 5 days
- d. 4 days

46. The efficiency of A is 50% more than that of B. And the efficiency ratio of B to C is 2 : 1. Then calculate in how much time A complete the whole work. If they together complete the work in 6 days.

- a. **12 days**
- b. 7 days
- c. 5 days
- d. 4 days