09.09.2020 AN SESSION CTS

55. Which of the given options is true for the value of 0.999.... ?

a. It is equal to 1. b. It is less than 1.

c. It is equal to 0.9. d. None of the above.

0.99999 < 1

0.99999………. this extends infinitely

56. A restaurant prepares 22 litres of a mixture that contains 25% of orange essence and the remaining quantity as water. If 3 litres of water is mixed in this mixture, what will be the percentage of orange essence in the new mixture?

22 litre liquid 🡪 5.5 litres is orange essence , (22-5.5)=16.5 litres is water

50 % of 22 l = 50% of 11 l= 5.5 l 🡪 (5.5 / 22) \* 100 = 25%

25 litres liquid 🡪 5.5 litres of Essence , 19.5 litres of water

Percentage of Orange Essence in the mixture= (5.5 / 25 )\* 100 =(1.1) / 5 \* 100= 22 %

25% of 100 = 25

50 % of 100 = 50% of 50 = 25

57. A train travelling at 250 kmph overtakes a cyclist who is travelling at 10 kmph in 45 seconds. What is the length of the train in metres?

2 objects moving then we have to choose the relative Speed.

Case 1 : 2 objects move in same direction have Speeds S1 & S2

Relative Speed = S1 – S2.

Case 2 : 2 objects move in Opposite direction have Speeds S1 & S2

Relative Speed = S1 + S2.

Train & Cycle are moving in the same direction.

Cycle (10km/hr)

Train(250 km / hr 45 secs

x m x m Train(250 km / hr)

Distance taken to cross the cycle is the length of the train.

Time taken to cross cycle is 45 seconds.

Distance(taken to cross cycle) = Speed(taken to cross cycles) \* Time(taken to cross cycle)

= (250 – 10)kmph \* 45 secs

= 240 kmph \* 45 secs (240) \* 5 / 18 = 200 / 3 m/s(km/hr 🡪 m/s)

= (200 / 3)m/s \* 45s

= 3000m.

58. Mayank is going on a holiday trip. He wants to pack 3 t-shirts from 5 t-shirts he has. In how many ways can he make his choice?

He has to select 3 out of 5.

5C3 ways = 5C2 = (5 \* 4 ) / (1 \* 2) = 20 / 2 = 10.

59. Rajesh commutes daily by travelling 4/5 of the distance between his home and office by Metro train, 3/20 by auto and remaining 1 km on foot. The distance between his home and office is:

X = Distance between his house and office.

4 / 5 \* X 🡪 Dist Metro train

3 / 20 \* X 🡪 Distance in Auto

1 km 🡪foot.

(4X / 5) + (3X / 20) + 1 = X

16X + 3X + 20 = 20 X

20 km = X

60. 4.28 and -3.28 are two numbers on a real number line. If 1 is added to both the numbers. then which of the given statements is true

a. Distance between the two new numbers is 2 units more than the distance between 4.28 and -3.28

b. Distance between the two new numbers is 2 units less than the distance between 4.28 and -3.28

c. Distance between the two new numbers is equal to the distance between 4.28 and -3.28

d. None of the above

……….-5 -4 -3 -2 -1 0 1 2 3 4 5 . . . . .. . . . . . .. .

60. Find n if (2228/2n) = 512.

am \*an = am+n

am / an = am-n

(am)n = amn

a-m  = (1 / a)m

(2228/2n) = 512. 🡪 2228-n = 512 🡪2228 – n = 29 🡪228 – n = 9 🡪 n =219.

61.Evaluate : (4.563 + 5.443)/ (4.562 - 4.56 x 5.44 + 5.442)

4.56=a 5.44=b

(a3 + b3 ) / (a2 - ab + b2 ) = (4.563 + 5.443)/ (4.562 - 4.56 x 5.44 + 5.442) = 4.56 + 5.44 = 10.

(a3 + b3 ) = (a+b) (a2 - ab + b2 )

(a3 + b3 ) / (a2 - ab + b2 ) = (a+b)

62. In a town of 2,00,000 citizens, if the population increases at the rate of 4% per annum, then what will be the popuation of the town in 2 years from now?

09.09.2020 🡪 2 00 000

4 % per annum for 2 years does not mean 8% increase.

Successive increase of 4 % and 4 % is different from one flat increase of 8 %

Inc by 4% & Inc by 4%

100 🡪 104 🡪108.16 correct

Flat increase of 8 %

100 🡪 108 wrong

**Successive change Formula**

A= 4% ; B = 4%

A + B + (AB / 100)= 4 + 4 + (16 / 100)= 8.16 %

Increase ((2 00 000 \* (104 / 100) )\* (104 / 100))

= 2 16 320

63. What is the value of i34?

i is an imaginary number is equal to i2 = -1 🡪 i =

i2 = -1 ; i4 = 1; i6 = -1; i8 = 1

2,6,10,14,…..34 = -1

4,8,12,16 = 1

64. Which number should be added to 113257 so that it can be divisible by 9?

a. 4 b. 6 c. 8 d. 10

Divisibility rule for 9 is sum of digits must be a mul of 9.

1 + 1 + 3 + 2 + 5 + 7 = 19

Add 8

1 + 1 + 3 + 2 + 6 + 5 = 18 div 9

65. If LCM and HCF of two numbers are 234 and 13 respectively, then the smallest prime factor of the product of the two numbers k:

Product of the 2 nos = HCF \* LCM = 234 \* 13 = 2 \*117 \* 13=2 \* 29 \* 3 \* 13

Smallest factor is 2

66. How many toffees were distributed in total among Ankit, Aniket and Anuj in the ratio 2 : 3: 7, if Aniket receives 84 toffees in total?

In total there are 12 equal parts

12 \* 28 = 336 toffees.

Ankit share is 2 parts

Aniket Share is 3 parts 🡪 84 🡪 1 Part = 28 toffees

Anuj Share is 7 parts

ALTERNATE METHOD :

Ankit = 2x

Aniket = 3x = 84 🡪 x = 28

Anuj = 7x

2x + 3x + 7x = 12 x = 12 \* 28 = 336 toffess

67. A man can complete a job in 12 days and his wife can complete the same job in 15 days. How long will they take to complete the job if they work together?

LCM(12,15) = 60 units 🡪 Total work

Man Eff = 60 / 12 = 5 units / day

Wife Eff = 60 / 15 = 4 units / day

Man + Wife Eff = 9 units / day

Time (Man+Wife) = 60 / 9 = 6 6 / 9 days

68. A woman sold 15 bed sheets for Rs.15,000, hence gaining the cost price of 5 bed sheets. The cost per bed sheet is:

CP of 1 BS = ?

SP of 15 BS = 15 000

Gain = CP of 5 BS

SP of 15 BS – CP of 15 BS = CP of 5 BS

15 000 - CP of 15 BS = CP of 5 BS

15 000 = CP of 20 BS

15 000 / 20 = CP of 1 BS

750 = CP of 1 BS

69. To fill a storage tank of wheat, 20 containers full of wheat are required. How many containers of wheat will be required to fill the same tank if the capacity of the containers is reduced to two-fifth of their present capacity?

STORAGE TANK(Wheat)

CONTAINERS(Wheat) initial capacity 1 kg

1 STORAGE TANK = 20 CONTAINERS

Initially 1 STORAGE TANK = 20 \* 1kg = 20kg

We have the containers capacity changed as 2/5 kg = .40 kg

To fill 20kg capacity of STORAGE TANK we need X \* .4kg = 20 kg 🡪 X = 200 / 4 = 50 containers.

70. An employee has to attain 70% marks during appraisals to get a promotion. He gets 75 marks and doesn't qualify for a promotion since he falls short of 30 marks in the ratings. What is the maximum score that an employee can attain in the appraisal ratings?

Employee must get 70 / 100 to get promotion

Since 75 is 30 short of the promotion cut off .

Promotion cut off mark is 75 + 30 = 105 🡪 70 % of total

Lets assume the total amrks to be X

X \* 7 / 10 = 105

X = 150.

71. What is the value of (52 \* 258/625)2/7?

=(52 \* 516 / 54)2/7

= (518 / 54 ) 2 / 7

= 514 \* 2 / 7 = 54 = 625.

72. During a Quality Control Conference, if 30 employees are seated in a column. then 50 columns could be formed. However, if 25 employees are seated in a column. then how many such columns could be formed?

Tot employees 30 \* 50 = 1 500

25 \* x = 1 500

X = 1 500 / 25 = 60 columns

73. Supremo Coal Limited mined 8 1/3 tons of coal on Tuesday, 5 3/4 tons of coal on Monday and 9 1/2 tons of coal on Wednesday. If the goal is to mine 30 tons of coal this week then how many more tons of coal need to be mined?

30 – (25 / 3 + 23 / 4 + 19 / 2) = 30 – (100 +69 +114) / 12 = (360 – 283) / 12 = 77 / 12 = 6 5 /12

74. In an interview conducted for 5 ABC Consulting candidates. 6 Global Ltd. candidates, 2 candidates from Avilvar company, 3 from Sona Ltd and 1 from Bent company, what is the probability that the candidate who would be selected is from Sona Ltd. It is given that one candidate from Global Ltd. had not come for the interview round and one candidate from ABC Consulting is blacklisted during the interview process.

5 + 6 + 2 + 3 + 1 =17 – 2 = 15

Probability = Favourable Outcomes / Total Outcomes

= 3 / 15 = 1 / 5

75. Out of 9 people waiting for their turns for an interview. in how many ways can a selection of 4 be made if 1 is always excluded?

Total available ppl = 9 – 1 = 8.

How many ways can u select 4 from 8 ppl 🡪 8C4 ways.

76. Swaroop draws a certain amount of money from the ATM machine. Number of Rs. 500 notes are double the number of Rs.100 notes. What can be the possible amount drawn?

a. 5 000 b. 10 000 c. 8 800 d. 9 500

No of 500 rupees notes(X) notes twice No of 100 rupees notes(Y)

X = 2Y

X \* 500 + Y \* 100 = 500X + (100X / 2) = 1000X + 100X / 2 = 1100X / 2 = 11 \* (100X / 2)

X= 16 ; Y = 8

16 \* 500 + 8 \* 100 = 8 000 + 8 00= 8 800

77. Deepak sells 50 shirts at the cost price of 60 shirts. His gain percent is:

SP of 50 shirts = CP of 60 shirts

SP of 60 shirts = CP of 60 shirts 🡪 no profit and no loss

SP > CP = Profit

CP > SP = Loss

CP = SP = No profit and No loss

1. SP = CP

2. Quantity must be different .

((BQ – SQ) / SQ) \* 100 🡪 unequal quantity formula

((60 – 50) / 50) \* 100

(10 / 50 )\* 100 = 20%

78. A train travelling at 250 kmph overtakes a cyclist who is travelling at 10 kmph in 45 seconds. What is the length of the train in metres?

79. A flower seller purchases roses at Rs. 96 a dozen and sells them at Rs. 10 per flower. What is the profit percent of the flower seller?

CP of 12 flowers = 96

SP of 12 flowers = 120

Profit = 120 – 96 = 24

P % = (Profit / CP) \* 100

P % = 24 / 96 \* 100 = 25 %

CP of 1 flower = 8

SP of 1 flower = 10

P % = (2 / 8) \* 100 = 25 %

80. Three marketers distribute their products in a colony for pilot testing. Marketer A distributes 150 items to the people equally and then was left with a few items. Marketer B distributes 270 items to the people equally and then was left with the same number of items as the number left with Marketer A. Marketer C distributes 320 items to the people and is left with the same number of items as the number left with Marketer A. What is the maximum possible number of people in the colony?

Marketer A has 150 items

Marketer B has 270 items

Marketer C has 320 items

81. Rasheb starts for a wedding venue at 6 pm and drives at a speed of 60 km/hr. Ramesh starts for the same venue at 6.30 pm, and drives at a speed of 75 km/hr. When will both reach the venue, provided they reach at the same time?

Distance is the same for both

Rasheb starts at 6 pm and takes ‘ T ’ hrs to reach venue ,Speed = 60 km/hr

Ramesh starts at 6 :30 pm and takes ‘ T- 1/2 ’ hrs to reach venue,Speed = 75 km/ hr

Time taken by Ramesh is 30 mins leass than the time taken by rasheb

D1 = D2

60 \* T = 75 \* (T – 1/2)

60T = 75T – 75 / 2

15T = 75 / 2

T = 2.5 hrs

Rasheb 6pm + 2.5 hrs = 8.30pm

Ramesh 6.30 pm + 2 hrs = 8.30 pm