Answer Script

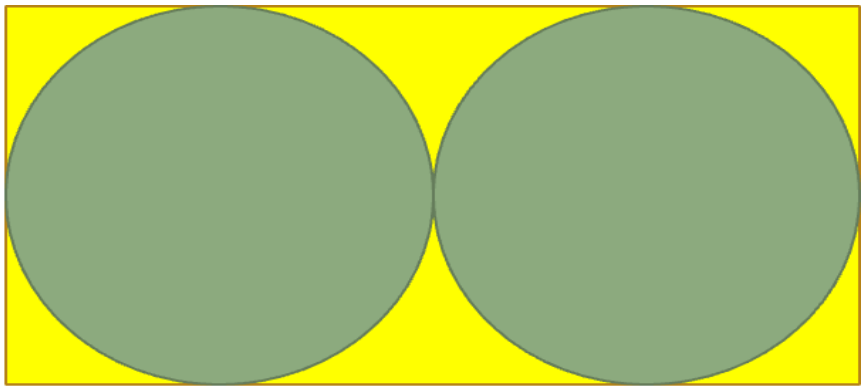
Question No. 01
Consider the following sets U = {1,2,3,4,5,6,7,8,9,10,11,12,13} A= {1,2,3,4,7} B = {3,4,5,6} Find the set $(A \cup B)'$
Answer No. 01
$(A \cup B)'$ = U - (A U B) = {1,2,3,4,5,6,7,8,9,10,11,12,13} - {1,2,3,4,5,6,7} = {8,9,10,11,12,13} Answer $(A \cup B)'$ = {8,9,10,11,12,13}

Question No. 02
Find the GCD and LCM of 77 and 121. Write the process in details
Answer No. 02
GCD of 77 and 121 is 11 LCM of 77 and 121 is 847 The Process of GCD: The Divisor of 77 are 1,7,11,77. The Divisor of 121 are 1,11,121. So, as we can see, the Greatest Common Divisor is 11 . The Process of LCM: 7 | 77, 121 11 | 11, 121 11 | 1, 11 1 | 1, 1 The LCM is the product of the prime numbers in the first column So, LCM = 7× 11× 11×1 = 847

Question No. 03
In a cricket match, you have a squad of 15 players and you need to select 11 for a game. The two opening batsmans are fixed and the rest of the players are flexible. How many batting orders are possible for the game?
Answer No. 03
We have two batsmans are fixed Now we have 15-2=13 players Now we need 11-2=9 players =13 P 9 $= \frac{13!}{(13-9)!}$ $= \frac{13\times12\times11\times10\times9\times8\times7\times6\times5\times4!}{4!}$ = 13×12×11×10×9×8×7×6×5 Answer = 259,459,200

Question No. 04

If the radius of both of the green circles is 10 cm, find the area of the yellow region (outside of the circles but inside the rectangle)



Answer No. 04

We have r =10 cm
We know , π = 3.1416

Area of Circle = π × r^2
= 3.1416 × (10 × 10)
= 314.16cm

Area of two circle = (2×314.16)cm = 628.32
Distance
d =2r = (2× 10)cm = 20cm

Wldth = Distance of two circle
= (d×2) = (20×2) =40
Height = 2×r = 2×10 =20cm

Area of rectangle
= Height × Wldth
= (20×40)=800

Area of the yellow region
= Area of Rectengle -Area of two circle
=(800-628.32)cm =171.68cm
Answer =171.68 square cm

Question No. 05
Find the 100-th term of the following sequence 3, 10, 17, 24, ... Also find the sum of the first 100 terms.
Answer No. 05
i) an = a1+(n-1)d a100 = 3(100-1)·7 a100 = 3+693 a100= 696 Answer ii) Sn =n/2· (2a1 + (n – 1) · d) Sn =100/2· (2·3 + (100 – 1) · 7) Sn =100/2· (6 + (99) · 7) Sn =100/2· (6 + 693) Sn =100/2· 699 Sn =34950 Answer

Question No. 06
Two taps, T_1 and T_2 can fill an empty tank in 20 minutes and 15 minutes, respectively. They both were turned on to fill the tank, but tap T_1 was turned off after some time, and tap T_2 took 10 minutes to fill the tank. Find out after how much time tap T_1 was turned off?
Answer No. 06
T_2 take 15 min to fill 1 tank T_2 take 1 min to fill 1/15 T_2 take 10 min to fill 10/15 = 2/3 T_1 fill 1/20 in 1 min Now, T_1 and T_2 fill the together in 1 min 1/20 + 1/15 3+4/60 = 7/60 Then, T_1 and T_2 1/3 Works 60/7 × 1/3 = 2.86 min Answer: T_1 was turned off after 2.86 min.

Question No. 07
Your friend deposited 10,500 BDT in a bank and received 12,150 BDT in total after 3 years. You deposited 15,100 BDT in another bank and received 18,755 BDT in total after 5 years. Considering simple interest, which one of you went to the bank with a higher interest rate?
Answer No. 07
My friend, Deposited - Received= 10,500 -12,150=1650 (3 years of interest) I = 1650/3 = 550 (1 year of interest) P=10,500 BDT, N=3 years, I=550 = I/p * 100% = 550/10,500 * 100 = 5.23% Answer And Me, Deposited - Received= 15,100 - 18755 =3,655 (5 years of interest) I = 3,655/5 = 731 = I/p * 100% = 731/15,100 * 100 =4.85% Answer Answer: The bank in which my friend keeps his money is the bank that gives the highest interest rate.

Question No. 08
You have two boxes, box A and box B. In box A, there are 5 red balls and 10 green balls. In box B, there are 3 red balls and 7 green balls. a) If you pick a ball from box A, what is the probability that this is a red ball? b) If you pick a ball from box B, what is the probability that this is a red ball? c) If you pick one from A and one from B, what is the probability that both of them are red balls?
Answer No. 08
a) Total balls of A box is 10+5=15 There are 5 red balls The probability of picking up the red balls is = 5/15=⅓ = 0.33 b) Total balls of B box is 7+3=10 There are 3 red balls The probability of picking up the red balls is =3/10= 0.3 c) 5/15 × 3/10 = 1/10 = 0.1

Question No. 09
Convert the hexadecimal number denoted by *A1E7* to an octal number.
Answer No. 09
=A 1 E 7 =1010 0001 1110 0111 =1 010 000 111 100 111 = 1 2 0 7 4 7 =120747 Answer=120747

Question No. 10
Eight students took a test on 30 marks and got the following scores: 10, 27, 12, 18, 30, 9, 24, 28 What is the mean score and express the score in percentage. Also find the median score.
Answer No. 10
We have, 10, 27, 12, 18, 30, 9, 24, 28 Now, 10+ 27+ 12+ 18+ 30+ 9+24+28= 158 158÷8=19.75 Number are average percentages =(19.75/30) * 100% = 0.6583* 100% = 65.83% Answer The Median 9,10,12,18,24,27,28,30 Now, =18,24 =18+24 = 42 42÷2 = 21 The Median of these number is 21. Answer