RAVI MATHS TUITION CENTER ,GKM COLONY, CH- 82. PH: 8056206308
10TH VERY IMPORTANT QUESTIONS WITH ANSWERS SET 1

1) If A = {1,3,5} and B = {2,3} then
   (i) find A x B and B x A
   (ii) Is A x B = B x A? If not why?
   (iii) Show that n(A×B) = n(B×A) = n(A)× n(B)
2) Let X={1,2,3,4} and Y={2,4,6,8,10} and R={(1,2),(2,4),(3,6),(4,8)} Show that R is a function and find its domain, co-domain and range?
3) A relation 'f' is defined by $f(x)=x^2-2$ where $x\in\{-2,-1,0,3\}$
   (i) List the elements of f
   (ii) Is f a function?
4) Find f o g and g o f when f(x)=2x+1 and $g(x)=x^2-2$
5) Find k if f o g(k) = 5 where f(k)=2k-1.
6) If the Highest Common Factor of 210 and 55 is expressible in the form 55x - 325, find x
7) Find the HCF of 396, 504, 636.
8) Determine the value of d such that $15 \equiv 3 \pmod{d}$.
9) Find the least positive value of x such that
   $67 + x \equiv 1 \pmod 4$
10) Compute x, such that $10^4 \equiv x \pmod{19}$
11) Find the 15^{th}, 24^{th} and n^{th} term (general term) of an A.P. given by 3, 15, 27, 39
12) Find the 8th term of the G.P 9,3,1,....
13) In a Geometric progression, the 4^{th} term is $\frac{8}{9}$ and the 7th term is $\frac{64}{243}$. Find the Geometric Progression.
14) Find the sum of
    1+3+5+..+to 40 terms
15) Find the least positive value of x such that
    $98 \equiv (x + 4) \pmod 5$
16) Find the sum of
    2+4+6+..+80
17) Find the sum of
    $5^2+10^2+15^2+...+105^2$
18) Find the sum of
    $9^3+10^3+,,,+21^3$
19) Let A = {3,4,7,8} and B = {1,7,10}. Which of the following sets are relations from A to B?
    R_1={(3,7), (4,7), (7,10), (8,1)}
20) Let A = {1,2,3,4} and B ={2,5,8,11,14} be two sets. Let f: A ⟶ B be a function given by f(x)=3x−1. Represent this function

(i) by arrow diagram
(ii) in a table form
(iii) as a set of ordered pairs
(iv) in a graphical form

21) The distance S (in kms) travelled by a particle in time 't' hours is given by S(t)= $\frac{t^2+t}{2}$. Find the distance travelled by the particle after
(i) three and half hours.
(ii) eight hours and fifteen minutes.

22) If the function f: R⟶ R defined by

$$f(x)=\begin{cases}2x+7, x<-2\\ x^2-\ 2, -2\le x<3\\ 3x-2, x\ge 3\end{cases},$$

(i) f(4)
(ii) f(-2)
(iii) f(4)+2f(1)
(iv) $\frac{f(1)-3f(4)}{f(-3)}$

23) A functionf: [-7,6) $\rightarrow$ R is defined as follows.

$$f(x)=\begin{cases}x^2+2x+1 & -7\le x<-5\\ x+5 & -5\le x\le 2\\ x-1 & 2<x<6\end{cases}$$

$$\frac{4f(-3)+2f(4)}{f(-6)-3f(1)}$$

24) Find the first five terms of the following sequence,
$a_1 = 1, a_2=1, a_n = \frac{a_{n-1}}{a_{n-2}+3}; n \ge 3, n\epsilon N$

25) The 13th term of an A.P is 3 and the sum of the first 13 terms is 234.Find the common difference and the sum of first 21 terms.

26) How many terms of the series 1 + 4 + 16 + ...make the sum 1365?

27) Find the sum 3 + 1+ $\frac{1}{3}$ + ...∞

28) Find the sum to n terms of the series 5 + 55 +555 +...

29) Find the least positive integer n such that 1 + 6 +6^2 + ... + 6^n > 5000

30) A person saved money every year, half as much as he could in the previous year. If he had totally saved Rs.7875 in 6 years then how much did he save in the first year?

31) Given A={1,2,3}, B = {2,3,5}, C = {3,4} and D = {1,3,5}, check if (A ∩ C) x (B ∩ D) =(A x B) ∩ (C x D) is true?

32) Let A ={x ∈ W| x < 2}, B={x ∈ N| < x ≤ 4} and C=(3,5). Verify that A x (B U C) = (A x B) U (A x C)

33) Let f: A ⟶ B be a function defined by f(x) = $\frac{x}{2}$-1, where A={2,4,6,10,12}, B= {0,1,2,4,5,9}, Represent f by
(i) set of ordered pairs
(ii) a table
(iii) an arrow diagram
(iv) a graph

34) The function 't' which maps temperature in Celsius (C) into temperature in Fahrenheit (F) is defined by t(C)=F where F-$\frac{9}{5}$C+32. Find,
(i) t(0)
(ii) t(28)
(iii) t(-10)
(iv) the value of C whenn t(C)=212
(v) the temperature when the Celsius value is equal to the Farenheit value.

35) Consider the functions f(x), g(x), h(x) as given below. Show that (f o g) o h = f o (g o h) in each case.
i. f(x)=x-1, g(x)=3x+1 and h(x) = x^2
ii. f(x)=x^2, g(x)=2x and h(x)=x+4
iii. f(x)=x-4, g(x)=x^2 and h(x)=3x-5

36) Find the greatest number consisting of 6 digits which is exactly divisible by 24,15,36?

37) What is the smallest number that when divided by three numbers such as 35, 56 and 91 leaves remainder 7 in each case?

38) Find the middle term(s) of an A.P 9,15,21,27,.....,183.

39) Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.

40) If the first term of an infinite G.P. is 8 and its sum to infinity is $\frac{32}{3}$ then find the common ratio

41) Find the sum to n terms of the series
0.4 +0.44+0.444+..to n terms

42) If 1+2+3+...+k = 325, then find $1^3+2^3+3^3+...K^3$.

43) If $1^3+2^3+3^3+...k^3$=44100 then find 1+2+3+...+k

44) The sum of the squares of the first n natural numbers is 285, while the sum of their cubes is 2025. Find the value of n.

45) Rekha has 15 square colour papers of sizes 10 cm, 11 cm, 12 cm,…, 24 cm. How much area can be decorated with these colour papers?

46) Use Euclid's Division Algorithm to find the Highest Common Factor (HCF) of 10224 and 9648

47) Use Euclid's Division Algorithm to find the Highest Common Factor (HCF) of 84,90 and 120

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