



- a)  $-\frac{7}{8}$                       b)  $-\frac{3}{2}$   
 c) 0                              d) 1
21. If  $F(y) = y^5 + 6y - 5$  then what is the value of  $F(-1)$ ? [S.B.- 16]  
 a) 0                              b) 2  
 c) -12                          d) -14
22. If  $F(x) = x^3 - 4x + 3$  then what is the value of  $F(2)$ ? [Dj.B.- 16]  
 a) 0                              b) 2  
 c) 3                              d) 4
23. If  $F(y) = y^2 - 4y + 4$  then what is the value of  $F(2)$ ? [D.B.- 15]  
 a) 4                              b) 2  
 c) 1                              d) 0
24. If  $F(a) = a^2 - 3a + 2$  then what is the value of  $a$ , where  $F(a) = 0$ ? [R.B.- 15]  
 a) 0                              b) 2  
 c) (1, -2)                      d) (1, 2)
25. If  $F(x) = x^2 + 3x + 2$  then what is the value of  $F(-1)$ ? [J.B.- 15]  
 a) 0                              b) -2  
 c) 1                              d) 6
26. If  $F(x) = x^2 + 5y + 6$  then what is the value of  $x$ , where  $F(x) = 0$ ? [J.B.- 15]  
 a) 1, 6                          b) 2, 3  
 c) -2, -3                      d) 1, 5
27. If  $F(x) = x^5 + 5x - 3$  then what is the value of  $F(1)$ ? [Ctg.B.- 15]  
 a) -9                              b) 3  
 c) -7                              d) 7
28. If  $F(x) = x^2 - 4x + 3$  then what is the value of  $F(-\frac{1}{2})$ ? [S.B.- 15]  
 a)  $\frac{29}{8}$                               b)  $\frac{21}{4}$   
 c)  $\frac{5}{4}$                               d)  $\frac{15}{4}$
29. Which of the following pair of ordered pairs satisfy  $x + 3y = 5$ ? [R.B.- 15]  
 a) (5, 0), (1, -2)              b) (2, 1), (5, 0)  
 c) (2, 1), (0, -5)              d) (1, 5), (0, 2)
30. Which is the condition of the degree of  $f(x)$  is positive?  $f(x)$  is divided by  $(ax + b)$  remainder is  $f(-\frac{b}{a})$ . [C.B.- 15]  
 a)  $a \neq 0$                       b)  $a = 0$   
 c)  $a > 0$                       d)  $a < 0$

31. If  $f(x) = \frac{1 + x^2 + x^3}{x^2}$  then find the value of  $f(-1)$ . [Dj.B.- 15]  
 a) -3                              b) -1  
 c) 1                              d) 3
32. For  $f(x) = 6x^2 - x - 1$  then - [J.B.- 15]  
 i.  $f(\frac{1}{2}) = 0$ .  
 ii.  $f(0) = 1$ .  
 iii.  $(3x + 1)$  is a factor of  $f(x)$ .  
 Which one of the following is correct?  
 a) i and ii                      b) ii and iii  
 c) i and iii                      d) i, ii and iii

### Creative Questions:

1.  $A = \{x \in \mathbb{Z}: x^2 < 10\}$ ,  $B = \{x \in \mathbb{N}: 2 < x \leq 7 \text{ and prime number}\}$  and  $f(x) = \frac{x^4 + x^2 + 1}{x^2}$ . [Dj.B.- 20]  
 a) Express set B in tabular method.  
 b) If  $f(\frac{1}{x^2}) = 4$  then find the value of  $(x^2 + \frac{1}{x^2})^2$ .  
 c) Express  $S = \{(x, y): x \in A, y \in B \text{ and } y = x + 1\}$  in tabular method and find the domain and range.
2.  $S = \{(x, y): x \in A, y \in A \text{ and } 2x - y = 1\}$ ,  $A = \{0, 1, 2, 3\}$  and  $B = y - 3x$ . [C.B.- 20]  
 a) Add:  $3.\dot{2}\dot{5}$  and  $2.0\dot{9}$   
 b) Express S in tabular method and determine the range.  
 c) Draw the graph when  $B = 0$  then determine whether is function or not, where  $-2 \leq x \leq 2$ .
3.  $A = \{x \in \mathbb{N}: x^2 - 10x + 24 = 0\}$ ,  $f(x) = x^4 + 3x^3 + px^2 - 3x - 4 + p$  and  $g(y) = \frac{3y+1}{3y-1}$ . [S.B.- 20]  
 a) Find  $P(A)$ .  
 b) Determine the value of P, when  $f(-2) = 0$ .  
 c) Find the value of  $\frac{g(y-2)+1}{g(y-2)-1}$ .
4.  $f(x) = x^2 + 4x + 3$   
 $A = \{x \in \mathbb{N}: x \text{ odd numbers and } x < 6\}$

**B = {x ∈ ℕ : x factors of 21}**  
**and C = {x ∈ ℕ : x is a multiple of 7 and x < 35}.** [D.B.- 17]

- Find the value of  $f(-1)$ .
- If the number of elements in A is n, show number of elements of P(A) supports  $2^n$ .
- Show that,  $A \times (B \cap C) = (A \times B) \cap (A \times C)$ .

5.  **$g(x) = \frac{3x+1}{3x-1}$  and  $h(t) = \frac{t^4+t^2+1}{t^2}$  are two algebraic expressions.** [Dj.B.- 17]

- Find out the value of  $g(0)$  and  $h(1)$ .
- Find the value of  $\frac{g(\frac{1}{x})+1}{g(\frac{1}{x})-1}$ .
- Prove that,  $h(t^2) = h(\frac{1}{t^2})$

6.  **$P = \{x \in \mathbb{N} : x^2 \geq 16 \text{ and } x^2 \leq 125\}$ ,  
 $Q = \{x \in \mathbb{N} : a^2 - 5a + 6 = 0\}$   
**and  $f(z) = \frac{4z-1}{4z+1}$ .** [Ctg.B.- 17]**

- Express the set P in tabular method.
- Prove that,  $P \cup Q = (P \setminus Q) \cup (P \cap Q)$ .
- Find the value of  $\frac{f(\frac{1}{z^2})+1}{f(\frac{1}{z^2})-1}$ .

7. **A = {1, 2, 3}**  
**B = {x ∈ ℕ : x<sup>2</sup> > 15 and x<sup>3</sup> < 200}**  
**C = {3, 5, 6}**  
**and R = {(x, y) : x ∈ A, y ∈ A and y = x + 1}** [S.B.- 17]

- Express the set B in tabular method.
- Express R in tabular method and find its domain and range.
- Prove that,  $A \setminus (B \cup C) = (A \setminus B) \cap (A \setminus C)$

8. **U = {1, 2, 3, 4, 5, 6, 7}**  
**P = {x ∈ ℕ : x<sup>3</sup> > 25 and x<sup>4</sup> ≤ 625}**  
**and  $f(t) = \frac{1+t^2+t^4}{t^2}$**  [J.B.- 16]

- What is the value of  $f(-\frac{1}{2})$ ?
- Determine  $P'$ .
- Show that,  $f(t^{-2}) = f(t^2)$ .

9. **A = {x ∈ ℕ : x < 9 and x is odd number}**  
**B = {4, 5, 6}**

**and R = {(x, y): x ∈ A, y ∈ B and y = x + 1}** [C.B.- 16]

- Find A ∪ B.
  - Determine P(B) and show that the number of elements P(B) supports  $2^n$ .
  - Express R in the tabular method and find the domain and range of R.
- What value of k will  $P(-1) = 0$ ?
  - Prove that,  $Q(\frac{1}{m}) = Q(1-m)$ .