



QP CODE: 25021692



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Reg No :

Name :

B.VOC DEGREE REGULAR/REAPPEARANCE EXAMINATIONS, MARCH 2025

Sixth Semester

B.Voc Banking and Financial Services

BFSC601 - FUNDAMENTALS OF BUSINESS MATHEMATICS

2018 Admission Onwards

C78D8478

Time: 3 Hours

Max. Marks : 80

Part A

Answer any **ten** questions.

Each question carries **2** marks.

1. Let $U = \{x : x \text{ is a integer, } -4 < x < 4\}$ be the universal set. $A = \{x : x \text{ is a integer, } 0 \leq x \leq 3\}$ and $B = \{x : x \text{ is a integer, } -3 < x < 1\}$ are the subset of U . Write A and B in roster form.
2. $A = \{3, 4, 5, 6, 7\}$ $B = \{3, 3, 4, 5, 6, 6, 7\}$
Is $A = B$?
3. Define natural numbers. Also write the set of Natural numbers.
4. Define prime and composite numbers.
5. If $0.75 : x :: 5 : 8$, then x is equal to?
6. Two numbers are in the ratio $3 : 4$. If the sum of numbers is 63, find the numbers.
7. Find the value of x if $\log_{10} x = \sqrt{2}$.
8. Find
 - a.) $\log_3 81$
 - b.) $\log_a 1$
9. Add the following matrices, $A = \begin{bmatrix} 3 & 5 \\ 4 & 2 \\ 1 & 6 \end{bmatrix}$ $B = \begin{bmatrix} 2 & 4 \\ 1 & 3 \\ 8 & 0 \end{bmatrix}$
10. What is Row matrix?
11. Find out the determinant of the matrix X , $X = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$





12.

Find the product of the matrices, $A = \begin{bmatrix} 2 & 7 & 3 \\ 4 & 0 & 6 \\ 0 & 1 & 8 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 3 & 4 \\ 1 & 0 & 1 \\ 2 & 5 & 1 \end{bmatrix}$

(10×2=20)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Let $A = \{ 1, 2, \{ 3, 4 \}, 5 \}$. Which of the following statements are incorrect and why?

- (i) $\{3, 4\} \subset A$ (ii) $\{3, 4\} \in A$ (iii) $\{\{3, 4\}\} \subset A$
(iv) $1 \in A$

14. If Set $U = \{1, 2, 3, 4, 5, 6, 7\}$, Set $A = \{1, 2, 3\}$, Set $B = \{3, 4, 5\}$ and Set $C = \{4, 5, 7\}$ then find

(i) $A' \cap (B \cup C)$

15. Evaluate

1. If $3A = 4B = 6C$; find $A : B : C$.
2. If $2A = 3B$ and $4B = 5C$, Find $A : B$

16. Find the value of x in the following proportions:

1. $10:35 = x:42$
2. $3:x = 24:2$
3. $2.5:1.5 = x:3$
4. $x:50::3:2$

17. A mixture contains alcohol and water in the ratio 4: 3. If 5 litres of water is added to the mixture, the ratio becomes 4:5. Find the quantity of alcohol in the given mixture.

18.

Let, $A = \begin{bmatrix} 6 & 3 & 5 \\ 1 & 0 & 1 \\ 2 & 2 & 7 \end{bmatrix}$ $B = \begin{bmatrix} 6 & 3 & 5 \\ 1 & 0 & 1 \\ 2 & 2 & 7 \end{bmatrix}$ Prove that $2A=2B$.

19.

Find out the transpose of the following matrices, $A = \begin{bmatrix} 3 & 4 \\ 5 & 2 \end{bmatrix}$ $B = \begin{bmatrix} 5 & 5 \\ 8 & 0 \end{bmatrix}$ $C = \begin{bmatrix} 3 & 5 \\ 6 & 3 \end{bmatrix}$ $D = \begin{bmatrix} 3 & 5 \\ 4 & 0 \end{bmatrix}$.

20.

Let, $P = \begin{bmatrix} 0 & 4 & 4 \\ 9 & 3 & 8 \\ 2 & 0 & 6 \end{bmatrix}$ and $Q = \begin{bmatrix} 7 & 1 & 4 \\ 1 & 3 & 0 \\ 5 & 4 & 2 \end{bmatrix}$ Find $3P-2Q$.





21. Let $A = \begin{bmatrix} 5 & 0 \\ 2 & -2 \end{bmatrix}$ Prove that, Adjoint of matrix A, is the transpose of the cofactor matrix of A.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. If $U = \{ 2,4,6,8,10,12,14,16,18,20,22,24 \}$, $A = \{ 8,16,24 \}$ and $B = \{ 8,10,12,14,16 \}$.

- Write $A \times B$
- Write $P(A)$.
- Find $(A')'$
- Verify that
 - $(A \cup B)' = A' \cap B'$
 - $(A \cap B)' = A' \cup B'$
- $(B-A)'$

23. Find the inverse of the following matrices, $A = \begin{bmatrix} 1 & 4 & 5 \\ 7 & 3 & 8 \\ 2 & 0 & 6 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 4 & 5 \\ 7 & 3 & 8 \\ 2 & 0 & 6 \end{bmatrix}$

24. Find the inverse of the following matrices, $A = \begin{bmatrix} 1 & 4 & 5 \\ 7 & 3 & 8 \\ 2 & 0 & 6 \end{bmatrix}$ $B = \begin{bmatrix} 4 & 4 & 5 \\ 0 & 4 & 9 \\ 3 & 5 & 6 \end{bmatrix}$

25. Solve completely the following equations using matrices:

$$1x+9y+3z=4$$

$$3y+6y-3z=6$$

$$6x-8y-4z=11$$

(2×15=30)

