**DEPARTMENT OF BUSINESS ADMINISTRATION**

**QUESTION BANK FOR BBA**

**FUNDAMENTALS OF BUSINESS MATHEMATICS**

**MODULE 1 (CO-Explain Set Theory) (Create)**

**SECTION A**

1. If A = {x: x is a natural number and x < 3} then what is p (A)?
2. If A = {1,8,6,7} and B= {6,7,3,2} then What is B-A
3. If A = {1, 2, 3} B= {2, 4} evaluate A x B and B x A.
4. If A = {1, 4}, B = {2, 5} and C = {5, 7} determine (A x B) U (A x C).
5. If A={1,3,5,7,9} B={2,4,6} C={3,4,7}.Find Aᴒ(Bᴗ C)
6. Divide 36 in the ratio 5:1
7. List out the power set of the set A= {3, 8, 1}
8. Represent A∩B’ using venn diagram?
9. What you mean by union of two sets?
10. If A= {1, 2, 3} ,B={a, b} .verify AB= BA
11. Find all subsets of A={a, b, c}

**SECTION B**

1. If A={1,4,7,10} B={2,4,5,8} U={1,2,3,4,5,6,7,8,9,10} ,find A’ᴒB.
2. Define power set of a set with example
3. Illustrate union and intersection of sets with example
4. Explain complement and difference of two sets with example
5. If A = {2, 4}, B = {3, 5} and C = {1, 7} find (A x B) U (A x C).
6. If A={1,3,5,7} B={5,9,13,17} and C={1,3,9,13} ,Determine (A-B)-C, A-(A-B)
7. If A = {1, 4}, B = {2, 5} and C = {5, 7} find (A x B) U (A x C).
8. If A={1,3,5,7}, B={5,9,13,17}, C={1,3,9,13}.Evaluate A∩B ,BᴜA, A-B, B-A, A-C, (A-B)-C,

**SECTION C**

1. Verify Demorgan’s law for A={2,3} B={3,4} U={1,2,3,4,5}

(ii)If A={a,b} B={p,q} C={q,r}.Verify A×(BᴜC)=(A×B)ᴜ(A×C).

1. (i)If A={2,3,4,6}, B={1,2,3,4,5,6,7}, C={1,3,4,6,7,8,9}.Find A∩B ,BᴜA, A-B, B-A, A-C, (A-B)-C,

(ii)If A={1,2,3,4,5} B={3,4,5,6,7} and C={1,3,9,13} ,find (A-B)-C, A-(A-B)

1. Verify Demorgan’s law for A={3,5} B={2,3} U={1,2,3,4,5}

(ii)If A={a,b,c} B={p,q,r} C={q,r,s}.Verify A×(BᴜC)=(A×B)ᴜ(A×C).

1. (i)Explain set operations with example

(ii) Represent AUB’ using venn diagram?

**MODULE 2 (CO-Examine Number system,ratio and Proportion) (Analyse)**

**SECTION A**

1. Find the mean proportion to 3 and 12?
2. Compare the relationship between x and y if x varies as y and x=14 when y=2?
3. Find the fourth proportion to 3,5,9?
4. Divide 24 in the ratio 5:1?
5. If A varies directly as B and inversely as the square root of C and if A=6 when B=10 and C=25.Determine the value of A when B=C=100.
6. Divide 36 in the ratio 5:1
7. A man can complete a job in 18 days. How many days will it take for 9 men to complete the same job
8. The ratio of monthly incomes of A and B is 5:6. If the monthly income of A is Rs. 450.find the monthly income of B.
9. If a:b=2:3 and b:c =4:5 find a:b:c.
10. Find the compound ratio of 3:6 , 4:5
11. Find the fourth proportion to 3,5,9
12. If 5x=6y determine y: x
13. Define a rational number
14. Determine the compound ratio of 4:5, 8:9 and 15:16

**SECTION B**

1. The ratio of two numbers is 8:11 and their difference is 135. Find the numbers?
2. If show that x is proportional to y.
3. The monthly salaries of two persons are in the ratio 3:5.If each receives an increase of Rs.20 in the monthly salary the ratio is altered to 13:21.Compare their salaries
4. If x varies directly as y and inversely as z . Find the relation between x, y, z if x =15,y=8 and z=2. Also find x when y=6 and z=3.
5. Ages of two people are in the ratio 3:4. After 10 years their ages would be in the ratio 4:5. Find their ages?
6. If 5x-2y:3x+2y=4:7 find x:y?
7. Ages of two people are in the ratio 3:4.After 10 years their ages would be in the ratio 4:5.Evaluate their ages.
8. Divide Rs.540 among A,B,C in the ratio 6:5:7

**SECTION C**

1. (i)The monthly incomes of two persons are in the ratio 4:6 and their monthly expenditure are in the ratio 7:9.If each saves Rs. 50 per month. Find their monthly incomes.?

(ii)A man completes a job in 12 days. How many days will it take for 6 men to complete the same job?

1. (i)If show that x is proportional to y.

(ii)If 2x+3y: x-2y=4:3, Evaluate

1. (i)Prove that is irrational.

(ii) If show that each of these ratios equal to

1. (i)Ages of two people are in the ratio 4:5. After 10 years their ages would be in the ratio 5:6.Determine their ages

(ii) If 40 men can plough 240 acres in 36 days ,how long will 60 men take to plough 160 acres?

**MODULE 3 (CO-Determine Permutation and Combination) (Evaluate)**

**SECTION A**

1.In how many different ways can a pack of 52 cards be dealt among 4 players, so that each receives exactly 13 cards

2.In how many ways can 8 boys form a ring.

3.If x=log 2,y= log 3, z=log 5 ,find log 30.

4.In how many ways can 4 white and 3 black balls be selected from a box containing 20 white and 15 black balls.

5 Simplify

1. If nP2= 72, find n?
2. . How many diagonals have a polygon of 5 sides?
3. . Find the number of years a sum of Rs.10000 will take to become 18000 if the rate of interest is 8%
4. Find the rate of interest per annum if the simple interest on a principal of Rs.5000 is 800 for 4 years?
5. In how many ways can 3 white and 5 black balls be selected from a box containing 14 white and 16 black balls

**SECTION B**

1. In how many ways can arrange the letters of the word ‘ASSASSINATION’
2. From 7 females & 6 males, a committee of 8 persons is to be formed. In how many ways can this be done when committee consist of exactly 4 males?
3. Find the C.I on Rs. 1000 at the rate of 10% per annum for 18 months when interest is compounded half yearly.
4. Find ½ log 9 + ¼ log 81 + 2 log 6 –log 12
5. Show that 3 log 4 + 2 log 5 – 1/3 log 64 – ½ log 16 =2.
6. In how many ways can 4 white and 3 black balls be selected from a box containing 20 white and 15 black balls.
7. A machine costs Rs. 10000 .Calculate its scrap value at the end of 10 years, depreciation on the reducing installment system being charged at 10%per annum.
8. Solve ++=12

**SECTION C**

1. .(i) A family of 4 brothers and 3 sisters is to be arranged for a photograph in one row . In how many ways can they be seated if (i)all the sisters sit together?(ii)no two sisters sit together

(ii)A candidate is required to answer 5 out of 10 questions.(a) How many choices he has?(b)if he has to answer first two questions , how many choices he has?(c)if he has to answer at least 3 questions of first 5 questions, how many choices he has?

1. Find the total amount of annuity of Rs.2400 payable at the end of every quarter for 6 years at 10% compounded quarterly?
2. Show that
3. (i) How many words can be formed out of the letters of the word TRIANGLE which will begin with T?

(ii)Find the number of ways in which 6 boys and 4 girls may be arranged in a row if no two of the girls are to together?

**MODULE 4 (CO-Analyse Matrix) (Analyse)**

**SECTION A**

1. Define symmetric matrices. Show that is symmetric.
2. Define singular and non-singular matrices.
3. Find the rank of
4. Show that I2 is idempotent.
5. Evaluate
6. Define the rank of a matrix. Find the rank of the matrix
7. Define skewsymmetric matrix with example?
8. Define singular matrix. Show that is singular.
9. Define symmetric and non-symmetric matrices.
10. Find the determinant of

**SECTION B**

1. If A= and B= find the products AB and BA. Show that AB≠BA.
2. If A= B= , C= find 4(A-B+C)
3. Find the rank of
4. If A= and B= , (i) Find X such that A-X=3B(ii) Find Y such that A+2Y=4B.
5. If A= B= , C= find 2(A+B+C)
6. If A= and B= find BA
7. If A= and B= find AB
8. If A= and B= find BA

**SECTION C**

1. If A= and B= find AB and BA

1. If A= B= , C= ,Show that A(B+C)=AB+AC
2. If A= B= , C= ,Show that A(BC)=(AB)C
3. If B= , C= ,Show that A(BC)=(AB)C

**MODULE 5 (CO-Solve the system of linear equations using matrices) (Apply)**

**SECTION A**

1. Define minor and cofactor of a matrix
2. If A=, find adjoint of A
3. If A= find A (adjA)
4. Write the matrix form of 2x-4y =7; 5x+2y=11
5. If A=, find adjoint of A
6. Find inverse of A if A=

1. Find inverse of A if A=
2. Write the matrix form of 2x+3y =1; 3x+y=5
3. If A=, find adjoint of A
4. If A= find A

**SECTION B**

1. Find inverse of A where A=.
2. . If A= , B=, find
3. If A= B= verify that =
4. Solve the equations 2x-3y=3, 4x-y=11 using Cramer’s rule.
5. Find inverse of A where A=.
6. Apply Crammer’s rule to find the solution of the equations: 2x+3y =1; 3x+y=5
7. If A= P.T AA-1=A-1A=I
8. If A= P.T AA-1=A-1A=I

**SECTION C**

1. Solve the equations using matrix method.
2. Solve the equations using Cramer’s rule.
3. Solve the equations 3x+y+z=8, x+ y +z=6, 2x+y-z=1 using matrix method.
4. 14. Solve the equations using Cramer’s rule.