14VCU07

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2019
(Second Semester)

Branch – **VISUAL COMMUNICATION (ELECTRONIC MEDIA)**

MATHEMATICS

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 2 = 20)

1 Find the average of all prime numbers between 30 and 50.

2 The average of 2,7,6 and x is 5 and the average of 18,1,6,x and y is 10. What is the value of y?

3 Simplify $\left(\frac{8}{125}\right)^{-\frac{4}{3}}$

4 Evaluate 28% of 450+45% of 280.

5 If 76 is divided into four parts proportional to 7,5,3,4. Find the smallest point.

6 Find the simple interest on Rs.68,000 at $16\frac{2}{3}\%$ per annum for 9 months.

7 If $A=\begin{bmatrix}4 & 6 & 9\\ 3 & 5 & 10\end{bmatrix}$ and $B=\begin{bmatrix}5 & 0 & 1\\ 4 & -7 & -3\end{bmatrix}$ find A-B and B-A.

8 Examine whether AB=B and BA=A, given $A=\begin{bmatrix}4 & -2\\ 3 & -1\end{bmatrix}$ and $B=\begin{bmatrix}2 & 4\\ 3 & 6\end{bmatrix}$.

9 Define Constraints.

10 Define Solution.

SECTION - B (25 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

11 a The sum of a rational number and its reciprocal is $\frac{13}{6}$. Find the number.

OR

b Rohit was 4 times as old as his son 8 years ago. After 8 years, Rohit will be twice as old as his son. What are their present age?

12 a Mr.Jones gave 40% of the money he had, to his wife. He also gave 20% of the remaining amount to each of his three sons. Half of the amount now left was spent on miscellaneous items and the remaining amount of Rs.12,000 was deposited in the bank. How much money did Mr.Jones have initially?

OR

b A man sells an article at a profit of 25%. If he had bought it at 20% less and sold it for Rs.10.50 less, he would have gained 30%. Find the cost price of the article.

13 a Adam borrowed some money at the rate of 6% p.a. for the first two years, at the rate of 9%p.a. for the next three years, and at the rate of 14%p.a. for the period beyond five years. If he pays a total interest of Rs.11,400 at the end of nine years, how much money did he borrow?

OR

b If $(4x^2-3y^2):(2x^2+5y^2)=12:19$, find (x:y).

Cont...

14 a Find the inverse of the matrix $A=\begin{bmatrix}1 & 0 & -1\\ 3 & 4 & 5\\ 0 & -6 & -7\end{bmatrix}$

OR

b Solve the equations by matrix method

$3x+2y=14$

$3x+3y=18.$

15 a A person requires at least 10,12 and 12 units of the chemicals A,B and C respectively for his garden. A liquid product contains 1,2, and 4 units of A,B and C respectively per jar. A dry product contains 5,2 and 1 units of A,B and C per carton. the liquid product sells for Rs.3 per jar and the dry product sells for Rs.2 per carton. Formulate this as an LPP for minimizing the cost and ensuring the requirement.

OR

b Solve graphically Max $z=x_1+x_2$

Sub to $x_1+2x_2\leq 2000$

$x_1+x_2\leq 1500$

$x_2\leq 600$

and $x_1,x_2\geq 0$.

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 a) If 2½ is added to a number and the sum multiplied by 4½ and 3 is added to the product and then dividing the sum by $1\frac{1}{5}$, the quotient becomes 25. What is the number?

b) The ratio between the present ages of A and B is 5:3 respectively. The ratio between A's age 4 years ago and B's age 4 years hence is 1:1. What is the ratio between A's age 4 years hence and B's age 4 years ago?

17 a) Find the largest from among $\sqrt[4]{6}, \sqrt{2}$ and $\sqrt[3]{4}$.

b) $\frac{5}{9}$ part of the population in a village are males. If 30% of the males are married, find the percentage of unmarried females in the total population.

18 a) Rs.800 becomes Rs.956 in 3 years at a certain rate of Simple Interest. If the rate of interest is increased by 4%, what amount will Rs.800 become in 3 years?

b) A sum of money doubles itself at compound interest in 15 years. In how many years will it become eight times?

19 Solve the following system of simultaneous equations by Cramer's rule.

$2x+3y+3z=22$

$x-y+z=4$

$4x+2y-z=9.$

20 Solve the LPP by using Simplex method.

Max $z=x_1+x_2+3x_3$

Sub to $3x_1+2x_2+x_3\leq 3$

$2x_1+x_2+2x_3\leq 2$

and $x_1,x_2,x_3\geq 0$.

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END