

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2018
(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 first 20 multiples of 7.
- 2 If the mean of 5 observations $x, x+2, x+4, x+6$ and $X+8$ is 11, then find the mean of the best three observations.
- 3 What is the quotient when $(x^{11} - 1)$ is divided by $(x-1)$?
- 4 Which is greatest in $16^2/M, 2/15$ and 0.17 ?
- 5 If $A:B = 5:7$ and $B:C = 6:11$, then find $A:B:C$.
- 6 Albert invested an amount of Rs. 8000 in a fixed deposit scheme for 2 years at compound interest rate 5p.c p.a . How much amount will albert get on maturity of the fixed deposit?

7 If $A = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 3 & 6 & 9 \end{vmatrix}$ and $B = \begin{vmatrix} -1 & -2 & -4 \\ -1 & -2 & -4 \\ 1 & 2 & 4 \end{vmatrix}$ find AB .

$$\begin{vmatrix} 3 & -2 & 1 \\ 2 & 3 & -1 \\ 1 & 1 & 1 \end{vmatrix}$$

- 9 Write down the mathematical formulation of LPP.
- 10 Define feasible solution.

SECTION - B (25 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

The sum of four numbers is 64. If you add 3 to the first number, 3 is subtracted from the second number, the third is multiplied by 3 and the fourth is divided by 3, then all the results are equal. What is the difference between the largest and the smallest of the original numbers.

OR

- b • Abhay's age after six years will be three-seventh of his father's age. Ten years ago, the ratio of their ages was 1:5. What is Abhay's father's age at present?
- 12 a A Salesman's commission is 5% on all sales up to Rs 10,000 and 4% on all sales exceeding this. He remits Rs.31,100 to his parent company after deducting his commission. Find the total sales.

OR

When a producer allows 36% commission on the retail price of his product, he earns a profit of 8.8%. What could be his profit percent if the commission is reduced by 24%?

- 13 a A sum of money trebles itself in 15 years 6 months. In how many years could it double itself?

OR

14 a Solve the following equations by cremer's rule.

$$3x + 2y = 8$$

$$5x - 3y = 7$$

OR

b If $A = \begin{vmatrix} 0.2 & 0.4 \\ 0.1 & 0.5 \end{vmatrix}$ and $F = \begin{vmatrix} 60 \\ 40 \end{vmatrix}$ find x and v.

15 a ABC animal feed company must produce atleast 200kg of a mixture consisting of ingredients A and B daily . A costs Rs.3 per kg and B costs Rs.5 per kg not more than 80 kg of A can be used and atleast 60kg of B must be used. Find the minimum cost mixture by graphical method.

OR

b Solve graphically

$$\text{Maximize } Z = 3x_1 + 2x_2$$

$$\text{Sub to } x_1 - x_2 < 1$$

$$x_1 + x_2 > 3$$

$$\text{and } x_1, x_2 > 0.$$

SECTION - C 130 Marks)

Answer any **THREE** Questions

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

16 a) 50 is divided into two parts Such that the sum of their reciprocals is $\frac{1}{6}$. Find the two parts.

b) Tanya's grandfather was 8 times older to her 16 years ago. He could be 3 times of her age 8 years from now. Eight years ago, what was the ratio of Tanya's age to that of her grandfather?

17 a) If $x = y^b$, $y = z^c$ and $z = x^a$ then find the value of abc.

b) Price register an increase of 10% on food grains and 15% on other items of expenditure. If the ratio of an employee's expenditure on food grains and other items be 2:5, by how much should his salary be increased in order that he may maintain the same level of consumption as before , his present salary being Rs. 2590?

18 a) The simple interest on a sum of money will be Rs.600 after 10 years. If the principal is trebled after 5 years, what will be the total interest at the end of the tenth year?

b) The difference between the compound Interest and the simple interest accrued on an amount of Rs 18,000 in a years was Rs.405. what was the rate of interest p.c.p.a ?

19 Show that $A = \begin{vmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{vmatrix}$ satisfies the equation

$A^2 - 4A - 5I = 0$ where I is the identity matrix and 0 denoter the Zero matrix . Hence find the inverse of A.

20 Solve the following LPP by using simplex method.