

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2017
(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 (10x2 = 20)

- 1 Find the average of first 20 multiples of 7.
- 2 The difference of two numbers is 11 and one-fifth of their sum is 9. Find the numbers.
- 3 Find the value of $(10)^{150} + (10)^{146}$ is:
- 4 Express 28% as a decimal.
- 5 If A:B=3:4 and B:C=8:9, then A:C.
- 6 Find the simple interest on Rs.3000 at 6 J/jVo per annum from the period from 4th feb 2005 to 18th April 2005.
- 7 If $A = \begin{pmatrix} 4 & -2 \\ 3 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} 2 & 4 \\ 3 & 6 \end{pmatrix}$ then examine BA=A.
- 8 Find the value of the determinant $B = \begin{vmatrix} 3 & -1 & 2 \\ 5 & 3 & 0 \\ 1 & 4 & -6 \end{vmatrix}$
- 9 Define Feasible Solution.
- 10 Define Slack Variable.

SECTION - B (25 Marks)

Answer **ALL** Questions

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

- 11 a The present age of a father is 3 years more than three times the age of his Son. Three years hence, father's age will be 10 years more than twice the age of the son. Find the present age of the father.
OR
b 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?
- 12 a Evaluate 16^{-%} of 600gm-33^{-%} of 180gm.
OR
b Find c.p when Sp=Rs.51.70, Loss=12%
- 13 a A man took a loan from a bank at the rate of 12% p.a simple interest. After 3 years he had to pay Rs.5,400 interest only for the period. The principle amount borrowed by him was:
OR
b Find the compound interest on Rs. 16,000 at 20% per annum for 9 months, compounded quarterly.

Cont...

$$14 \text{ a Find } \begin{vmatrix} 4 & 1 & 3 \\ 2 & 0 & -6 \\ 5 & -7 & 9 \end{vmatrix} x \begin{vmatrix} 5 & -2 & 0 \\ 1 & 6 & 8 \\ 3 & 4 & 7 \end{vmatrix}$$

OR

b Solve the equations by matrix method.

$$3x+2y=14$$

$$3x+3y=18$$

15a A manufacturer produces two types of models M_1 and M_2 . Each M_1 model requires 4 hours of grinding and 2 hours of polishing, whereas each M_2 model requires 2 hours of grinding and 5 hours of polishing. The manufacturer has 2 grinders and 3 polishers. Each grinder works for 40 hours week and each polisher works for 60 hours a week. Profit on an M_1 model is Rs.300 and on as M_2 model is Rs.400. Whatever is produced in a week is sold in the market. How should the manufacturer allocate his production capacity to the two types of models so that he may make the maximum profit in a week?

OR

b Solve graphically Maximize $Z=3x_1+2x_2$

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

$$x_1+x_2 > 3$$

$$x_1, x_2 > 0$$

SECTION - C (30 Marks)

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

- 16 (a) The ratio of the ages of a man and his wife is 4:3. After 4 years, this ratio will be 9:7. If at the time of marriage, the ratio was 5:3, then how many years ago were they married?
- (b) A Pupil's marks were wrongly entered as 83 instead of 63. Due to that the average marks for the class got increased by half. Find the number of pupil's in the class.
- 17 (a) By selling 33 meters of cloth, one gains the selling price of 11 meters. Find the gain percent.
- (b) Find the largest from among $\sqrt[3]{6}$, $\sqrt{2}$ and $\sqrt{4}$.
- 18 (a) A bag contains 50p, 25p and 10p coins in the ratio 5:9:4 amounting to Rs.206. Find the number of coins of each types.
- (b) The difference between the compound interest and the simple interest accrued on an amount of Rs. 18,000 in 2 years was Rs. 405. What was the rate of interest p.c.p.a.?
- 19 Solve the following equations
- $$3x-y+2z=8, \quad x+y+z=2, \quad 2x+y-z=-1$$
- 20 Use simplex method to solve
- $$\text{Max } Z=3x_1+4x_2$$
- $$\text{Sub to } 4x_1+2x_2 < 80$$
- $$2x_1+5x_2 < 180$$
- $$\text{and } x_1, x_2 > 0$$