PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BCA DEGREE EXAMINATION DECEMBER 2018
(First Semester)

Branch - **COMPUTER APPLICATIONS**

STATISTICS AND OPERATIONS RESEARCH

Time : Three Hours.   Maximum : 75 Marks

SECTION-A (20 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (10x2 = 20)

1   Define statistics.
2   Write the sources of collecting data.
3   Define average.
4   Calculate range : 4, 8, 2,10, 5,
5   Write the uses of time series.
6   Mention any two methods of measuring seasonal variation.
7   Define L.P.P.
8   Write the standard form of LPP.
9   What is meant by a balanced transportation problem?
10   Give the three time estimates used in PERT analysis.

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

11 a Define classification. Explain the various methods of classification in brief.
                              OR
    b Draw Histogram and frequency polygon for the following data:

Marks:	0-10	10-20	20-30	30-40	40-50	50-60
No. of students:	5	8	12	10	4	1

12 a Calculate median and mode for the following information:

X:	5	10	15	20	25
f:	2	7	10	8	3

                              OR
    b   Briefly explain the various methods of measuring dispersion.

13 a Explain the various components of time series.
                              OR
    b Calculate seasonal indices by simple average method for the data given below:

Year	I	II	III	' IV
			Quarters	
2011	10	15	12	8
2012	12	20	13	10
2013	15	22	15	12
2014	16	26	20	18
2015	20	30	27	22

14 a Solve graphically the following LPP:
        Maximize $z = 2x_1 + 10x_2$
        Subject to the constraints :
        $2x_1 + 5x_2 < 16$, $6x_1 < 30$, $x_1, x_2 > 0$.
                              OR

15 a ' Obtain an initial basic feasible solution to the following transportation
problem by North-West comer method:

	D	E	F	G	Available
A	11	13	17		250
B	16	18	14	10	350
C	21	24	13	10	450

Requirement 200 225 275 350

OR

b The following table gives the activities in a constmction project and time
duration:

Activity:	1-2	1-3	2-3	2-4	3-4	4-5
Preceding activity:	-	-	1-2	1-2	1-3,2-3	2-4,3-4

(a) Draw the activity network of the project
(b) Find the ritical path and total duration of the project.

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

16   Explain the various methods of collecting primary data in detail.

17   Calculate Quartile deviation for the following data:

X:	0-20	20-40	40-60	60-80	80-100
f:	6	15	20	12	7

18   Estimate the trend values by the method of least squares:

Year:	2001	2002	2003	2004	2005
Sales (in Lakhs) :	10	14	15	18	23

19   Use Simplex method to solve the following LPP:
Maximize $z = xj - x_2 + 3x_3$
Subject to the constraints :
$xj + x_2 + x_3 < 10, 2xi - x_3 < 2, 2xi - 2x_2 + 3x_3 < 0; x_t, x_2, x_3 > 0.$

20   Obtain an initial basic feasible solution to the following transportation
problem by Vogel's approximation method:

		Destination				Availability
		1	2	3	4	
	1	21	16	25	13	11
Source	2	17	18	14	23	13
	3	32	27	18	41	19
Requirement		6	10	12	15	

Z-Z-Z   END