AAL-010-001407 Seat No. _____

B. B. A. (Sem. IV) (CBCS) Examination

April / May - 2016

407 : Business Statistics-II

(New Course)

Faculty Code : 010

Subject Code : 001407

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) Attempt all six questions.
(2) Figures to the right indicate marks.

1 M.C.Q. **20**

(1) In S.Q.C. control limits are calculated on the basis of

(A) 3σ

(B) 2σ

(C) σ

(D) None

(2) Difference between maximum and minimum value of sample is called

(A) Range

(B) Standard deviation

(C) Mean

(D) None

(3) If for C chart U.C.L. = 18, L.C.L. = 0 then $\overline{C}$ = _____.

(A) 12

(B) 9

(C) 6

(D) 3

(4) P and nP charts are based on _____ distribution.

(A) Poisson

(B) Binomial

(C) Normal

(D) None

(5) Forecasting is process of making an estimate of _____.

(A) Present

(B) Past

(C) Future

(D) None

(6) Relationship between a_{ij}, x_{ij} and x_j is given by

(A) $a_{ij} = x_{ij}\ x_j$

(B) $x_j = a_{ij}\ x_{ij}$

(C) $x_{ij} = a_{ij}\ x_j$

(D) None

(7) There are _____ normal equations are used to fit a second degree parabola.

(A) 4

(B) 1

(C) 2

(D) 3

(8) There is an assumption in input-output analysis that every industry produces _____ things.

(A) Four

(B) Three

(C) Two

(D) One

(9) What happens when maximum and minimum value of the game are same ?

(A) Saddle Point exists

(B) No solution exists

(C) Solution is mixed

(D) None

(10) The size of the payoff matrix of a game can be reduced by using the principle of

(A) game inversion

(B) dominance

(C) Rotation reduction

(D) Game transpose

(11) When the sum of gains of one player is equal to the sum of losses to another player in the game, this situation is known as _____ game.

(A) Biased

(B) Fair

(C) Zero Sum

(D) All of the above

(12) Game theory models are classified by the

(A) number of players

(B) sum of all payoffs

(C) number of strategies

(D) All of the above

(13) If $Z_{cal} > Z_{tab}$ then H_0 is_____

(A) rejected

(B) accepted

(C) (A) and (B) both

(D) None

(14) S.E. (P) = _____

(A) $\sqrt{\frac{PQ}{n}}$

(B) $\frac{PQ}{\sqrt{n}}$

(C) $\frac{\sqrt{PQ}}{n}$

(D) None

(15) Degree of freedom for 3×2 contingency table is

(A) 1

(B) 2

(C) 3

(D) 6

(16) χ^2_{cal} = _____

(A) $\sum\left(\frac{O-E}{E}\right)^2$

(B) $\sum\frac{(O-E)^2}{E}$

(C) $\sum\frac{O-E}{E^2}$

(D) $\sum\frac{O-E}{E}$

(17) _____ test is used in analysis of variance

(A) χ^2

(B) Z

(C) F

(D) T

(18) Which test is use for testing H_0 : $\mu_1 = \mu_2 = \mu_3$?

(A) T test

(B) F test

(C) Analysis of variance

(D) None

(19) _____ test is used to test $H_0 : \delta = 0$

(A) χ^2

(B) Z

(C) F

(D) T

(20) For comparing the variances of two indep. smal samples _____ test is used

(A) T

(B) Z

(C) χ^2

(D) F

2 Explain : **10**

(1) Theory of runs

(2) Difference between the charts for variables and charts for attributes.

OR

2 The following table gives mean and range of 10 samples each of size 5. Draw $\overline{X}$ and R charts and state your conclusion. **10**

Sample No	1	2	3	4	5	6	7	8	9	10
$\overline{X}$	40	42	41	40	42	43	40	40	42	45
R	3	2	5	2	1	4	3	2	5	4

3 Explain : **10**

(1) Two person zero sum game

(2) Saddle point

OR

3 Solve the following game : **10**

$$\begin{bmatrix} 30 & 40 & -80 \\ 0 & 15 & -20 \\ 90 & 20 & 50 \end{bmatrix}$$

4 Explain the forecasting method of input-output analysis. Give its assumptions. **10**

OR

4 Fit a second degree parabola for the following data and estimate the likely sales for the year 2016. **10**

Year	2010	2011	2012	2013	2014
Sales (Rs. lakhs)	10	20	30	50	40

5 (a) Explain : **5**

(i) Type I and type II errors

(ii) Degrees of freedom

(b) The average marks of 80 boys is 78 with s.d. of 12 and the average marks of 120 girls is 75 with s.d. of 15. Can it be said that the average marks of boys is more than that of girls ? **5**

OR

5 A sample of 200 families each having 3 children gave the following distribution of boys. Test the hypothesis that boys and girls are equally probable. **10**

Boys	0	1	2	3
No. of families	40	60	62	38

6 (a) Expain the difference between large sample test and small sample test. **5**

(b) The following information is obtained from a sample of 5 observations. **5**

$\Sigma x = 18, \quad \Sigma x^2 = 80$

Test the hypothesis that the mean of population is 4.

OR

6 Analyze the following data completely **10**

Treatment	A	20	30	20	40	30
	B	50	20	20	30	40
	C	60	20	30	50	40