Department of Business Statistics - I

List of practical's along with date of submission

For S.Y.B.Com. 2011-12

Practical – 1

Topic – Moments.

Q. 1) Calculate the first four raw moments about zero 4, 1, 5, 3, 9, 7, 10, 6, 8, 12.

Q. 2) Calculate the karl Pearson's coefficient of skewness for the following data, 25,15,23,40,27,25,23,25,20,30.

Q. 3) If $\mu_1^1 = 2$, $\mu_2^1 = 20$, $\mu_3^1 = 40$, $\mu_4^1 = 40$, A = 5 Calculate the first four Central moments.

Q. 4) The First 2 moments of a distribution about Value 5 of the variable are 2 & 20 find the mean & the Variance.

Q. 5) Obtain the least square regression equation of X_3 on X_1 & X_2

Practical – 2

Topic- Time Series.

Q. 1) Fit a straight line trend by the method of least Squares.

Year	2001	2002	2003	2004	2005	2006
Sales (in lacs)	55	56	56	58	60	65

Plot the time series & trend values

Q. 2) The No. Of tourist arrivals (in millions) during a year 1994 to 2000 in India.

Year	1994	1995	1996	1997	1998	1999	2000
Tourist (in millions)	18	20	23	25	24	28	30

Fit a straight line trend by the method of least squares estimate the tourist arrivals in 2001 & estimate the trend values.

Q. 3) Calculate 3 yearly moving averages for following data.

Year	1970	1971	1972	1973	1974	1975	1975	1976	1977	1978	1979
Birth rate	36.8	36.9	36.6	34.6	34.6	34.5	35.2	34.4	33	33.3	33

Q. 4) Following are the profits of a concern firm from 1965 to 1971 compute trend ordinates (ye) for the data.

Year	1965	1966	1967	1968	1969	1970	1971
Profits	75	70	72	65	50	54	41

Q. 5) The following data relate to the no of passenger cars in millions sold from 1972 to 1979

Year	1972	1973	1974	1975	1976	1977	1978	1979
No. Of Passenger	6.7	5.3	4.3	6.1	5.6	7.9	5.8	6.1

I) Fit a straight line trend to the data through 1977 only.

II) Use your result in i to estimate production in 1979 & compare with the actual production.

Practical – 3
Topic- Vital Statistics

Q.1) State the use of vital statistics.

Q. 2) Compute CDR. & ASDR for the following data.

Age Group	Population	No. Of deaths
0-5	15,000	300
5-30	30,000	600
30 & above	20,000	800

Q. 3) Compute C.D.R. & STDR for two places A & B taking population of place A as standard population comment on the health constitution in the 2 town

Place	Place – A		Place – B	
Age Group	Population	No. Of deaths	No. Of deaths	No. Of deaths
0-5	20,000	300	10,000	280
5-30	30,000	600	25,000	400
30 & 60	15,000	600	10,000	500
60 & above	5,000	200	5,000	250

Q. 4) Calculate CBR & GFR

Age group	Population	No. Of lire births
15-19	25	800
20-24	20	2200
25-29	18	1800
30-34	15	900
35-39	12	500
40-44	6	120
45-49	4	10

Assume the ratio of M & F as 1:1 in the population.

Q. 5) Calculate TFR

Age group	Female Population	No. Of lire Births
15-19	90000	1800
20-24	92000	10120
25-29	89000	10680
30-34	86000	7740
35-39	84000	4200
40-44	80000	1600

Department of Business Statistics - II
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Practical – 1
Topic : - Probability

Q. 1) If a pair of unbiased coins is tossed, obtain probability of occurrence of

i) Both heads
ii) Single heads
iii) At least one head

Q. 2) Four cards are drawn at random from a well shuffled pack of S_2 cards. Find the probability that.

i) Two cards are red & two are black
ii) All cards are of different suits.
iii) All are of same suit
iv) One is king

Q. 3) If P (A) = 0.6, P (B) = 0.5, P (A ^ B) = 0.3 Compute,

i) P(A')
ii) P(A v B)
iii) P(A' ^ B)
iv) P(A' ^ B')
v) P(A' v B')

Q. 4) Let A & B be two events defined on a sample space Ω such that,

P (A) = $\frac{3}{4}$ & P (B) = $\frac{5}{8}$

Show that, $\frac{3}{8} \leq$ P (A ^ B) $\leq \frac{5}{8}$

Q. 5) A random experiment results in an integer out come between 1 & 10 [both Including] All members are equally likely. Let A be the event that an odd number occurs & B be the event that a number divisible by 3 occurs.

Obtain

i) P(A/B)
ii) P(B/A)
iii) P(A'/B)
iv) P(A/B')
v) P(A'/B')

Practical No. 2
Topic – Univariate Discrete Probability Distribution

Q. 1) If a random variable X has the following probability distribution.

X	0	1	2	3	4	5	6
P(X)	k	3k	5k	7k	9k	11k	13k

i) Find K
ii) Find P($X \geq 2$)
iii) Find P(0< X < 5)

Q. 2) Verify whether the following function can be regarded as the P.M.F. for the given Values of X

X	1	2	3	4
P(X)	0.2	0.4	0.3	0.5

X	-1	2	3	4
P(X)	0.5	-0.3	0.3	0.5

P(X) = $\frac{X2}{14}$, If X = 1, 2, 3 = 0, otherwise.

Q. 3) Obtain the expected value of no. of heads when 3 fair coins are tossed simultaneously

Q. 4) Obtain variance random variable X haring following P.M.F.

X	0	1	2	3	4	5
P(X)	0.05	0.15	0.2	0.5	0.09	0.01

Q. 5) Compute variance of X for the following probability distribution.

P(X) = $\frac{X2}{30}$, If X = 0,1,2,3,4.

Practical No – 3

Topic: - Applications of Binomial, Poisson & Bernoulli distribution.

Q. 1) A coin with P = $\frac{1}{3}$ as the probability of head is tossed 6 times. Find the probability of getting,

i) 4 Heads
ii) At least 2 heads
iii) At most one head
iv) 4 tails

Q. 2) The average no. of misprints per page of a book is 1.5, assuming the distribution of no. of misprints to be Poisson, find the probability that a particular book is free from misprint.

Q. 3) Number of road accidents on a high way during a month follows a Poisson distribution with mean 5. Find the probability that, in a certain month no. of accidents on the highway will be

i) Less than 3
ii) Between 3 & 5
iii) More than 3

Q. 4) Let, X → (n = 8, P = $\frac{1}{4}$) find,

i) P(X = 3)
ii) P(X< 3)
iii) P(X ≤ 6)

Q. 5) Let, X follows binomial distribution with mean = 10, & variance = 5

i) P(X < 5)
ii) P(2 < X < 10)
iii) P(X ≤ 10)

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Practical No – 1
Topic – Numerical Integration

Q. 1) Evaluate $\int_0^1 x2$ dx by Trapezoidal rule (take n = 0.1)

Q. 2) Use Simpson's $\frac{3rd}{8}$ rule with n = 6 evaluate $\int_0^1 -\frac{1}{1+X2}$ dx.

Q. 3) Use Simpson's $\frac{1}{3}$ rule to evaluate $\int_0^1 -\frac{1}{1+X2}$ dx take n = 8.

Q. 4) State Trapezoidal rule, Simpson's $\frac{1}{3}$ rule & Simpson's $\frac{3}{8}$ rule with notations.

Practical No – 2
Topic – CPM & PERT

Q. 1) Constructs a network for the project whose activities & their precedence relationship are as given below,

Activity	A	B	C	D	E	F	G	H	I
Immediate Predecessor	-	A	A	-	O	B,C,E	F	D	G,H

Q. 2) The following table shows the jobs of network along with their estimates

Jobs	1-2	1-6	2-3	2-4	3-5	4-5	6-7	5-8	7-8
A(days)	1	2	2	2	7	5	5	3	8
N(days)	7	5	14	5	10	5	8	3	17
Y (days)	13	14	26	8	19	17	29	9	32

i) Draw the project network
ii) Find the expected project duration
iii) Find the critical path
iv) Find the variance of each activity

Q. 3) The following table shows the jobs of a network along with their time estimates, the time estimates are in days.

Jobs	A	M	V
1-2	3	6	15

1-2	2	5	14
2-3	6	12	30
2-4	2	5	8
3-5	5	11	17
4-5	3	6	15
5-8	1	4	7
6-7	3	9	27
7-8	4	19	28

i) Draw the project network.

ii) Find the critical path.

iii) Find the project length.

Q. 4) Consider the following data for activities in a given project.

Activity	A	B	C	D	E	F
Predecessor	-	A	-	B,C	C	D,E
Time(day)	5	4	7	3	4	2

Draw the arrow diagramme for the project.

Project No-3

Topic – Game theory

Q. 1) Determine which of the following two person zero sum games are strictly determinable & fair

i) $\begin{bmatrix} 5 & 0 \\ 0 & 2 \end{bmatrix}$

ii) $\begin{bmatrix} 0 & 2 \\ -1 & 4 \end{bmatrix}$

iii) $\begin{bmatrix} -5 & 2 \\ -7 & -4 \end{bmatrix}$

iv) $\begin{bmatrix} 0 & 2 \\ -1 & 4 \end{bmatrix}$

Q. 2) Solve the game whose pay off matrix is given by.

$$\begin{bmatrix} 1 & 3 & 1 \\ 0 & -4 & -3 \\ 1 & 5 & -1 \end{bmatrix}$$

Q. 3) Solve the game whose pay off matrix is given below.

$$\begin{bmatrix} -2 & 0 & 0 & 5 & 3 \\ 3 & 2 & 1 & 2 & 2 \\ -4 & -3 & 0 & -2 & 6 \\ 5 & 3 & -4 & 2 & -6 \end{bmatrix}$$

Q. 4) Using dominance principle reduce the following game & then solve it. What is of the game?

Player B

Player A $\begin{bmatrix} 2 & -2 & 4 & 1 \\ 6 & 1 & 12 & 3 \\ -3 & 2 & 0 & 6 \\ 2 & -3 & 7 & 7 \end{bmatrix}$