

Goa Vidyaprasarak Mandal's

**GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND
ECONOMICS, PONDA-GOA**

B.C.A (SEMESTER-IV) EXAMINATION, APRIL 2016

DATA ANALYSTS AND STATISTICAL TECHNIQUES

Duration: 2 hours

Marks: 50

Instructions

- i. *All the questions are compulsory however internal choices are given*
- ii. *Only standard calculators are allowed*
- iii. *Marks to the right indicate full marks*

Q.1 Answer the following (1 × 10 = 10)

- a. State Addition Theorem on probability forevents A and B of an experiment
- b. Let E_1 and E_2 be two mutually exclusive events of an experiment.
Then $P(E_1 \cap E_2) = \dots\dots$
- c. Let S be the sample space for an experiment and E_1, E_2 be its events
Then $P(E_1 \cup E_2) = \dots\dots$
- d. Calculate Mean for the following data
7, 8, 5, 6, 7, 5, 5, 4, 6, 7
- e. Find Median for the data given below
7, 9, 8, 5, 7, 7, 6, 8, 9
- f. Consider a data with Mean 42 and Median 43. Calculate the Mode
- g. Explain in short the meaning of data mining.
- h. Define the term correlation
- i. Write the formula for Karl Pearson coefficient of correlation.
- j. Write the formula for line of regression of y on x

Q.2

- a. Out of 36 students appearing for S.S.C examination from a school, only 19 passed.
Does this mean that the passing percentage from this school, in general is 60% at 1%
level of significance? (5)

- b. Given a coin, the null hypothesis is H_0 : the coin is perfect, as against the alternative hypothesis H_1 : the probability of head in a toss is 0.4. The null hypothesis is to be accepted, if out of two tosses, Head appears atmost once. Find the probability of the errors of type- I and type- II. Also state the Power of the test. (5)

OR

Q .II

- A. A sample of 100 children have a mean weight of 50.6 kg. Can it be regarded as a random sample from a large population with mean weight of 50 kg, and standard deviation of 5kg at 5% level of significance? (5)
- B. An urn contains 8 marbles of which an unknown number m are green. To test the hypothesis $H_0:m = 4$ against the alternative hypothesis $H_1:m = 5$ following procedure is used,Draw two marbles from the urn and reject H_0 if both are green.Find the probability of the errors of type- I and type- II. Also state the Power of the test. (5)

Q .3

- a. What do you mean by probability? (5)

Consider the following probability distribution function for the variable x

Where x : numberof times head appear when a coin is tossed twice

$$P(x) = \begin{cases} \frac{1}{4} & , x = 0 \text{ or } 2 \\ \frac{1}{2} & , x = 1 \\ 0 & , \text{otherwise} \end{cases}$$

Find $P(x \geq 1)$, $P(x > 1)$, $P(1 \text{ or } 2)$, $P(X < 1)$

- b. Write applications of data mining (5)

OR

Q .III

- A. Two cards are drawn from a well shuffled pack of 52 cards. Find the probability that
- Both are hearts
 - Both are of same suite (spade or diamond or heart or club)
 - Exactly one king is drawn
 - One is king and one is queen
 - One is black and one is red
- (5)
- B. Write a short note on Apriori algorithm with an example (5)

Q.4

- a) Find Karl Pearson coefficient of correlation for the data given below (5)

x	2	5	8	10	6	3	1
y	4	6	7	8	5	4	3

- b) Find the quartile deviation for the following data (5)

Interval	Frequency	Interval	Frequency
30-32	2	40-42	62
32-34	9	42-44	39
34-36	25	44-46	20
36-38	30	46-48	11
38-40	49	48-50	3

OR

Q.IV

- A. For the data given below, Find the equations of both the lines of Regression (5)

x	2	3	4
y	3	5	7

- B. Calculate median for the following data of income tax paid by 500 employees of a company (5)

Income tax in Rs.	Number of employees
3000-4000	50
4000-5000	70
5000-6000	80
6000-7000	120
7000-8000	1000
8000-9000	50
9000-10000	30

Q.5

- a. Draw histogram for the following data (5)

Profits per shop in '000'Rs.	0-100	100-200	200-300	300-400	400-500	500-600	600-700
Number of shops	15	20	28	32	18	12	5

- b. Find the mean for the following (5)

x	10	20	30	40	50	60
f	8	16	25	24	18	9

OR

Q.V

- A. Distinguish between qualitative and quantitative data (2)
- B. From a frequency distribution for the words in the following paragraph by taking the number of letters as the variable,
"DO NOT WAIT TO WARN YOUR SON ABOUT DRUNK DRIVING UNTIL THE NIGHT HE CALLS FROM THE POLICE STATION" (3)
- C. Get an ordinary frequency distribution from the following cumulative frequency distribution and hence find the median (5)

Marks	Number of students
Below 5	10
Below 10	22
Below 15	37
Below 20	50
Below 25	55

XXXXXXXXXXall the bestXXXXXXXXXX