# Tribhuvan University

## Faculty of Humanities & Social Sciences

## OFFICE OF THE DEAN

## 2019

**Bachelor in Computer Applications** **Full Marks: 60**
**Course Title: Probability and Statistics** **Pass Marks: 24**
**Code No: CAST 202** **Time: 3 hours**
**Semester: III**

| **Name:** | **Symbol No:** |
|---|---|

***Candidates are required to answer the questions in their own words as far as possible.***

### Group A

**Attempt all the questions.** **[10×1 = 10]**

1. Circle (O) the correct answer.

i) How many types of data on the basis of sources of data collection?
a) 1 b) 2 c) 3 d) 4

ii) Which is more appropriate central tendency to find the average of profit?

a) Arithmetic mean b) Median

c) Mode d) All

iii) What is the range of Correlation?

a) 0 to ∞ b) -∞ to ∞ c) -1 to 1 d) 0 to 1

iv) If r=0.2 then coefficient of determination implies that

a) 20% of total variation in dependent variable has been explained by independent variable.

b) 40% of total variation in dependent variable has been explained by independent variable.

c) 2% of total variation in dependent variable has been explained by independent variable.

d) )4% of total variation in dependent variable has been explained by independent variable.

v) What is the minimum value of Probability?

a) 1 b) 100 c) 0 d) None of above

vi) In case of Normal distribution

a) Mean >Median b) Mean =Median c) Mean ≤Median d) Mean ≥Median

vii) The regression line of X on Y and Y on X are intersect at the point

a) (μ,0) b) (a,b) c) (X,Y) d) $(\bar{X}, \bar{Y})$

viii) In case of systematic sampling

a) sample mean is biased estimator population mean.

b) sample mean is unbiased estimator population mean.

c) sample mean can't estimate population mean.

d) sample mean may equal to population mean.

ix) Mean of Chi-Square distribution with n degrees of freedom is

a) 1 b) 0 c) 2n d) n

x) How do you obtain degree of freedom in one-way ANOVA?

a) (k, n-1) b) (k, n-k)

c) (k-1, n-1) d) k-1, n-k)

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### Group B

**Attempt any SIX questions.** **[6×5 = 30]**

2. Describe scope and limitation of Statistics.

3. Determine average wages from following data:

| Wages | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 |
|---|---|---|---|---|---|---|---|---|---|
| No. of Worker | 10 | 13 | 18 | 21 | 24 | 28 | 20 | 11 | 8 |

4. Calculate Karl Pearson's correlation coefficient from the following data:

| Sales | 43 | 41 | 36 | 34 | 50 |
|---|---|---|---|---|---|
| Expenses | 10 | 22 | 13 | 19 | 17 |

5. Estimate the marks in JAVA when the marks in Statistics is 65 by using following data:

| Marks in Statistics | 57 | 58 | 59 | 59 | 60 | 61 | 62 | 64 |
|---|---|---|---|---|---|---|---|---|
| Marks in JAVA | 77 | 78 | 75 | 78 | 82 | 82 | 79 | 81 |

6. Fit Binomial Distribution from the following data where p = 0.5

| No. of heads | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Frequency | 28 | 62 | 46 | 20 | 4 |

7. How do you determine sample size in sampling? Explain briefly.

8. Write short notes on simple random sampling.

## Group C

**Attempt any TWO questions.** **[2×10 = 20]**

9. Student's age in the regular daytime BCA program and the morning time BCA program of a campus are described by two samples. If the homogeneity in age of the class is positive factor in learning make suggestion, with reason, which of two groups will be easier to teach?

| Regular BCA program | | Morning BCA program | |
|---|---|---|---|
| **Age** | **No. of Students** | **Age** | **No. of Students** |
| 23 | 9 | 27 | 10 |
| 29 | 2 | 31 | 8 |
| 28 | 5 | 30 | 5 |
| 22 | 10 | 29 | 4 |
| 30 | 1 | 28 | 6 |
| 21 | 4 | 33 | 5 |
| 25 | 11 | 34 | 5 |
| 26 | 6 | 35 | 11 |
| 27 | 3 | 36 | 2 |
| 24 | 9 | 32 | 4 |
| Total | 60 | Total | 60 |

10. Given a normal distribution with mean 200 and s.d. 20, find the probability that

    i) $P(X>180)$ ii) $P(X<220)$

    iii) $P(160<X<240)$ iv) $P(X>220)$

    v) $P(X<180 \text{ or} X>220)$ vi) 10% of the values are less than what values of X?

11. The labor productivity indexes of Nepal are recorded as below:

| Sector | Year | | |
|---|---|---|---|
| | **2015** | **2016** | **2017** |
| Agriculture | 100 | 125 | 138 |
| Manufacturing | 100 | 60 | 53 |
| Community and Social service | 100 | 89 | 80 |

Does the labor productivity index vary due to the;

i) difference in the sector ii) difference in the time period?