PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BCom DEGREE EXAMINATION DECEMBER 2019
(Second Semester)

Branch - **COMMER (BUSINESS ANALYTICS)**

APPLIED BUSINESS STATISTICS - 1

Time: Three Hours   Maximum: 75 Marks
SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (10 x 1 = 10)

1   In the simultaneously toss of two perfect coins the probability of having at
     least one head is.

     (i) | (ii) i   (iii) | (iv) 1

2   If X is a life time of an equipment then X is a_____ . random variable.
     (i) Discrete   (ii) Continuous
     (iii) Both (a) & (b)   (iv) None of these

3   The mean of ^oisson distribution is 4, the standard deviation is
     (i) 2   (ii) 4   (iii) 8   (iv) 16

4   In binomial distribution the number of trial 'n' must be
     (i) Finite   (ii) infinite
     (iii) Finite (or) infinite   (iv) None of these

5   Sampling error will be decreasing when the sample size will
     (i) Increase   (ii) Decrease
     (iii) Constant   (iv) None of these

6   The standard error of the sample mean $\bar{x}$ is

     (i)   CT.Vn   (ii) $\dfrac{\sqrt{n}}{\sigma}$

     (iii)   ⊘   (iv) $\sigma + \sqrt{n}$

7   Probability of rejecting a lot when it is good leads to
     (i) Type -1 error   (ii) Type - II error
     (iii) Sampling error   (iv) Standard error

8   To test the equality of two population variances, can be tested by
     (i) t-test   (ii) F-test

     (iii) q -test   (iv) ANOVA

9   Ordinary sign test utilises
     (i) Poisson distribution   (ii) Binomial distribution
     (iii) Normal distribution   (iv) None

10   If n, and n_2 in Mann-Whitney test are large the variable u is distributed with
     mean

     (i)   (ii) $\dfrac{n_1 \sim\sim n_2}{2}$
              2

     (iii) $n_1 n_2$ tivl nin-.

SECTION - B (35 Marks!

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5x7 = 35)

11 a   State and prove multiplication theorem of probability.

OR

b   i) Define Mathematical expectation.

ii) An industrial salesman wants to know the average number of units he sells per sales call. He cheeks his past sales records and comes up with the

Sales in units	0	1	2	3	4	5
Probability	0.15	0.20	0.10	0.05	0.30	0.20

What is the average number of units he se Is, per sales call?

12 a   Define binomial distribution. Find its Mean and variance.

OR

b   Suppose on an average 1 house 1000 in a certain district has a fire during a year. If there are 2000 houses in that district, what is the probability that exactly 5 houses will have fire during the year?

13 a   Write a note on :
i) Population ii) Sample iii) Standard Error iv) Sampling Distribution

OR

b   Distinguish between point estimation and interval estimation.

14 a   A fertilizer mixing machine is set to give 12 kg of nitrate for every quintal bag of fertilizer. Ten 100 kg bags are examined. The percentage of nitrate is given below. 11,14,13,12,13,12,13,14,11,12
Is there reason to believe that the Machine is defective? (to.o5(9) = 2.26)

OR

b   500 apples are taken at random from a large basket and 50 are found to be bad. Estimate the proportion of bad apples in the basket ad assign limits with in which the percentage Most probably lies.

15 a   The following table give the classification of 100 workers according to sex and the nature of work. Test whether nature of work is independent of the sex of the workers.

	Skilled	Unskilled
Males	40	20
Females	10	30

OR

b   Describe Kruslcal - Wallis test.

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks (3 x 1 0 = 30)

16   There are three alternative proposals before a businessman to start a new project.
Proposal A: Profit of Rs.5 lakh with probability of 0.6
(or) a loss of Rs.80,000 with a probability of 0.4
Proposal B: Profit of Rs.10 lakh with a probability of 0.4
(or) a loss of Rs.2 lakh with probability of 0.6
    Proposal C: Profit of Rs.4.5 lakh with a probability of 0.8 (or) a loss of
^^^

17 Fit a Poisson distribution.

No.of Mistakes per page	~0~	1	2	3	4	5
No.of pages	142	156	69	27	5	1

18 Calculate the standard error of Mean from the following data showing the amusement paid by 100 firms in Kolkata on the occasion of Drug pooja.

Mid value (Rs.)	39	49	59	69	79	89	99
No.of firms	2	3		20	32	25	7

19 Two different types of drugs A and B were tried on certain patients for increasing weight. 5 persons were given drug A and 7 persons were given drug B. The increase in weight in pounds is given below.

Drug A	8	12	13	9	3		
Drug B	10	8	12	15	6	8	11

Do the two drugs differ significantly with regard to effect in increasing weight.

20 Describe KolMogrov - Smirnov test.

Z-Z-Z   END