



PBG-161100010303 Seat No. _____

B. B. A. (Sem. III) (CBCS) (W.E.F.-2016) Examination

November / December – 2018

Business Statistics

(New Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions :

- (1) All questions are compulsory.
- (2) Marks are indicated on right side.
- (3) Statistical tables will be given on request.

- 1 (a) State and prove addition rule of probability. 7
- (b) A box contains 20 electric bulbs, out of which 25% are defective. Three bulbs are taken at random from it. Find the probability that (1) all three are defectives (2) at least one is defective. 7

OR

- 1 (a) Explain the following terms : 7
Random experiment, sample space, mutually exclusive events.
- (b) If A , B and C are mutually exclusive and exhaustive events and $5P(A) = 6P(B) = 4P(C)$, then obtain $P(A \cup B)$ and $P(A' \cap B')$. 7

- 2 (a) State the properties of normal distribution. 7
- (b) A r.v. x has the following probability distribution : 7
- | | | | | | | | |
|----------|---|-----|---------------|----------------|-----|----------------|----------------|
| x | : | 0 | 1 | 2 | 3 | 4 | 5 |
| $P(x)$: | | P | $\frac{1}{5}$ | $\frac{1}{10}$ | P | $\frac{1}{20}$ | $\frac{1}{20}$ |
- (1) Find P and (2) Calculate mean and Variance.

OR

- 2 (a) Define mathematical expectation and state its properties. 7
- (b) For a normal distribution 10% values are less than 30 and 3% values are more than 62. Find mean and standard deviation of the distribution. 7

- 3 (a) State the properties and uses of binomial distribution. 7
 (b) Using Poisson distribution, find the expected frequencies 7
 for the following data :
- | | | | | | |
|-------|----|----|----|---|---|
| x : | 0 | 1 | 2 | 3 | 4 |
| f : | 42 | 36 | 14 | 6 | 2 |

OR

- 3 (a) State the properties and uses of Poisson distribution. 7
 (b) For a binomial distribution mean = 2 and variance = $\frac{6}{5}$, 7
 then find the probability of getting atleast three successes.
- 4 (a) What is correlation ? Explain its types. 7
 (b) Calculate the coefficient of rank correlation from 7
 the following data :
- | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|----|----|
| x : | 6 | 7 | 9 | 10 | 8 | 8 | 9 | 7 | 3 |
| y : | 30 | 34 | 36 | 37 | 34 | 34 | 35 | 36 | 29 |

OR

- 4 (a) Explain Scatter diagram method. 7
 (b) From the following data, find Karl Pearson's coefficient 7
 of correlation :
- | | | | | | |
|-------|-----|-----|-----|-----|-----|
| x : | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 |
| y : | 10 | 20 | 30 | 50 | 40 |

- 5 (a) Define the regression coefficients and state its properties. 7
 (b) From the following data obtain two regression lines : 7
- | | | | | | |
|-------|---|---|---|---|----|
| x : | 2 | 4 | 6 | 8 | 10 |
| y : | 5 | 7 | 9 | 8 | 11 |

OR

- 5 (a) Explain the difference between regression and correlation. 7
 (b) $4x = 5y + 33 = 0$ and $20x - 9y - 107 = 0$ are the two 7
 regression lines, $\sigma_x = 3$, then find \bar{x} , \bar{y} , r and σ_y .