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GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND ECONOMICS
PONDA - GOA
B.COM. CBCS (SEMESTER – IV) SUPPLEMENTARY EXAMINATION
DECEMBER 2020
BUSINESS STATISTICS - II

Duration: 2 hours

Marks: 40

- INSTRUCTIONS:** i) Attempt all questions.
ii) Figures to the right indicate full marks.
iii) Use of non – programmable calculator is allowed.
iv) Graph paper may be used wherever necessary.

Q 1. Answer the following: (Any **ten**) (10 x 2 = 20)

1. Draw a scatter diagram for the following data

| | | | | | | |
|---|---|---|----|---|----|----|
| x | 1 | 2 | 3 | 4 | 5 | 6 |
| y | 3 | 8 | 11 | 8 | 13 | 18 |

Do you think there is a correlation between x and y? If yes, is it positive or negative?

2. Distinguish between Simple and Multiple correlation.
3. If Spearman's coefficient of rank correlation is 0.6, the sum of the squares of the differences in ranks is 48, find the number of items in the group.
4. If the coefficient of correlation $r = 0.5$ and $b_{yx} = 1.5$, find b_{xy}
5. Define the terms 'Random experiment' and 'Event' with the help of an example.
6. If $\bar{x} = 52$, $\bar{y} = 12$, $\sigma_x = 7$, $\sigma_y = 12$, $r = 0.7$, obtain the regression equation of x on y.
7. For a bivariate data, $\bar{x} = 27.9$, $\bar{y} = 53.2$, $b_{yx} = -0.2$, $b_{xy} = -1.5$. Find the value of x when $y = 60$.
8. If a man purchases a raffle ticket he can win a first prize of ₹ 5000 or a second prize of ₹ 2000 with probabilities 0.001 and 0.003. What should be a fair price to pay for the ticket?
9. Two cards are drawn from a well shuffled pack of cards. Find the probability that exactly one king is drawn.
10. What is Stratified Sampling? When is it useful?
11. What is the probability of getting a black or red marble from a bag containing 30 black marbles and 20 red marbles?
12. If 5% of electric bulbs manufactured by a company are defective, find the probability that in a sample of 100 bulbs no bulb is defective. (Given $e^{-5} = 0.007$)

13. A coin is tossed 4 times. What is the probability of getting no heads?
14. A normal distribution has mean 28 and standard deviation 4. Find $P(x \geq 24)$.
(Area under the standard normal curve between $t = 0$ and $t = 1$ is 0.3413)
15. Form the forward difference table for the following data

| | | | | | | |
|------|------|------|------|------|------|------|
| f(x) | 3010 | 3032 | 3054 | 3075 | 3096 | 3118 |
|------|------|------|------|------|------|------|

16. Form the backward difference table for the following data

| | | | | | |
|------|----|----|----|----|-----|
| x | 10 | 20 | 30 | 40 | 50 |
| f(x) | 46 | 66 | 81 | 93 | 101 |

Q 2. Answer the following: (Any **four**)

(4 x 5 = 20)

1. Calculate the coefficient of correlation by Karl Pearson's method from the following data

| | | | | | |
|---|----|----|----|----|----|
| x | 5 | 9 | 13 | 17 | 21 |
| y | 12 | 20 | 25 | 33 | 35 |

2. The probability that a student passes in Physics is $\frac{2}{3}$ and the probability that he passes in both Physics and English is $\frac{14}{45}$. The probability that he passes in at least one subject is $\frac{4}{5}$. What is the probability that he passes in English?
3. The average test marks in a particular class are 79. Standard deviation is 5. If the marks are normally distributed, how many students in a class of 200 will get marks between 75 and 82?
(Area under the standard normal curve between i) $t = 0$ and $t = 0.6$ is 0.2257
ii) $t = 0$ and $t = 0.8$ is 0.2881)
4. Estimate the production for the year 2010 from the following data

| | | | | | |
|------------|------|------|------|------|------|
| Year | 2007 | 2008 | 2009 | 2010 | 2011 |
| Production | 8 | 18 | 28 | ? | 52 |

5. Using Lagrange's interpolation formula, find $f(4)$ from the following data

| | | | | |
|------|---|---|---|----|
| x | 0 | 1 | 2 | 3 |
| f(x) | 1 | 0 | 1 | 10 |

6. Find the regression equation of y on x from the following data

| | | | | | |
|---|----|----|----|----|----|
| x | 4 | 6 | 8 | 9 | 10 |
| y | 10 | 11 | 13 | 17 | 20 |

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