

B.C.A. DEGREE END SEMESTER EXAMINATION - OCTOBER 2024**SEMESTER 3 : MOBILE APPLICATIONS AND CLOUD TECHNOLOGY****COURSE : 19U3CRBCA7 : BASIC STATISTICS**

(For Regular 2023 Admission and Improvement/Supplementary 2022/2021/2020/2019 /2018/2017/2016 Admissions)

Time : Three Hours

Max. Marks: 75

PART A**Answer All (1 mark each)**

1. Find the variance of the wages of 9 workers given below: ₹310, ₹290, ₹320, ₹280, ₹300, ₹290, ₹320, ₹310, ₹280.
2. Which of the given sets are not an event of the sample space $S = \{a, 1, 2, 3, z\}$.
a) $\{a, z\}$ b) $\{1, 2, 3\}$ c) $\{\}$ d) $\{a, b\}$
3. Define quantity index numbers.
4. The heights of five runners are 160 cm, 137 cm, 149 cm, 153 cm and 161 cm respectively. Find the mean height per runner.
5. Find the range and coefficient of range of the following data.
63, 89, 98, 125, 79, 108, 117, 68
6. Which of these gives the empirical relationship between Mean, Median and Mode of a set of observations?
a) $\text{Mode} = 2\text{Mean} - 3\text{Median}$ b) $\text{Median} - \text{Mode} = \frac{2}{3}(\text{Mode} - \text{Mean})$
c) $\text{Mode} - \text{Mean} = 3(\text{Mean} - \text{Median})$ d) $\text{Mode} = 3\text{Median} - 2\text{Mean}$
7. Find the mode of the following data: 20, 14, 12, 14, 26, 16, 18, 19, 14
8. When a card is drawn from a well shuffled deck of playing cards, what is the probability of getting a black king?
9. Find the standard deviation of first 21 natural numbers.
10. What are unweighted index numbers?

(1 x 10 = 10)**PART B****Answer any 8 (2 marks each)**

11. The mean yearly salary of employees of a company was Rs.36,000. The mean yearly salaries of male and female employees were Rs. 40,000 and Rs. 30,000 respectively. Find the percentage of male and female workers in the company.
12. Distinguish between simple and weighted arithmetic mean.
13. Explain Standard Deviation.
14. What are the methods for finding trends?
15. A problem is given to three persons P, Q, R whose respective chances of solving it are $\frac{2}{7}$, $\frac{4}{7}$, $\frac{4}{9}$ respectively. What is the probability that the problem is solved?
16. A coin is thrown 3 times. What is the probability that at least one head is obtained?
17. Obtain the coefficient of quartile deviation for the following data:
Class: 0-10 10-20 20-30 30-40 40-50 50-60 60-70
Freq: 5 9 20 31 18 11 6

18. **State and prove Multiplication theorem for three events.**
19. **Name the different tests on index numbers.**
20. **What is Wholesale price index number?**
21. Find the range of the following data. Also find its coefficient measure.
 Class: 5-15 15-25 25-35 35-45
 Freq: 5 15 12 4

22. **What are the properties of arithmetic mean?**

(2 x 8 = 16)

PART C

Answer any 5 (5 marks each)

23. Obtain the first and third quartiles for the following data
 Mid value of the classes: 5 15 25 32 45 55 65
 Frequency: 5 9 20 31 18 11 6
24. **Show that Fisher's index number satisfies both time and factor reversal test.**
25. **Explain the interrelationship between the partition values.**
26. **A box contains 5 red balls, 6 whites balls and 3 blue balls. Two balls are randomly chosen from the box. Find the probabilities of**
 1)The balls are red 2) the balls are 1 white and 1 red. 3) the balls are blue.
27. **The contents of two boxes are as follows:**
Box 1: 5 black, 4 white and 3 red balls.
Box 2: 7 black and 5 whites balls. A box is selected as random and two balls are drawn from it. What is the probability that 1 is black and the other one is white.
28. Distinguish between correlation and regression.
29. What is Box- Whisker plot?

(5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

30. **A teacher asked the students to complete 60 pages of a record note book. Eight students have completed only 32, 35, 37, 30, 33, 36, 35 and 37 pages. Find the standard deviation of the pages yet to be completed by them.**
31. **i) Define conditional probability and state multiplication theorem on probability**
ii) Given $P(A)=0.5$. And $P(A \cup B)= 0.7$. Find $P(B)$ if
a) A and B are independent.
b)A and B are mutually exclusive.
32. Calculate mean, median and mode for the following data

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|-----------|------|-------|-------|--------|
| class | 2- 4 | 4 - 6 | 6 - 8 | 8 - 10 |
| frequency | 3 | 4 | 2 | 1 |

33. **Calculate the cost of living index numbers for the year 2005 related to 2000 using aggregate expenditure method.**

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|--------------------------------|----------|----------|----------|----------|-----------|----------|
| Articles: | A | B | C | D | E | F |
| Base year quantity: | 3 | 2 | 6 | 4 | 3 | 5 |
| Base year cost/unit: | 5 | 6 | 4 | 7 | 6 | 8 |
| Current year cost/unit: | 6 | 5 | 7 | 8 | 10 | 9 |

(12 x 2 = 24)