

B C A DEGREE END SEMESTER EXAMINATION : OCTOBER 2022
SEMESTER 3 : MOBILE APPLICATIONS AND CLOUD TECHNOLOGY
COURSE : 19U3CRBCA7 : BASIC STATISTICS

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

Time : Three Hours

Max. Marks: 75

PART A

Answer All (1 mark each)

1. When a card is drawn from a well shuffled deck of playing cards, what is the probability of getting a black king?
2. Find the arithmetic mean of first n natural numbers.
3. If the mean of 9, 8, 10, x, 12 is 15, find the value of x.
4. What is the median of the following ungrouped data?

Salary(in Rs)	150	100	80	200	130
No.of workers	24	70	40	15	10
5. Explain simple aggregate method?
6. If the minimum value in a set is 12 and its range is 8, what is its maximum value?
7. Define Laspeyer's Price index numbers.
8. In a random experiment of selecting a red bead from a bag with five beads of colours red, white, blue, green and yellow, probability of "getting a red bead" is ?
9. Prove that for two variables X and Y , Pearson's correlation coefficient r_{xy} lies in the interval $[-1,1]$.
10. Define Quartile deviation.

(1 x 10 = 10)

PART B

Answer any 8 (2 marks each)

11. In a firm a unit work is completed by A, B, C, D, and E in 4 hours, 5 hours, 6 hours, 8 hours and 10 hours respectively. What is the average number of units of work completed per hour?
12. 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
13. Explain Quartile deviation.
14. What are the properties of a good measure of dispersion?
15. 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.
16. An insurance company insured 3000 scooter drivers, 2000 car drivers and 5000 truck drivers. The probability of accident by the drivers of these types of vehicles is 0.04, 0.02 and 0.03 respectively. One of the insured people meets with an accident. What is the probability that he is a truck driver?
17. Explain Quantity Index numbers.

18. A driver has to drive 90 miles at an average 30 mph. He could drive only at the rate of 20 mph for the first half of the journey. What must be his average speed for the second half of the journey so as to make the average speed of the entire journey 30 mph?
19. What is Factor reversal test?
20. What is weighted average of relatives?
21. State and prove addition theorem for two events.
22. Distinguish between Mutually exclusive and Exhaustive events with examples. (2 x 8 = 16)

PART C

Answer any 5 (5 marks each)

23. Explain Regression Coefficient.
24. What is Box- Whisker Plot?
25. Explain the uses of cost of living index numbers.
26. A train covers the first 16 miles at an average speed of 20 mph, another 20 miles at 40 mph and the last 10 miles at 15 mph. Find the average speed of the entire journey.
27. Calculate Mode of the following data:

X:	0-10	10-20	20-30	30-40	40-50	50-60
Frequency:	6	10	15	20	12	7
28. If A and B are independent., show that A and the complement of B are independent.
29. 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. (5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

30. i)State and prove the multiplication theorem on probability.
 ii) Define independence of events. Show that pair wise independence need not imply their mutual independence.
31. For a group of 100 candidates the mean and standard deviation of their marks were found to be 60 and 15 respectively. Later on it was found that the scores 45 and 72 were wrongly entered as 40 and 27. Find the correct mean and standard deviation.
32. The lengths of a number of leaves collected for a project are recorded. Estimate the mean , median and mode.

Length (cm)	2 – 5	6 – 10	11 – 15	16 – 25
Frequency	8	20	42	12
33. Fit a straight line trend for the following data by the method of least squares and estimate the production of 2008.

Year	2000	2001	2002	2003	2004	2005	2006
Production	50	47	52	45	48	55	60

(12 x 2 = 24)