

8. (a) A box contains 6 red, 4 white and 5 black balls. A person draws 4 balls from the box at random. Find the probability that among the balls drawn, there is at least one ball of each color.
- (b) In a test, a candidate either guesses or copies or knows the answer to a multiple choice question with four choices. The probability that he makes a guess is $1/3$ and the probability that he copies the answer is $1/6$. The probability that his answer is correct, given that he copied it is $1/8$. Find the probability that he knew the answer to the question, given that he correctly answered it. 6, 6

7/12/19 CW

This question paper contains 8 printed pages]

Roll No.

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S. No. of Question Paper : 8601

Unique Paper Code : 32371101 J

Name of the Paper : Descriptive Statistics

Name of the Course : B.Sc. (Hons.) Statistics

Semester : I

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt 6 questions in all.

Question No. 1 is compulsory.

Attempt 5 more questions,

selecting at least 2 questions from each section.

Use of simple calculator is allowed.

1. (a) Fill in the blanks :

(i) The geometric mean of 3, 9, 27 and 81

is

- (ii) The total number of class frequencies of all orders, for n attributes is
- (iii) The standard deviation is the least value of
- (iv) If γ_2 is greater than zero, the distribution is
- (v) A letter is selected from the word 'UNIVERSITY'.
The probability that it is a vowel is
- (b) Mean, median and mode of 10 numbers are 50, 52 and 55 respectively. The value of the largest number is 100. It was later found that it is actually 110. Find the corrected mean, median and mode.
- (c) Let $P(E) = 0.7$, $P(F) = 0.5$ and $P(\bar{E} \cap \bar{F}) = 0.1$. Find $P(E \cap F)$ and comment on the independence of the events E and F .

7. (a) Let X_1 and X_2 be two independent random variables having the same distribution with p.d.f.

$$f(x) = e^{-x}, \quad x \geq 0.$$

- (i) Find the joint p.d.f. of (X_1, X_2) .
- (ii) Find joint p.d.f. of transformed variables :

$$Y_1 = X_1 + X_2 \text{ and } Y_2 = \frac{X_1}{X_1 + X_2},$$

- (iii) Comment on the independence of Y_1 and Y_2 .
- (b) The odds against the wife who is 40 years old living till she is 70 is 8 : 5 and odds against her husband now 50 living till he is 80 is 4 : 3. Find the probability that 30 years hence,
- (i) both will be alive,
- (ii) only one will be alive, and
- (iii) at least one will be alive.