

- Q. 2(a) State the measures of dispersion that you have studied. Which measure is better? Why? 7
- (b) Mean and standard deviation of 100 observations are 40 and 10 respectively. Later it was found that two observations 30 and 70 were taken wrongly as 3 and 27 respectively. Compute correct mean and standard deviation 8
- Q. 3(a) Give mathematical, statistical and axiomatic definitions of probability and with usual notations prove that: 7
- (i)  $P(A) + P(A') = 1$  and  
(ii)  $0 \leq P(A) \leq 1$
- (b) If  $P(A_1) = 2P(A_2) = P(A_1/P(A_2)) = 0.4$  then find following probability: 8
- (i) Only  $A_1$  happen  
(iii) Both  $A_1$  and  $A_2$  happen  
(iv) At least one of them happens  
(v) Neither  $A_1$  nor  $A_2$  happens
- OR**
- Q. 3(a) With usual notations, state and prove addition theorem of probability considering two joint events 7
- (b) In a box there are 3 white and 5 red balls, in second box there are 6 white and 4 red balls and in third box there are 7 white and 2 red balls. Two balls are drawn at random from a box, find the probability to get one white and one red ball 8
- Q. 4(a) Give conditions, p.d.f. properties and uses of Binomial, Poisson and Normal distribution of probability 7
- (b) Fit Poisson distribution to the following data and compute 8