MALPRACTICE

➢ DON'T WRITE ANYTHING ON THE QUESTION PAPER

...EVEN IN 'OFF' POSITION IS TREATED AS EXAM

Max. Mark

General Instruction:

Statistical Tables are permitted

Answer ALL Questions

(10 X 10 = 100 Marks)

1. (a) Eight members are to be selected from a group of nine males and seven females. In how many ways will the members with at most three females and at least four males be selected? **[10]**

   (b) The probabilities of three students to solve a problem in mathematics are 1/2, 1/3, and 1/4 respectively. What is the probability that the problem will be solved.

2. Three machines I, II, III produce 40%, 30% and 30% of the total number of items produced in a factory. The respective percentage of defective items of these machines are 4%, 2%, 3%. If an item is selected at random, find the probability that the item is defective? **[10]**

3. A random variable has X has following probability distribution **[10]**

x	0	1	2	3	4	5	6	7
$P(X=x)$	0	K	$2k$	$2k$	$3k$	K^2	$2k^2$	$7k^2+k$

   (a) Find the value of K

   (b) Evaluate $P(X<6)$, $P(X\geq 6)$ and $P\ (0<X<5)$

   (c) Determine $E(3X-4)$ and $var(3X-4)$

   (d) $P\ [(1.5<X<4.5)/(X>2)]$.

4. If X has the probability density function $f(x)=\begin{cases} ke^{-3x}; & x>0 \\ 0 ; & \text{otherwise} \end{cases}$. **[10]**

   Find the value of k , $P(0.5<X<1)$ and the mean of X.

5. (a) Six dice are thrown 729 times. How many times do you expect atleast 3 dice show 5 or 6? **[10]**

   (b) A component has an exponential time to failure distribution with mean of 10,000 hours. The component has already been in operation for its mean life. What is the probability that it will fail by 15,000 hours?

6. The average percentage of marks of candidates in an examination is 45 will a standard deviation of 10 follows normal distribution, the minimum for a pass is 50%. If 1000 candidates appear for the examination, how many can be expected pass marks. If it is required, that double that number should pass, what should be the average percentage of marks? **[10]**

7. Calculate the mode for the following data : **[10]**

Class Interval	130-134	135-139	140-144	145- 149	150-154	155-159	160-164
Frequency	5	15	28	24	17	10	1

8. Calculate the Mean and S.D. for the following data: **[10]**

Daily wages	40-50	50-60	60-70	70-80	80-90	90-100
No. of workers	10	15	25	35	8	7

9.a) Explain primary data and secondary data? Explain the methods involved in statistics? **[10]**

OR

9.b) Evaluate the double integral $\int_0^1 \int_x^{\sqrt{x}} xy(x+y)dxdy$. **[10]**

10.a) The following table gives the distribution of weekly wages of 600 workers in a certain factory: **[10]**

Weekly wages	Below 75	75-150	150-225	225-300	300-375	375-450	450 and above
No. of workers	60	170	200	60	50	40	20

Draw 'Less than' and 'More than' ogive curves for the above data. Also find the median wage.

OR

10.b) Evaluate the triple integral $\iiint(x+y+z)dxdydz$ over the surface S bounded by the planes $x=0, y=0, z=0$ and $x+y+z=1$. **[10]**

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