

4. Two horses A and B were tested according to the time (in seconds) to run a particular track with the following results.

Horse A	28	30	32	33	35	29	34
Horse B	29	30	30	24	27	29	

Test whether the two horses have the same running capacity. [10]

OR

5. Given below is the number of male births in 1000 families having five children

Male Children	0	1	2	3	4	5
No. of Families	40	300	250	200	30	180

Test whether the given data is consistent with the hypothesis that the binomial law holds if the chance of a male birth is equal to that of female birth. [10]

6. In a city A 20% of a random sample of 900 school boys had a certain slight physical defect. In another city B 18.5% of a random sample of 1600 school boys had the same defect. Is the difference between the proportions significant at 0.05 level of significance? [10]

OR

- 7.a) A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40. Test whether the sample has come from a population with mean 38.

- b) The standard deviations of two samples are 8 and 12. Samples sizes are 200 and 100. Find the standard error of the difference between the means and also find the confidence interval at 0.05 level. Means of the sample are 60, 50. [5+5]

8. Fit a parabola $y = a + bx + cx^2$ to the following data.

x	1	2	3	4	5	6	7
y	2.3	5.2	9.7	16.5	29.4	35.5	54.4

[10]

OR

9. Solve the system of equations using Gauss Seidal method
 $x + 5y + 2z = 7$, $7x - y + z = 2$, $x + 2y + 5z = 9$

[10]

10. Given that $\frac{dy}{dx} = e^x - y$ and $y(0)=1$. Compute $y(0.1)$ and $y(0.2)$ using Picard's method.

[10]

OR

11. Use Runge Kutta fourth order method to evaluate y at $x= 0.1$ and 0.2 given that

$$\frac{dy}{dx} = x + y, y(0) = 1$$

[10]

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