HG(3) - Math (8) Bio-Math (Sc. & Arts)

2021

Time : 3 Hours

Maximum Marks : 70

Candidates are required to give their answers in their own words as far as practicable.

Answer any five questions.

1. Explain the process and obtain the difficulties equation for the flow of blood in arteries

2. Discuss the least square method for measurement of growth and decay of biological Species .

3. Find the logistic equation for single species population model and hence obtain solution for it .

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4. Obtain the differential equation for prey-Predator model and hence find its solution

5. If for a given species birth rate $= \left(\frac{1}{2} - \frac{1}{800}p\right) P$ and death rate $= \left(\frac{1}{4} + \frac{1}{200} P\right) P$ find the population N as a function of time

6. Discuss the formulation and solution of Difference equation of a biological species

7. What do you mean by infections disease? Find the differential equation for spread of Infections disease.

8. Discuss the relationship between health habits and longevity in late adulthood.

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9. What do you mean by air pollution ? What are the primary and Secondary pollutants ? Discuss the methods to reduce the air pollution.

10. Number of female in a village is 500. 200 of them are below 5 years, 100 of them are between 5 to 15 years, 100 of them are between 15 to 30 years , 50 of them are between 30 to 50 years and remaining 50 are of above 50 years of age. If all female of less than 15 years of age are married and the growth equation of population is given by

$$P(n+1) = 0 \times Pn_2 + \frac{1}{2}Pn_3 + \frac{1}{5}Pn_4 + \frac{1}{20}Pn_5$$

$$P(n+1)_2 = \frac{1}{2} Pn_1$$

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$$P(n+1)_3 = Pn_2$$

$$P(n+1)_4 = \frac{1}{2}Pn_3$$

$$P(n+1)_5 = Pn_3$$

Find the population of female in the village after second generation.

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