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M.Sc. Semester II Examination (2022)
Biotechnology
Course/Paper – IX (Computer Application and Biostatistics)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin

Group-A

Answer any two questions

1. A) Write a C Program to convert Celsius to Fahrenheit.
B) What is an array ? 8+2=10
2. A) Write a C Program to check a given integer is Prime Number or not.
B) What are the basic data types associated with C ? 7+3=10
3. A) Create your homepage using HTML. It should contain link to favourite sites and image of the owner of the homepage (Assume image is available in the same directory.).
B) Create a table using HTML containing two rows and two columns. 7+3=10
4. A) Write a JavaScript to find the maximum of three given integers.
B) Write a C-program to find the variance of a given set of numbers. 4+6=10

Group-B

Answer any two questions

1. A) What do you mean by statistical hypothesis testing? Define null and alternate hypothesis.
B) Mention the aim and utility of ANOVA test. Define 2-way-ANOVA.
C) How correlation differs from regression? Which statistical expression is indicated by R^2 value in regression analysis? 3+4+3=10
2. A) What is "paired t test"? What is the parameter by which one can decide whether the t test will "paired t test" or "non-paired t test"?
B) What is the utility of "one sample Z test"? Define the phenomenon "5% level of probability" for rejection of a null hypothesis in "Z test" 5+5=10
3. A) Define "sum rule" and "product rule" in probability. How can you apply both the rules at the same time in a Mendelian dihybrid cross?
B) What will be the probability of different kinds of gametes produced by the F_1 plants generated from a cross between a pure strain of tall pea plant with a pure strain of dwarf pea plant? 8+2=10
4. A) What is the utility of Chi square test?
B) In a typical Mendelian experiment, a Tall pea plant with Red flower was crossed with a Dwarf pea plant with White flower. The F_1 plants generated were all Tall plants with Red flower. The F_1 plants were crossed with the parental plant (Dwarf with white flower). The generated progeny showed a population of 35 Tall plants with Red flower, 39 Tall plants with white flower, 29 dwarf plants with red flower and 30 dwarf plants with white flower. Comment on the inheritance pattern of the genes associated with plant height and flower colour. (chi square value at 5% level for df 3 is 7.82) 2+8=10