

M.Sc. Examination, 2017
Semester-II
Biotechnology
Course – IX
(Computer Applications and Biostatistics)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin.

1. Create an HTML page for some study material that you are preparing for your students. The page should contain the followings:
- Heading, - At least one list, -At least one image, -A table, Text in different faces (Italics, bold etc.) and colours. 2+1+2+2+2+1=10
2. (a) Why do you need compiler?
(b) What is a variable in C?
(c) What does “fgcts (bhoot, 80, stdmin)” do?
(d) Write an SQL command to create a table called “bhombal” with the following columns:
i) An integer id number
ii) A text column containing the name
iii) A floating number column containing the height in metres
iv) A text column for comments
(e) Write query to display all the values stored in the above table. 1+1+2+4×1+2=10
3. (a) Write a C programme to do the following:
- Read in two floating point numbers x and y
- calculate $x^2 + \sin(x)$ and display the result
(b) Write the compilation command for the above (Note: math library ins needed)
(c) Explain the syntax of a “for loop”. 2+3+2+3=10
4. What do you mean by Standard Deviation? How it is calculated? How do standard errors differ from standard deviation? The mean height of a sample of 100 wheat plants is 30 cm. It is likely that this is a random sample from a population having mean height 29 ± 1 cm. Is the sample of wheat plants really representing the population? Statistically test your hypothesis at 5% level of significance (Z_α at 0.05=1.96) 1+1+1+7=10
5. (a) Give a comparative account on the objectives of Z-test, t-test and ANOVA. In a dihybrid experiment a red flowered tall plant (RRTT) is crossed with a white flowered dwarf plant (rrtt). All the F1 plants were red flowered and tall, on selfing of these F1 plants the following type of F2 plants were phenotyped.

P.T.O.

(2)

- (b) Red Tall-150, Red dwarf-25, White Tall-35, White dwarf-17.

Comment on the assortment of T and R genes. (Chi-square value at 3 degree of freedom is 7.8) 3+7=10

6. (a) Human have 23 pairs of chromosome. How many different gametes are possible for the individual to produce by independent assortment of chromosomes law?
- (b) A DNA segment is of 100 bp long. How many different sequences are possible?
- (c) A cross was made between plants heterozygous for three different genes, each assorting independently. Find out the probability of following genotypes:
- (i) Homozygous recessive
 - (ii) Homozygous dominant
 - (iii) Heterozygous dominant
- (d) How many number of different types of gametes, genotypes and phenotypes can be produced from *Arabidopsis* and *Drosophila*? (Assume one gene from one homologous chromosome). 1+1+3+5=10
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