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UG/5th Sem/Biot(H)/T/19

2019

B.Sc. (Honours)

5th Semester Examination

BIOTECHNOLOGY

Paper - DSE1T

Full Marks : 40

Time : 2 Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

[Bioinformatics]

Group - A

1. Answer any *five* questions : 5×2=10
- (a) Define Bioinformatics. Who coined the name of Bioinformatics ? 1+1
- (b) What are PAM and BLOSUM ? 1+1
- (c) What is FASTA ? 2

[Turn Over]

(2)

- (d) State the importance of Sequence Information Resources. 2
- (e) What is the significance of e.value in BLAST ? 2
- (f) Write down the three steps of Bioinformatics. 2
- (g) What is primary database ? Give two examples. 1+1
- (h) What do you mean by open reading frames ? Give two examples of whole genome database. 1+1

Group - B

2. Answer any *four* questions from the following : 4×5=20

- (a) Define biological database. Write down the objectives of biological database construction. Differentiate among primary, secondary and specialized database. 1+1+3

(3)

- (b) Define gap opening penalty and gap extension penalty with diagram. Write down the importance of pairwise sequence and multiple sequence. 2+3
- (c) What do you mean by Open Reading Frame ? How will you detect the Open Reading Frames ? 2+3
- (d) Write down the basic principle of mass spectrometry. Write the basic principle of PCR. 2+3
- (e) Find out the gap between following nucleotide sequence using dot plot. 2+3

AGTTCA and AGTCA

- (f) Write the mechanism of restriction digestion with example. Write the basic principle of blot techniques. 2+3

[Turn Over]

(4)

Group C

3. Answer any *one* question from the following :

1×10=10

(a) What is protein data bank ? Explain the terms similarity, identity and Homology with example. Define orthologous and paralogous sequence.

5+5

(b) Write the different steps for the preparation of chromatogram with example.

(5)

[Medical Microbiology]

1. Answer any *five* questions : 5×2=10
- (a) What is septic shock ?
- (b) Write down the Gram nature of *Vibrio cholerae* and *Mycobacterisum tuberculosis*. 1+1
- (c) Why *Clostridium tetani* is dangerous ?
- (d) What are the symptoms of *Haemophilus influenzae* infection ?
- (e) Write the name of four normal flora of human. $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}$
- (f) What is the nature of genomic material of Rhabdovirus and HIV ? 1+1
- (g) What are dermatophytes ? Cite an example. 1+1
- (h) Write the examples of two blood-borne infections.

[Turn Over]

(6)

2. Answer any *four* questions : $4 \times 5 = 20$

- (a) What is nosocomial infection ? Write two examples. Define septicemia. $2+1+2$
- (b) Write the laboratory diagnosis and pathogenesis of *Corynebacterium diphtheriae* infection. What preventive measures can we take to prevent *Salmonella typhi* infection ? $(2+2)+1$
- (c) State the effect of cholera toxin in human. What type of toxin it is ? $4+1$
- (d) What diseases are caused by Reovirus and Picorna virus ? What physiological consequences do take place in human in infection with pox viruses? $(1+1)+3$
- (e) Write a note on Cryptococcus infection. 5
- (f) Write the treatment and preventive measures of amoebiasis and candidiasis. What is virulence factor ? $(2+2)+1$

(7)

3. Answer any *one* question from the following :

1×10=10

(a) What is meant by biosafety level ? State the different types of biosafety levels. What is exotoxin and endotoxin ? Cite examples.

2+4+(2+2)

(b) Write four salient features of Histoplasma infection. *Escherichia coli* is “opportunistic pathogen” — Justify with reasons. Why HIV infection has no treatment to cure ?

3+3+4
