NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Science
Program/s: BMS
Year: 3ʳᵈ   Semester: 7th
Examination: End Semester Examination
Examination year: December - 2021

Course Code: BM405   **Course Name:** Bioinformatics and Database Management
Date: 07/12/2021   **Total Marks:** 40
Time: 02.30pm to 4.30 pm   **Total Pages:** 04
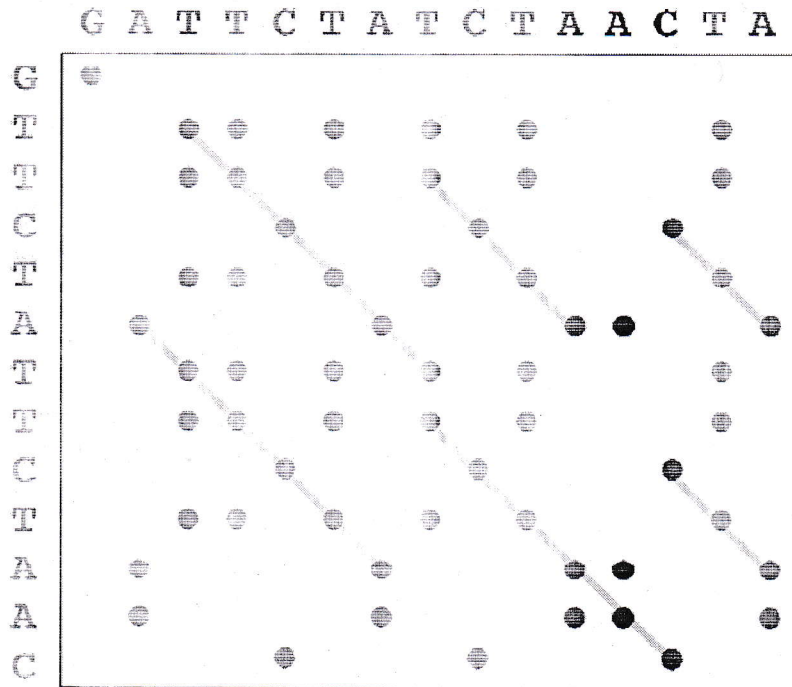

Instructions:

➔ *Write each answer on a new page.*
➔ *Draw the diagram wherever necessary*
➔ *Stick to the Word Limit given in the Questions.*

Q. No.	Details	Marks	CO	BTL
Q.1	**Do as Directed.**	1x8=8	CO1	BTL1
	1. Which of the following scientists created the first Bioinformatics database?		CO2	BTL2
	a. Dayhoff		CO3	BTL3
	b. Pearson		CO4	BTL4
	c. Richard Durbin			
	d. Michael.J.Dunn			
	2. Proteomics refers to the study of _____			
	a. Set of proteins in a specific region of the cell			
	b. Biomolecules			
	c. Set of proteins			
	d. The entire set of expressed proteins in the cell			
	3. Which of the following does not describe local alignment algorithm?			
	a. In traceback step, beginning is with the highest score, it ends when 0 is encountered			
	b. First row and first column are set to 0 in initialization step			
	c. Score can be negative			
	d. Negative score is set to 0			
	4. Which of the following is incorrect regarding sequence homology?			
	a. It is an important concept in sequence analysis			

b. When two sequences are descended from a common **evolutionary** origin, they are said to share homology

c. Two sequences can homologous relationship even if have do not have common origin

d. When two sequences are descended from a common **evolutionary** origin, they are said to have a homologous relationship

5. The shotgun approach _____ sequences clones from _____ of cloned DNA.

   a. randomly, both ends

   b. specifically, both ends

   c. specifically, one end

   d. randomly, one end

6. Role of clinical data coordinator is

   a. Coding adverse event, medical history

   b. Create database and edit check

   c. Design crf

   d. Tracking receipt of crf pages

7. Case report form should include

   a. Database structure specification

   b. Sop for data management processes

   c. Description of how data will be reviewed

   d. None of the above

8. Database design-

   a. Occurs before case report form design

   b. Occurs after crf design

   c. Occurs before protocol design

   d. Occurs after database validation

Q.2	Answer the following (20-30 words only per answer)	2x4=8	CO 1	BTL1
	1. What is an annotation? State a typical example of it.			BTL2
	2. What are archival databases? State two advantages of it.		CO2	
	3. Enlist the importance of local and global alignment.		CO3	BTL3
	4. What are the advantages of electronic data collection vs traditional data collection methods?		CO4	BTL4

| Q.3 | Answer the following -- *any four* (max 350 words per answer)
1. What is Gene Ontology. Discuss the different attributes of it at three different levels.

2. Explain the principle of Next Generation Sequencing. How is better than other sequencing methods

3. citing suitable examples, elucidate the multi-dimensional nature of bioinformatics.

4. Identify the difference between the two columns and state which of the two is correctly designed of the two and why

Date of visit: _____   Date of visit: ☐☐/☐☐ ☐☐☐☐
                     (DD/MM/YYYY)
Blood pressure: ___ . ___ Blood pressure ☐☐☐ ☐☐☐
                     (mmHg)
Pulse: _____   Pulse: ☐☐☐ (beats/min)
Temperature: _____ Temperature: ☐☐.☐ (°C)
Respiration: _____   Respiration: ☐☐ (/min)

5. Why do you thing clinical database management is critical to good clinical practice? Elaborate citing suitable examples. | 3x4=12 | CO1

CO2

CO3

CO4 | BTL1

BTL2

BTL3

BTL4 |
| Q.4 | Answer the following (max 450 words per answer).

1. A Scientist was deducing a sequence from the *D melanogaster*. Further, it was subjected to sanger sequencing. The autoradiogram obtain is shown in the given figure. Being a Bioinformatician help the scientist to deduce the sequence and state the importance of technique. | 4x3=12 | CO1

CO2

CO3

CO4 | BTL1

BTL2

BTL3

BTL4 |

2. The

G A T T C T A T C T A A C T A

following diagram shows the sequence and the similarity between them is shown as (•). On the basis of this answer the following:

a. Which method is applied for the alignment process?

b. Which type of algorithm is used for creating the matrix.

c. Deduce the sequence obtained from this matrix.

3. Design a standard template of a CRF form consisting of basic minimum information.