Name: Enrolment No:	

UPES

End Semester Examination, December 2024

Set 2

Course: Introduction to IT Systems for Health Sciences — **Semester: 1st**

Program: B. Tech. (Biotechnology) and (Food Technology) — **Duration: 3 Hours**

Course Code: HSBT1003 — **Max. Marks: 100**

Instructions: Read all questions carefully.

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	Which of the following best describes ROM? a) Volatile memory used for temporary storage b) Non-volatile memory used to store firmware c) High-speed memory used for cache d) External memory used for backups	1.5	CO1
Q 2	What type of data is a collection of social media posts? a) Structured b) Semi-structured c) Unstructured d) Relational	1.5	CO2
Q 3	What does ACID stand for in database systems? a) Atomicity, Consistency, Isolation, Durability b) Accuracy, Control, Integrity, Data c) Active, Consistent, Inactive, Durable d) Automated, Consistent, Integrity, Data	1.5	CO2
Q 4	What does the 'A' in BASE properties stand for? a) Always Available b) Available c) Atomicity d) Automation	1.5	CO2
Q 5	In an ER diagram, a diamond shape represents: a) Entity b) Attribute c) Relationship d) Key	1.5	CO3
Q 6	In-memory processing refers to: a) Processing data directly from disk storage b) Processing data directly from RAM c) Processing data from a network drive	1.5	CO3

	d) Processing data from cache memory		
Q 7	What is the purpose of a pivot table in Excel? a) To create charts b) To summarize and analyze data c) To merge cells d) To apply formulas	**1.5**	**CO4**
Q 8	The primary goal of SwissProt is to: a) Provide annotated protein sequences b) Provide uncurated genome sequences c) Visualize 3D structures of proteins d) Store metabolic pathways	**1.5**	**CO3**
Q 9	Which of the following is a protein structure database? a) GenBank b) SwissProt c) PDB d) RefSeq	**1.5**	**CO3**
Q 10	What is the first step in the software development process? a) System testing b) Information gathering c) Software deployment d) Project management b) Information gathering	**1.5**	**CO4**
Q 11	Which symbol in DFD represents a process? a) Rectangle b) Circle c) Arrow d) Diamond	**1.5**	**CO4**
Q 12	The purpose of input/output design in a software system is to: a) Maximize the storage space b) Define how the system interacts with users c) Define the hardware interface d) Store data efficiently	**1.5**	**CO3**
Q 13	The main function of data flow diagrams (DFD) is to: a) Display data storage methods b) Show how data moves through a system c) Outline the timeline of a project d) Generate database structures	**1.5**	**CO4**
Q 14	A feasibility analysis examines which of the following aspects of a project? a) Usability only b) Technical, economic, legal, and operational c) Coding speed d) Testing methods	**1.5**	**CO4**
Q 15	What type of data does a CDS typically handle?	**1.5**	**CO5**

	a) Image data b) Chromatographic data c) Genomic data d) Meteorological data		
Q 16	Which of the following is a key feature of TIMS? a) Data visualization tools b) Large-scale textual data management c) Chemical reaction modeling d) Image processing	**1.5**	**CO5**
Q 17	What is a core component of LIMS? a) Peak integration algorithms b) Sample management and tracking c) Cloud storage d) DNA sequencing	**1.5**	**CO5**
Q 18	In Tableau, a line chart is most effective for: a) Time-series data b) Comparing different categories c) Displaying geographic locations d) Showing parts of a whole	**1.5**	**CO5**
Q 19	What is Tableau primarily used for? a) Word processing b) Data storage c) Data visualization d) Operating systems	**1.5**	**CO5**
Q 20	Which of the following is used for visualizing task dependencies in a project? a) Gantt Chart b) Pie Chart c) Line Chart d) Venn Diagram	**1.5**	**CO3**
	Section B **(4Qx5M=20 Marks)**		
Q 1	Describe the concept of a process in an operating system. Explain the different states a process can be in during its lifecycle?	**5**	**CO5**
Q 2	Describe the function of a dashboard in Tableau and its importance in data presentation.	**5**	**CO4**
Q 3	Define a Data Flow Diagram (DFD) and explain its importance in information system design.	**5**	**CO3**
Q 4	Discuss the major hardware components (CPU, memory, input/output devices) and software components (operating systems, applications), and how they work together.	**5**	**CO1**
	Section C		

(2Qx15M=30 Marks)			
Q 1	Create an ER (Entity-Relationship) diagram for a student management system. Explain the entities, relationships, and attributes involved in the diagram, and describe how it helps in database design.	**15**	**CO4**
Q 2	How do modern-day supercomputers and quantum computing differ in their technological capabilities, and what are their current applications and prospects in fields such as drug discovery, climate modeling, and artificial intelligence?	**15**	**CO2**
Section D **(2Qx10M=20 Marks)**			
Q 1	What is the process of information gathering in the context of designing a genome databank? Discuss the challenges and methodologies used.	**10**	**CO3**
Q 2	Discuss the role of LIMS in preclinical development. How do they contribute to the analysis and validation of experimental data?	**10**	**CO5**