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

<table>
<tr><td colspan="4" align="center">Section D
(2Qx10M=20 Marks)</td></tr>
<tr><td>Q 1</td><td>What is the process of information gathering in the context of designing a genome databank? Discuss the challenges and methodologies used.</td><td>10</td><td>CO3</td></tr>
<tr><td>Q 2</td><td>Discuss the role of LIMS in preclinical development. How do they contribute to the analysis and validation of experimental data?</td><td>10</td><td>CO5</td></tr>
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