


Name:			
Enrolment No:			
<b>UPES</b> <b>End Semester Examination, December 2024</b>			
Course: Data Management Technologies		Duration : 3 Hours	
Semester: V Sem		Max. Marks: 100	
Program: BMSC Clinical Research			
Course Code: HSCR3020P			
<b>Instructions: Attempt all sections</b>			
S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	Data Management deals with _____ for business decisions.	1.5	CO1
Q 2	Name the types of Data Management techniques.	1.5	CO1
Q 3	DM is the practice of collecting, _____, _____ and storing of organization's data.	1.5	CO1
Q 4	Data Preparation is the _____ step of DM Techniques.	1.5	CO1
Q 5	ETL stands for _____.	1.5	CO1
Q 6	Data Warehouses are (write the correct option): a. A storage facility where data disks are kept b. Cold storage for computers c. A place to consolidate various data sources. d. None of these	1.5	CO1
Q 7	A Data Management Plan consists of: a. Statement of Purpose b. Data Definition c. Data collection and access d. All of the above	1.5	CO1
Q 8	Research data limitations are a crucial part of DMP. True or False.	1.5	CO1
Q 9	Data integrity means maintaining data against _____ and _____ errors.	1.5	CO1
Q 10	_____ automates Clinical research by transforming the way data is collected.	1.5	CO2
Q 11	System backups and disaster recovery protocols protect against _____	1.5	CO2
Q 12	There are _____ key challenges in analyzing lab data management	1.5	CO2

Q13	The p-value in hypothesis testing represents the probability that the null hypothesis is true. True/False.	1.5	CO2
Q14	What is the primary purpose of a Health Information Exchange (HIE) system in health sciences? A. To perform data analysis for medical research B. To allow secure sharing of patient data across healthcare organizations C. To store patient data for a single healthcare organization D. To manage financial transactions within healthcare systems	1.5	CO2
Q15	In a clinical trial, the term <b>p-value</b> represents: A. The probability of the null hypothesis being true B. The probability of observing the data, or something more extreme, assuming the null hypothesis is true C. The effect size of the treatment D. The confidence interval of the study results	1.5	CO2
Q16	Which of the following data formats is commonly used in health sciences for data interoperability? A. JPEG B. HL7 FHIR C. CSV D. JSON	1.5	CO3
Q17	What is the primary purpose of randomization in clinical trials? A. To ensure all participants receive the same treatment B. To eliminate selection bias and ensure comparability between treatment groups C. To increase the sample size of the study D. To reduce the duration of the trial	1.5	CO3
Q18	The _____ is the threshold probability below which the null hypothesis is rejected, commonly set at 0.05 in clinical trials.	1.5	CO3
Q19	What is the main benefit of using a cloud-based Electronic Health Record (EHR) system? A. It eliminates the need for training healthcare providers. B. It reduces the risk of cyberattacks. C. It provides scalability and remote access to patient data. D. It makes healthcare services entirely free.	1.5	CO4
Q20	In a clinical trial, the _____ is a range of values that is likely to contain the true population parameter, often reported alongside point estimates.	1.5	CO4
<b>Section B</b> <b>(4Qx5M=20 Marks)</b>			
Q 1	Explain the difference between a null hypothesis and an alternative hypothesis in hypothesis testing.	5	CO3

<b>Q 2</b>	Explain hypothesis testing, and its important in statistical analysis.	<b>5</b>	<b>CO4</b>
<b>Q 3</b>	Define survival analysis and explain its importance in medical research.	<b>5</b>	<b>CO2</b>
<b>Q 4</b>	Explain the Kaplan-Meier estimator, and the type of data it handles.	<b>5</b>	<b>CO3</b>
<b>Section C</b> <b>(2Qx15M=30 Marks)</b>			
<b>Q 1</b>	Explain the log-rank test and how it is used to compare survival curves in survival analysis.	<b>15</b>	<b>CO2</b>
<b>Q 2</b>	Describe the concept of censoring in survival analysis. Differentiate between right-censoring, left-censoring, and interval-censoring with examples.	<b>15</b>	<b>CO3</b>
<b>Section D</b> <b>(2Qx10M=20 Marks)</b>			
<b>Q 1</b>	Explain the concepts of gene prediction and gene annotation. Discuss the methods used in both processes and their importance in genomics.	<b>10</b>	<b>CO4</b>
<b>Q 2</b>	Discuss the steps involved in constructing and interpreting a Kaplan-Meier survival curve. Include the handling of censored data, plotting survival probabilities, and comparing survival curves between groups.	<b>10</b>	<b>CO3</b>