

FEB / MARCH - 2024

(B.Tech.) Program: DS Scheme :II

Examination: Honors Semester: VII

Course Code: HDSC701

Course Name: Data Science for Health and Social Care

Date of Exam: 23/02/2024

Duration: 2.5 Hours

Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

| | | Max. Marks | CO | BT level |
|------------|--|------------|-----|----------|
| Q 1 | Solve any six questions out of eight. | 12 | | |
| i) | Explain benefits of EHR ? | 2 | CO1 | U |
| ii) | What do you mean by Social Media analysis for detecting disease outbreaks ? | 2 | CO4 | U |
| iii) | Explain the reasons to separate lexical and syntax analysis? | 2 | CO3 | U |
| iv) | Illustrate the components of Information Retrieval ? | 2 | CO5 | U |
| v) | List the public repositories for genomic data ? | 2 | CO2 | R |
| vi) | Differentiate between morphological and temporality analysis ? | 2 | CO3 | An |
| vii) | Explain 'Biomedical Image' analysis ? | 2 | CO2 | U |
| viii) | Explain any one of the early CDSS systems ? | 2 | CO6 | U |
| Q.2 | Solve any four questions out of six. | 16 | | |
| i) | Explain applications and practical systems for Healthcare ? | 4 | CO1 | U |
| ii) | Explain the challenges encountered in processing clinical reports in detail ? | 4 | CO3 | U |
| iii) | Describe by applying various signal processing approaches in ECG measurement for noise removal ? | 4 | CO2 | Ap |
| iv) | Explain the steps for biomedical image analysis ? | 4 | CO6 | U |
| v) | With the use of 'SPM-EHR applications' explain the Temporal pattern mining ? | 4 | CO5 | Ap |
| vi) | Explain 'Adverse Medical Events and Drug Reactions' in detail? | 4 | CO4 | U |

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|------------|---|-----------|-----|----|
| Q.3 | Solve any two questions out of three. | 16 | | |
| i) | Explain following privacy-preserving data publishing methods in Healthcare: a) PeGS: Perturbed Gibbs Sampler b) Generalization | 8 | CO5 | U |
| ii) | Explain information extraction and context based extraction as mining information from clinical text ? | 8 | CO3 | U |
| iii) | Explain in detail CDSS ? | 8 | CO6 | U |
| Q.4 | Solve any two questions out of three. | 16 | | |
| i) | What is the Topic Modeling concept ? Use Latent Dirichlet Allocation (LDA) mathematical concept to describe it ? | 8 | CO4 | Ap |
| ii) | Using Hoppner's representation describe the Time-Interval pattern mining ? | 8 | CO5 | Ap |
| iii) | Differentiate various methods of clinical text processing ? | 8 | CO3 | An |
