Total No. of Questions : **08** Roll No. : 0701.....

B.Tech SEVENTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-7301 FUNDAMENTAL OF MACHINE LEARNING

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Explain the machine learning concept by taking an example. Describe the perspective and issues in machine learning. ***07***

(b) Explain Supervised and Unsupervised Learning with example. ***07***

2(a) Explain K-Nearest Neighbor (K-NN) algorithm? How does K-NN work? ***07***

(b) What do you mean by Gradient Descent? ***07***

3(a) Define Artificial Neural Networks with their applications. ***07***

(b) Write the algorithm for back propagation. ***07***

4(a) Discuss linear regression with an example. Explain the role of hypothesis function in machine learning models. ***07***

(b) Briefly describe clustering. How does it work in machine learning? ***07***

5(a) Explain Apriori algorithm by taking an example. ***07***

(b) Explain partitioning clustering methods in detail. ***07***

6(a) Define Dimensionality reduction. Why it is important in machine learning? ***07***

(b) Illustrate various dimensionality reduction techniques. ***07***

7(a) What is the difference between filter, wrapper and embedded methods for feature selection? ***07***

(b) What is Reinforcement learning? Explain its detailed concepts. ***07***

8(a) Explain Q learning algorithm assuming deterministic rewards and actions. ***07***

(b) Write short note on any two : (i) MDP (ii) Support vector machine (iii) FP-growth. ***07***

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech SEVENTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-7302 SOFTWARE ARCHITECTURE

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Explain software architecture. Discuss the need for software architecture. ***07***

(b) Define architectural structure and view in Software Architecture with examples. ***07***

2(a) Explain the role of quality attributes in software architecture. Why is it important to consider them during architectural design? ***07***

(b) How can architectural tactics be used to improve specific quality attributes? Choose any two attributes and explain relevant tactics. ***07***

3(a) Explain the Call and Return architectural style in software architecture. ***07***

(b) Explain the Layered System architectural style in software architecture. Describe its structure and the role of each layer. ***07***

4(a) Write down the steps to analyze the quality of software Architecture using Trade off Analysis (ATAM) method. ***07***

(b) Explain the concept of Domain-Specific Software Architecture (DSSA) and its significance. How does DSSA differ from general-purpose architecture? ***07***

5(a) Discuss the software architecture model for an object-oriented organization. ***07***

(b) Explain the role of architecture description language using suitable examples. ***07***

6(a) What is a documentation package? Explain in detail. ***07***

(b) Prepare Activity Diagram for order processing of Online Purchase System. Describe the purpose and key elements of an activity diagram. ***07***

7(a) Discuss the advantages and disadvantages of using visual languages in software architecture. ***07***

(b) Describe the Cost Benefit Analysis Method for the economic analysis of software architecture. ***07***

8(a) List the architectural patterns. Explain the Pipe-Filter pattern with its advantages and disadvantages. ***07***

(b) Discuss the role of UML in software architecture. ***07***

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech SEVENTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-7311 (EL-I) BIG DATA ANALYTICS

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Define Big Data. Explain the classification of Big Data. ***07***

(b) List and explain the characteristics of big data. Illustrate by considering an example of E-commerce, how big data is used? ***07***

2(a) What is Real Time Analytics? Discuss their technologies in detail. ***07***

(b) Explain the Stream model and Data stream management system architecture. ***07***

3(a) Brief out the features of Hadoop HDFS? Also explain the functions of Name Node and Data Node. ***07***

(b) Define MapReduce frame work and its functions. ***07***

4(a) Explain in detail about the PIG architecture. ***07***

(b) Discuss the characteristics of NoSQL data store along with the features in NoSQL transactions. ***07***

5(a) Discuss Regression Analysis using Linear and Non-linear regression models. ***07***

(b) Define multiple regressions. Write down the examples involved in forecasting and optimization in regression. ***07***

6(a) Discuss the following in detail : ***07***

(i) Conventional challenges in big data (ii) Nature of data

(b) Define Decaying window and how it is performed in data analytics. ***07***

7(a) Elaborate the impact of seamless Hadoop integration on enhancing data processing and analysis. ***07***

(b) Explain in detail IBM Infosphere BigInsights and Streams. ***07***

8(a) How does regression analysis predict the value of the dependent variable in case of linear regression? ***07***

(b) Write a short note on the following : ***07***

(i) Counting distinct elements in a stream
(ii) Finding most popular elements using decaying window.

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech SEVENTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

EC-7321 (OEL-II) CYBER FORENSIC AND LAWS

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks. All parts of a question must be attempted at the same place.

1(a) Enlist and discuss data recovery tools and deleted file recovery process in cyber forensics.

(b) Discuss the salient features of cyber forensics and digital evidences.

2(a) Explain cyber terrorism and virtual crimes in detail and the safety majors used to mitigate them.

(b) Explain the perception of cyber criminals, hackers and online frauds.

3(a) Write down the classification of cyber-crimes and discuss the cyber-crime and criminal justice.

(b) Discuss the harassment and e-mail abuse and e-mail spoofing, spamming.

4(a) Discuss how preliminary investigations done and how disk-based analysis being conducted.

(b) Discuss cyber forensic investigation and investigation tools in detail.

5(a) Write a detailed note on international law and jurisdiction issues in cyber laws.

(b) Write an explanatory note on IT laws and cyber-crimes.

6(a) Discuss network forensics, cell phone and mobile devices forensics in detail.

(b) Write a detailed note on data hiding techniques and validating forensic data.

7(a) Write a detailed note on Indian context of jurisdiction and IT Act.

(b) Write a detailed note on investigations of information hiding and scrutinizing e-mails.

8 Write short notes on **any two** :

(i) Phishing techniques
(ii) Insurgents and Extremist group
(iii) Tracking Internet access
(iv) IPR
(v) Cyber fraud and cheating

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