

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH] DECEMBER 2024

Paper Code: AIDS/AIML/IOT-401

Subject: Principles of Management
For Engineers

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No1 which is compulsory. Internal choice is indicated.

Q1. Explain the following in not more than 40 words. Attempt **any five**:
(5x5=25)

- a. Management- Science or art
- b. Manager vs entrepreneur
- c. Centralization vs decentralization
- d. Informal organization
- e. Job satisfaction
- f. Effective communication
- g. Use of computers in management control
- h. Reporting in control

Q2. What is management? Discuss principles of scientific management.
(12.5)

OR

Q3. What is a business organization? How does a partnership differ from a sole proprietorship in terms of ownership, liability, and decision-making?
(12.5)

Q4. What are the different types of planning in management? Explain each with examples.
(12.5)

OR

Q5. Differentiate between recruitment and selection. Describe employment interviews as selection technique.
(12.5)

Q6. Describe Maslow's needs hierarchy theory. Suppose that you are a manager and find yourself with one group of subordinates who apparently seek higher-order need satisfactions at work, and another group that seems concerned only with lower-order needs. What would you do to motivate each group of subordinates? Why?
(12.5)

OR

Q7. What is leadership? What traits do you think characterize successful leaders? Differentiate between transactional and transformational leadership.
(12.5)

Q8. Explain the non-budgetary control techniques used by organizations as an alternative to traditional budgetary controls.
(12.5)

OR

Q9. Discuss the importance of the controlling function in the management process. Describe the various types of control systems used by managers to ensure that organizational activities are aligned with strategic objectives.
(12.5)

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH] DECEMBER 2024

Paper Code: OAE-409T

Subject: Web Intelligence

Time: 3 Hours

Maximum Marks: 75

Note: Attempt all questions as directed. Internal choice is indicated.

- Q1 Attempt **any Five** of the following questions: (5x5=25)
- a) List and explain any five suitable application of web mining.
 - b) What are the three types of web mining?
 - c) List and explain any five challenges of web mining.
 - d) Compare data mining and web mining with example.
 - e) How to convert different types of visitors?
 - f) How classification and regression can be used in web mining?
 - g) What is dashboard? Why are data dashboards useful?
 - b) What is segmentation in web analytics?

UNIT-I

- Q2 a) What is the importance of similarity measure in web mining? Formulate and explain the use of Jaccard, Euclidean and Cosine similarity functions. (7.5)
- b) What is text similarity and how to implement it? (5)

OR

- Q3 a) What is web scraping? Why is Python a Popular Programming Language for Web Scraping? List and explain types of web scrapers. (8.5)
- b) What is web scraping used for? (4)

UNIT-II

- Q4 a) What do you mean by benchmarking? What are the benefits of it? (6.5)
- b) How do you measure website traffic? How to increase website traffic? (6)

OR

- Q5 a) What do you mean by time on site? Why is it important? (6)
- b) Why is website traffic important? What are the different types of web traffic? (6.5)

UNIT-III

- Q6 a) What is automated reporting? What are the benefits of report automation? (6)
- b) What is the importance of web data analytics? How ensemble learning can be used for it? (6.5)

OR

- Q7 What is web testing? What are the approaches to web testing? List and explain any five types of web testing? (12.5)

UNIT-IV

- Q8 a) What is website ranking? Why is it important to check website rankings? (6)
- b) What is PageRank analysis? How PageRank algorithm works? (6.5)

OR

- Q9 What is Google analytics best used for? How Google analytics used in acquisition analysis, Behavior analysis and conversation analysis? Explain it with help of example. (12.5)

P-11

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Exam Roll No. 03/17711921

END TERM EXAMINATION

SEVENTH SEMESTER (B.TECH] DECEMBER-2024

Paper Code: OAE-411T

Subject: Intelligent and Expert Systems

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.

- Q1 Attempt all questions: (2.5x10=25)
- (a) What is the primary function of an inference engine in an expert system?
 - (b) Describe the role of semantic nets in representing knowledge.
 - (c) How do expert systems emulate human cognitive processes?
 - (d) Define fuzzy logic and its application in expert systems.
 - (e) Explain the concept of Bayesian probabilistic inference in knowledge representation.
 - (f) What is the difference between object-oriented representation and frame-based representation?
 - (g) What is the purpose of indexing and retrieval techniques in knowledge organization?
 - (h) Describe the role of linguistic analysis in natural language processing.
 - (i) Explain the concept of image transformation in computer vision.
 - (j) What is the difference between a "feature" and a "pattern" in pattern recognition?

UNIT-I

- Q2 (a) Explain the concept of "stored knowledge" in expert systems and how it is used to make decisions. (6.5)
- (b) Explain the abstract view of modeling in expert systems, including elementary knowledge and computational logic. (6)
- Q3 (a) Describe the process of knowledge acquisition and manipulation in expert systems, using examples. (6.5)
- (b) Compare and contrast the use of predicate logic and simple logic connectives in expert systems. (6)

UNIT-II

- Q4 Describe the structure of a graph in knowledge representation and the role of search and control strategies in expert systems, including AND-OR graphs. (12.5)

P-1/2

- Q5 (a) Compare and contrast the use of frames and semantic nets in knowledge representation. **(6.5)**
(b) Describe the differences between forward and backward chaining in rule-based expert systems, and provide an example of each. **(6)**

UNIT-III

- Q6 Discuss the importance of knowledge organization in expert systems, including integration and memory organization. **(12.5)**
- Q7 (a) Explain the process of natural language generation in expert systems. **(6.5)**
(b) Describe the application of basic parsing techniques in natural language processing. **(6)**

UNIT-IV

- Q8 Explain the concept of "deep learning" and how it is used in expert systems for tasks such as image recognition and natural language processing. **(12.5)**
- Q9 Explain the process of low-level, medium and high-level processing in computer vision. Also, explain the concept of "back propagation" in neural networks. **(12.5)**

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH] DECEMBER 2024

Paper Code: AIML-411T

Subject: Advance Machine Learning

Time: 3 Hours

Maximum Marks: 75

Note: Attempt all questions as directed. Internal choice is indicated.

- Q1 Attempt any Five of the following questions: (5x5=25)
- a) Explain the exploration-exploitation tradeoff in Q-learning and how it influences the learning process.
 - b) In what scenarios might stacking outperform both bagging and boosting techniques in an ensemble model?
 - c) What are the key differences between CNNs and fully connected neural networks in terms of feature extraction and parameter efficiency?
 - d) What are the primary differences between BERT and GPT, and in what scenarios would one be preferred over the other?
 - e) How does the architecture of Transformers differ from RNNs, and why has it become the dominant approach in NLP?
 - f) How does transfer learning in deep learning allow models to leverage pre-trained knowledge for new tasks, and what limitations does it have?

UNIT-I

- Q2 a) How does the use of non-linear kernels in SVMs help in mapping input data into higher-dimensional spaces? (6.5)
- b) In what way do deep Q-networks (DQNs) combine deep learning and Q-learning, and what problem do they solve? (6)

OR

- Q3 a) How does Deep Reinforcement Learning overcome the limitations of traditional Q-learning in complex environments? (6)
- b) What role do neural networks play in Deep Reinforcement Learning (DRL), and how do they enhance the ability of RL agents to handle large-scale problems? (6.5)

UNIT-II

- Q4 a) What are the advantages and limitations of using LIME (Local Interpretable Model-agnostic Explanations) for model interpretability? (6)
- b) How do SHAP values provide insights into model decisions, and why are they preferred over traditional feature importance methods? (6.5)

OR

- Q5 a) How does LIME generate local explanations, and what challenges arise when applying it to complex models like deep neural networks? (6)
- b) How can explainable AI (XAI) techniques help mitigate ethical concerns in AI models, particularly in regulated industries? (6.5)

UNIT-III

- Q6 a) Explain Recurrent Neural Network. How do long short-term memory (LSTM) networks address the vanishing gradient problem in RNNs? (6)
- b) What makes Recurrent Neural Networks (RNNs) well-suited for processing sequential data, and how do they handle long-term dependencies in time-series or natural language data? (6.5)

P.T.O.

OR

- Q7 a) What are the benefits of using bidirectional RNNs over unidirectional ones in sequence processing tasks? (6)
- b) Discuss the impact of pooling operations in CNNs, including max-pooling and average-pooling, on model performance and computational efficiency. (6.5)

UNIT-IV

- Q8 Explain the architecture of BERT (Bidirectional Encoder Representations from Transformers) and how it improves upon previous NLP models like word2vec and LSTMs. (12.5)

OR

- Q9 How do Generative Adversarial Networks (GANs) work, and what are the challenges involved in training GANs for image synthesis? (12.5)

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH] DECEMBER 2024

Paper Code: AIML-413T

Subject: Machine Learning in Healthcare

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions in all including Q.No1 which is compulsory.
Select one question from each unit.

Q1 Attempt any Five

[5x5=25]

- Discuss the key differences between structured, unstructured, and semi-structured healthcare data. Provide examples of each.
- What are the advantages of using support vector machines (SVMs) in medical diagnosis?
- What are some common techniques for noise reduction in medical imaging?
- What is a healthcare decision support system (DSS), and how can machine learning enhance its functionality?
- How can data from wearable devices and sensors contribute to healthcare applications? What are the potential privacy issues?
- How can autoencoders be used for anomaly detection in medical data?
- Discuss the role of transfer learning in training deep learning models for medical imaging.

UNIT-I

- Q2 (a) Explain the differences between supervised, unsupervised, and reinforcement learning. Provide examples of how each could be applied in healthcare. (6)
- (b) What role do neural networks play in healthcare applications such as medical imaging? Discuss. (6.5)

- Q3. (a) How can decision trees and random forests be used for clinical decision-making? Provide a suitable example.
- (b) What is data preprocessing? Why is it important to deal with missing data in healthcare? What methods can be used to handle it?

UNIT-II

- ~~Q4~~ Explain the difference between classification and regression in the context of medical diagnosis. Provide examples. (12.5)
- Q5 (a) What is clustering? Explain different clustering methods to identify subgroups in patient populations. (6)
- (b) How can confusion matrices help in assessing the performance of healthcare prediction models? (6.5)

UNIT-III

- Q6 (a) Describe the role of feature extraction in analyzing medical images. (6)
- (b) How are convolutional neural networks (CNNs) used in medical image classification? (6.5)

P.T.O.

P-1/2

- Q7. (a) How has machine learning been applied in radiology for tasks like disease detection and diagnosis? Provide examples. (6)
(b) What are the limitations of using deep learning for medical image analysis? (6.5)

UNIT-IV

- Q8 What are the key steps involved in building an ML-powered healthcare decision support system? How can classification models be used in healthcare DSS to predict diseases? (12.5)
- Q9 (a) How can bias in healthcare datasets lead to unfair ML predictions, and what measures can mitigate this? (6.5)
(b) How can decision trees and rule-based systems improve interpretability in healthcare? (6)

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END TERM EXAMINATION

SEVENTH SEMESTER (B.TECH) DECEMBER-2024

Paper Code: OAE-421T

Subject: Digital & Smart Cities

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions as directed including Q. No.1 which is compulsory. Internal choice is indicated.

- Q1 Attempt **any five** of the following questions: (5x5=25)
- (a) Define a smart city and its need in today's world?
 - (b) What are the components of a smart city infrastructure, and how do they interact?
 - (c) What are the benefits of open data initiatives in smart cities?
 - (d) Discuss the potential of AI and IoT in improving healthcare delivery in smart cities.
 - (e) Explain how AI and IoT can be utilized to enhance energy efficiency in buildings.
 - (f) How blockchain can be useful in smart cities, explain with a suitable use case?
 - (g) What are the ethical implications of using AI and IoT technologies in smart cities?
 - (h) What are the emerging trends in smart governance and citizen engagement?
- Q2 Explain importance of cloud computing, edge computing, and data centers in the context of smart cities. (12.5)
- OR**
- Q3 Evaluate the impact of smart city initiatives on quality of life, economic development, and sustainability. (12.5)
- Q4 Explain the concept of the Internet of Things (IoT) and its role in data collection and analysis for smart cities. (12.5)
- OR**
- Q5 Analyze a successful smart city implementation in India, highlighting its key features, challenges, and outcomes. (12.5)
- Q6 Discuss the role of AI and IoT in optimizing traffic flow and reducing congestion in smart cities. How can real-time data from sensors and cameras be used to improve traffic management? (12.5)
- OR**
- Q7 How can smart waste bins, waste tracking systems, and recycling optimization algorithms reduce waste and environmental impact? (12.5)
- Q8 How can e-governance initiatives improve the efficiency and transparency of government services? Discuss the role of digital platforms in facilitating citizen-government interactions. (12.5)
- OR**
- Q9 What are the cyber security challenges associated with smart cities? How can we protect sensitive citizen data and critical infrastructure from cyber threats? (12.5)

P-1/1

