

BE Sem VIII CSE (AIML) R-19 C Scheme

Duration: (3 hrs.)

[Maximum Marks : 80]

NB:

- (1) Question No. 1 is compulsory.
- (2) Attempt any three questions out of the remaining five.
- (3) All questions carry equal marks.
- (4) Assume suitable data, if required and state it clearly.

- Q1. ATTEMPT ANY FOUR [20]
- a. Differentiate between Generative Adversarial Network and Variational Auto Encoder.
 - b. Explain Contractive autoencoders.
 - c. What are the benefits of pre-trained models?
 - d. Explain XGBoost regression.
 - e. Explain the limitations of 2D learning environments.
- Q2. a. Explain WGAN in detail. [10]
b. Explain the MinMax loss function used in GAN, along with the components of GAN. [10]
- Q3. a. Explain transfer learning. Describe different types of transfer learning. [10]
b. Explain DCGAN in detail. [10]
- Q4. a. Explain Sparse autoencoders in detail. [10]
b. Explain AdaBoost in detail. [10]
- Q5. a. Explain Gaussian Mixture Models. [10]
b. Explain CycleGAN in detail. [10]
- Q6. a. What is metaverse? Explain the characteristics and components of the metaverse. [10]
b. Explain Markov Random Field in detail. [10]



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Q 1. Attempt any four question

20 marks

- Define reinforcement learning and explain the key components involved in the RL framework. 5
- Explain exploration approach and exploitation approach in multi armed bandit problem? 5
- Enlist components of MDP model and explain in detail? 5
- What is the Bellman equation, and how does it relate to value iteration and policy iteration? 5
- Define Temporal Difference and explain parameters of TD in detail? 5

Q 2. A.

20 marks

- Discuss the difference between on-policy and off-policy learning. Provide examples of algorithms that fall into each category. 6
 - What is optimal policies and explain optimal value function (q^*)? 4
- B.
- Compare between value iteration and Policy iteration? 5
 - Write gradient bandit algorithm and explain its steps? 5

Q. 3

20 marks

- Define Offpolicy algorithm and onpolicy algorithm and identify SARSA is which type of algorithm and why? Write SARSA algorithm in detail? 10
- Write Epsilon Greedy algorithm in detail with any one example? 10

Q. 4

20 marks

- Explain the concept of Monte Carlo Prediction in reinforcement learning and describe the main steps involved in a Monte Carlo prediction algorithm. 10
- Explain the concept of Deep Q-Networks (DQN) and discuss how deep learning can be integrated with Q-learning to solve complex problems. 10

Q. 5

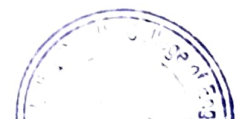
20 marks

- Write and explain off policy TD control using Q-learning? 5
- Explain Generalised policy iteration of policy evaluation and policy improvement? 5
- Define Agent and Environment and explain Agent Environment interface with diagram? 5
- After 12 iterations of the UCB 1 algorithm applied on a 4-arm bandit problem, we have $n_1 = 3, n_2 = 4, n_3 = 3, n_4 = 2$ and $Q_{12}(1) = 0.55, Q_{12}(2) = 0.63, Q_{12}(3) = 0.61, Q_{12}(4) = 0.40$. Which arm should be played next? 5

Q. 6

20 marks

- Explain the differences between TD learning and Monte Carlo methods. Also, describe the main components and key steps involved in TD prediction algorithms. 10
- Explain the concept of Elevator Dispatching in a multi-floor building with diagram. Discuss the objectives and challenges of an elevator dispatching system. 10



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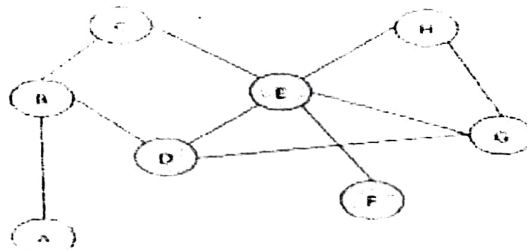
Duration: 3hrs

[Max Marks:80]

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- 1 Attempt any FOUR [20]
- Draw and explain the Social Media Analytics Cycle with a detailed description of each stage. 5
 - Explain Tie strength and trust. What is significance of weak ties in a social network? 5
 - What is mobile analytics? Explain characteristics of mobile Apps. 5
 - Explain types of search engines. 5
 - Explain data privacy, privacy policies and settings, issues related to data ownership on social media in the context of social media platforms. How can individuals protect their personal data when using digital platforms? 5
- 2 a Explain in detail the "Seven Layers of Social Media Analytics." Also, discuss the tools commonly used for each layer with suitable examples. [10]

- b [10]



Answer the following questions about this graph.

- What is the degree distribution for this graph? [2mark]
- What is the density of this graph? [1 mark]
- Which node(s) have the highest degree? What is the degree? [1 mark]
- Which node(s) have the lowest degree? What is the degree? [1 mark]
- Which node has the highest closeness centrality? Calculate it. [2 mark]
- Which node has the highest degree centrality? [1 mark]
- Draw the 1.5 egocentric network of node D. [1 mark]
- Draw 1 egocentric network of node D. [1 mark]



- 3 a Explain types of social media text. What are text analytics and explain text analytics steps. [10]
- b Explain Social Media Hyperlink Analytics by discussing the types of hyperlinks, types of hyperlink analytics, and commonly used hyperlink analytics tools. [5]
- c Explain what action analytics is. Identify some of the existing social media and types of actions used in them. [5]
- 4 a Explain categories of location analytics. What are applications of each category of location analytics? [10]
- b Explain Search Engine Analytics. Also, discuss the concepts of Search Engine Optimization (SEO) and Search Trend Analytics. Further, describe the different types of analytics provided by Google Trends with examples. [10]
- 5 a Describe Automated Recommendation Systems and compare Traditional Recommendation Systems with Social Recommendation Systems. [8]
- b Discuss the key steps involved in Formulating a Social Media Strategy and highlight how organizations can Manage Social Media Risks effectively. [6]
- c Explain the importance of Understanding Social Media and Business Alignment, and describe key Social Media KPIs used to measure performance. [6]
- 6 a Discuss a case study highlighting effective use of social media in the public sector. [10]
- b Discuss how businesses can measure the success of their social media initiatives. Explain the importance of interaction and monitoring in business social media strategies. [10]

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- | | | |
|---|---|------|
| 1 | Attempt any FOUR | [20] |
| a | Explain Internet of Things- driver for digital business. | |
| b | Explain different factors that affect consumer behavior | |
| c | Describe the need of security in e-commerce | |
| d | Explain different types of e-business | |
| e | Explain building blocks of mobile commerce . | |
| f | Discuss use of Cloud computing for e-Business. | |
| 2 | a Explain Drivers of digital business-
Big Data & Analytics, Mobile, Social media. | [10] |
| | b Explain Opportunities and Challenges in Digital Business. | [10] |
| 3 | a What do you mean by digital business infrastructure? Name the different
hardware and software that are used in the e-infrastructure. | [10] |
| | b Describe the Components of E-SCM | [10] |
| 4 | a Describe different security attacks. Also explain any one encryption and
decryption technique. | [10] |
| | b Describe the use of firewalls and their types. | [10] |
| 5 | a What is Information System? Explain its Components? | [10] |
| | b Explain the risk and list the steps to manage the risk in the e-business | [10] |
| 6 | a Discuss various Legal, Ethics and Societal impacts of E-commerce | [10] |
| | b Explain selling and buying in private e-markets with respect to business to
business E-commerce. | [10] |

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[Time: 3 Hours]

[Marks:80]

1. Questions No. 1 is Compulsory.
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3. Figures to the right Indicate full marks.

Q.1 Attempt any Four.

20

- a) Explain any five Salient features of the Environment Protection Act, 1986.
- b) Describe the current energy scenario in India. What challenges does India face in meeting its energy demands?
- c) What is a food chain? How does it differ from a food web?
- d) What are atomic and biomedical hazards?
- f) Explain the role of the government as a planning and regulatory agency.

Q.2 a) Discuss major environmental problems in India and their implications for public health and natural resources.

10

- b) Explain Ozone layer depletion? What are the Causes, effects and preventive measures of Ozone depletion?

10

Q.3 a) Define ecosystem. Classify different types of Ecosystems? What are the biotic and abiotic components of an ecosystem?

10

- b) Discuss the role of Central Pollution Control Board (CPCB) in pollution monitoring.

10

Q.4 a) What is ISO 14000? Explain its significance in environmental management and how it helps organizations reduce their environmental impact.

10

- b) What is Corporate Environmental Responsibility (CER)? Explain its importance and mention any three ways in which companies can practice CER to promote environmental sustainability.

10

Q.5 a) Compare natural and human-made sources of greenhouse gases. Which ones have the greatest impact on global warming and why? Support your answer with examples

10

- b) What is Environmental Quality Management (EQM)? Explain its objectives in detail.

10

Q.6 a) With reference to EMS, explain PDCA cycle with neat diagram.

10

- b) Critically evaluate the concept of sustainable development as a multidimensional approach. How does it reconcile the conflicting goals of economic growth, environmental conservation, and social equity?

10
