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| Velegapudi Ramakrishna Siddhartha Engineering College::Vijayawada  (Autonomous)  IV/IV B Tech Degree Examinations(December/2023)  Seventh Semester  Department of Information Technology  **20IT7301-DEEP LEARNING** | | | | | | | |
| Time:3Hrs | | | MODEL QUESTION PAPER | | Max Marks:70 | | |
| Part – A is Compulsory  Answer one (01) question from each unit of Part – B  Answers to any single question or its part shall be written at one place only | | | | | | | |
| *Cognitive Levels(K): K1-Remember;K2-Understand; K3-Apply; K4-Analyze; K5-Evaluate; K6-Create* | | | | | | | |
| Q. No | | Question | | Marks | | Course Outcome | Cog. Level |
| Part - A | | | | 10X1=10M | | | |
| 1 | a | Differentiate between Machine Learning and deep Learning. | | 1 | CO1 | | K2 |
|  | b | What is the need for validation data in deep learning? | | 1 | CO1 | | K4 |
|  | c | List any three hyper parameters used in deep learning models | | 1 | CO2 | | K2 |
|  | d | Explain the use of zero padding in CNN | | 1 | CO2 | | K2 |
|  | e | List the types of layers in CNN. | | 1 | CO2 | | K1 |
|  | f | What is sparsity in autoencoder | | 1 | CO2 | | K2 |
|  | g | List any 4 applications of deep learning. | | 1 | CO1 | | K1 |
|  | h | What is a recurrent neural network? | | 1 | CO3 | | K2 |
|  | I | Write the difference between convolutional neural network and recurrent network. | | 1 | CO3 | | K2 |
|  | j | Briefly explain attention mechanism | | 1 | CO2 | | K2 |
| Part - B | | | | 4X15 =60M | | | |
| UNIT - I | | | | | | | |
| 2 | a | Write the functional description of a biological neuron’s structure with a suitable diagram and explain how artificial neuron structure can be compared with biological neuron structure. | | 9 | CO1 | | K4 |
|  | b | List and explain various activation functions | | 6 | CO1 | | K2 |
| (OR) | | | | | | | |
| 3 | a | Summarize back propagation algorithm in reducing the error | | 8 | CO1 | | K4 |
|  | b | Explore different techniques to prevent overfitting in deep neural networks. | | 7 | CO1 | | K2 |
| UNIT - II | | | | | | | |
| 4 | a | Consider the problem of classification of cats and dogs. Assume each image is of 28X28 size. Draw VGG architecture that can satisfy the given classification problem and explain different layers used in the model. | | 8 | CO2 | | K3 |
|  | b | Apply convolution operation on the following input image shown with the given kernel and show the output image with stride=1 and stride=2   1. Without zero padding 2. With zero padding   Input Kernel   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 1 | 1 | 1 | 0 | 0 | | 0 | 1 | 1 | 1 | 0 | | 0 | 0 | 1 | 1 | 1 | | 0 | 0 | 1 | 1 | 0 | | 0 | 1 | 1 | 0 | 0 |  |  |  |  | | --- | --- | --- | | 1 | 0 | 1 | | 0 | 1 | 0 | | 1 | 0 | 1 | | | 7 | CO2 | | K3 |
| (OR) | | | | | | | |
| 5 | a | Differentiate between PCA and Autoencoder for dimensionality reduction. | | 7 | CO2 | | K4 |
|  | b | Explain the concept of denoising in auto encoders | | 8 | CO2 | | K2 |
| UNIT – III | | | | | | | |
| 6 | a | Explain unfolding computational graphs in detail | | 7 | CO3 | | K2 |
|  | b | Draw an RNN architecture for summarizing a sequence and produce a fixed- size representation | | 8 | CO3 | | K3 |
| (OR) | | | | | | | |
| 7 | a | Discuss the challenges of long term dependencies | | 7 | CO3 | | K2 |
|  | b | Discuss about LSTM architecture in detail. | | 8 | CO3 | | K2 |
| UNIT – IV | | | | | | | |
| 8 | a | Discuss the application of the visual attention approach for image captioning | | 7 | CO2 | | K3 |
|  | b | Explain the working of Neural Turing machine with a neat diagram | | 8 | CO2 | | K2 |
| (OR) | | | | | | | |
| 9 | a | What is GAN? Explain the process of generating image data with GAN | | 9 | CO2 | | K3 |
|  | b | Discuss the limitations of Neural Networks | | 6 | CO1 | | K4 |

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| Designation | Name in Capitals | Signature with Date |
| Course Coordinator |  |  |
| Program Coordinator |  |  |
| Head of the Department |  |  |