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| SRM Institute of Science and Technology Vector Logo - (.SVG + .PNG) -  VectorLogoSeek.Com | **SRM Institute of Science and Technology**  **Data Science and Business Systems,**  **School of Computing** Kattankulathur  **Academic Year: 2024-25 (ODD)** | |  |
| **Test: CLA-T1** | | **Date: 27-08-2024** | |
| **Course Code & Title: 18CSE484T – Convolutional Neural Network** | | **Duration:** 1 hour | |
| **Year & Sem: IV Year / VII Sem** | | **Max. Marks:** 25 | |

Part A (5 x 1 = 5)

**1. What is the primary function of a Convolutional Neural Network (CNN)?**

A. Classifying text data

B. Processing sequential data

C. Recognizing patterns in image data

D. Predicting numerical values

**2. Which layer in a CNN is responsible for extracting features from an image?**

A. Fully connected layer

B. Convolutional layer

C. Pooling layer

D. Activation layer

**3. What is the purpose of a pooling layer in a CNN?**

A. Increasing the dimensionality of feature maps

B. Reducing the dimensionality of feature maps

C. Adding non-linearity to the network

D. Normalizing the input data

**4. Which activation function is commonly used in CNNs?**

A. Sigmoid

B. ReLU

C. Softmax

D. Tanh

**5. What is the role of a fully connected layer in a CNN?**

A. Extracting local features

B. Reducing dimensionality

C. Combining features and making predictions

D. Introducing non-linearity

Part B (3 x 2 = 6)

1. What is the role of convolution in a CNN?
2. Explain the concept of feature extraction using convolution filters.
3. A 4x4 image is given with a 3x3 filter. What padding is required to maintain the original image size?

Part C (2 x 7 = 14)

1. A CNN consists of the following layers:

Input: 64,64

Conv layer: 32 filters, kernel size 3x3, stride 1, padding 'same', input channels 3.

Max pooling: 2x2.

Conv layer: 64 filters, kernel size 3x3, stride 1, padding 'same'.

Fully connected layer: 1024 neurons.

Output layer: 10 neurons.

Calculate the total number of parameters in the network.

1. Explain the basic structure of a CNN, including its core components.