

Reg. No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 13009

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024

Sixth Semester

Computer Science and Technology

U19CTV32 – DEEP LEARNING

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels	K1 – Remembering	K3 – Applying	K5 - Evaluating
(KL)	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q. No	Questions	Marks	KL	CO
1.	Briefly explain a real-life scenario of supervised and unsupervised machine learning techniques.	2	K2	CO1
2.	What is a loss function? How can one regularize it?	2	K4	CO1
3.	How a simple neural network may fail to implement XOR gate?	2	K2	CO2
4.	Why ReLU function is more popular than Sigmoid in deep learning?	2	K3	CO2
5.	What is the key difference between CNN and RNN?	2	K2	CO3
6.	Why should we apply pooling in a CNN architecture?	2	K5	CO3
7.	What is the purpose of dimensionality reduction in auto encoder?	2	K4	CO4
8.	What is the problem with gradient descent?	2	K2	CO4
9.	Briefly explain the technical benefits of transfer learning.	2	K1	CO5
10.	What is triplet loss function and its use?	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q. No.	Questions	Marks	KL	CO
11. a)	Explain in detail the training, testing, validation and cross validation process and their role in a learning architecture.	13	K1	CO1
(OR)				
b)	Take a scenario and explain over fitting and under fitting to it. Also explain the remedy of these two situations.	13	K4	CO1

12.	a)	Compare various activation functions mathematically. Which activation function will you prefer in CNN? Justify your choice mathematically.	13	K4	CO2
		(OR)			
	b)	Is it mandatory to use drop out layers in a deep learning architecture? What will happen if we do not apply drop out in a deep learning model? Explain in detail.	13	K5	CO2
13.	a)	What are the limitations with RNN? Can these limitations be overcome using LSTM technique? Explain in detail the reason.	13	K2	CO3
		(OR)			
	b)	Create your own CNN model for object detection in a color image. Describe each module, used activation function, learning parameters and procedure in detail.	13	K6	CO3
14.	a)	In which applications, auto-encoder might be useful? Take a scenario and explain a suitable auto-encoder in detail.	13	K3	CO4
		(OR)			
	b)	What is the purpose of stochastic gradient descent and mini-batch gradient descent for CNN models? Why these variations of gradient descent are required in multi-layers neural networks having large number of features?	13	K1	CO4
15.	a)	Explain the basic architecture of the combined CNN-RNN with Keras. What is the use of this complicated model?	13	K4	CO5
		(OR)			
	b)	Create a deep learning model for any application using video processing. Describe its components in detail.	13	K6	CO5

PART – C

			(1 x 15 = 15 Marks)		
Q. No.		Questions	Marks	KL	CO
16.	a)	Consider the basic AlexNet deep learning architecture as the base model. Apply any transfer learning model to use it for any purpose. Explain in detail the new generated model, model components which are newly trained and already trained components.	15	K3	CO5
		(OR)			
	b)	Create your own 3D-CNN architecture for object recognition in a color image. What is the difference between CNN and 3D-CNN models? Which one is better in terms of accuracy and how?	15	K6	CO3