Roll No.:.....

National Institute of Technology Delhi

Name of the Examination: B.Tech. (Dec. 2023)

Semester: 7th (B.Tech.), 1st (M.Tech.)

Branch: CSE

Course Code: CSL 477 and MACM 541

Title of the Course: Game Theory

Time: 3 Hours

Maximum Marks: 50

Note: Attempt all questions.

Q.No.	1	2	3	4	5
C.O.	CO1	CO2	CO1	CO3	CO4

1. (a) Write the definition of strategy in extensive games with perfect information. In the Fig. 1 mention all the trategies of the player 1. (4)

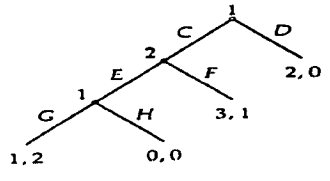

Figure 1: An extensive game in which player 1 moves both before and after player 2.

(b) Explain the outcome of strategy profile in extensive games with perfect information. Define the outcome of the every possible strategy profiles (strategy pairs) in Fig. 1. (5)

2. (a) Represent the entry game in the form of extensive games. (3)

(b) Write the definition of Nash equilibrium of extensive game with perfect information. Using this definition define the Define the Nash equilibrium (5)

3. (a) How will you define the bargaining in Game Theory? Explain it by considering the example of pie game with 2-stage and 3-stage strategy bargaining and their equilibriums. Define the notations of the used variables here. (6)

(b) Explain Rubinstein's bargaining model. Derive the equilibrium in the Rubinstein's model (5)

(c) What do you understand by axiomatic approach of bargaining? (3)

4. (a) Consider a variant of the situation modeled by BoS in which player 1 is unsure whether player 2 prefers to go out with her or prefers to avoid her, whereas player 2, as before, knows player 1's preferences. Specifically, suppose player 1 thinks that with probability 1/2 player 2 wants to got out with her, and with probability 1/2 player 2 wants to avoid her. Model this situation by considering all the possible states (Assume payoffs accordingly). Calculate the expected payoffs of player 1 for all the possible pairs of actions of the two types of player 2. (5)

(b) Calculate the Equilibria of a variant of BoS with imperfect information in the above problem using the Best response functions. (5)

5. Write short notes on the following:

(a) Bayesian Games (3)

(b) Subgame Perfect Equilibrium (3)

(c) Incentives and Pricing in Communications Networks (3)

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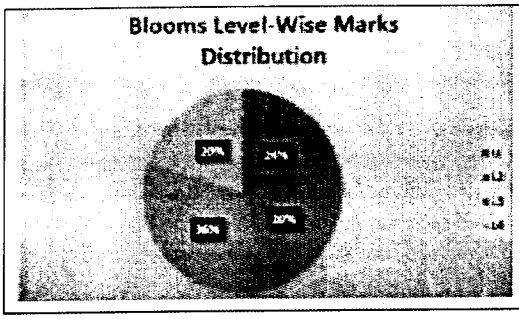
National Institute of Technology, Delhi

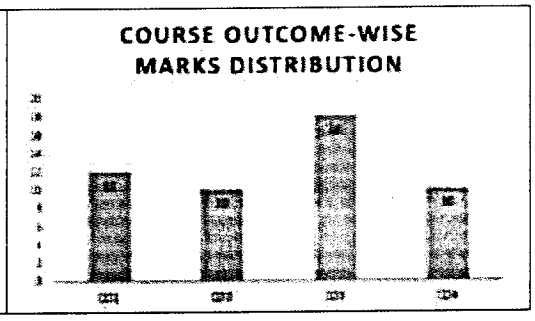
End Semester Examination (Autumn 2023)

Branch	**: B. Tech.**	**Semester**	**: 7th**
Title of the Course	**: Theory of Application Development**	**Course Code**	**: CSB 401**
Time	**: 3 Hours**	**Maximum Marks**	**: 50**

Ques No.		Marks	COs	BL	PO
Q1.	**Attempt any FIVE of the following.** a) What is Toast in Android? b) Define JDK. c) List different attributes of Table Layout d) What are return types of startActivityForResult () in android. e) Write the ways required to start services in android? f) You can shut down an activity by calling its _____ method. g) What are different fragment classes in android. h) When content Provider would be activated? i) Discuss ANR in android.	5*1=5	CO1	L1	1
Q2.	a) Discuss the use of AndroidManifest.xml file in any android application. b) Explain attributes wrap_content and match_parent with respect to viewgroups. c) Develop an android application using Date and Time picker. e) Write a program to create a table in database. (Java code)	2+1+2+2	CO1	L1	1
Q3.	a) Describe with example Radio button and checkbox. b) Differentiate between Activity context and Application context. c) If your service is private to your own application and runs in the same process as the client (which is common), you should create your interface by extending the----------class?	2+2+1	CO2	L2	2
Q4.	Discuss in brief various types of hardware sensors in android. Write a XML and Java code of Proximity sensor.	5	CO2	L2	2
Q5.	a) Explain the steps involved in following along with flowchart: i) Creating the Task Detail page. ii) Handling Pictures and Menus with views.	4+4	CO3	L3	3

	b) Explain Networking and Emailing in Android.				
Q6.	(a) What is Geocoding? What are the various steps for finding a location and selecting a destination in an iOS app? (b) What are the steps involved in publishing App to the Google play store?	5+5	CO3	L3	3
Q7.	(a) Briefly explain the Trip model. What are the steps involved in implementing Master view controller? (b)What are the different types of editors available for iOS app development? What is an XCode Source Editor? Explain the steps involved in navigating through the XCode source editor.	5+5	CO4	L4	3





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes
PO – Program Outcomes;
PI Code – Performance Indicator Code

Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B.Tech.			
End Semester Examination (Autumn, 2023)			
Branch	: CSE	Semester	: VII
Title of the Course	: Neural Network	Course Code	: CSL 465

Time: 3 Hours Maximum Marks: 50

Note: *All questions are compulsory.*

COURSE OUTCOMES

CO1 Understand the fundamentals, such as neural networks and their applications.

CO2 Analyze the concept of neural networks for learning linear and non-linear activation functions

CO3 Understand how to find the minimum cost functions, learn about training methods, and set the parameter values.

CO4 To learn how to apply Artificial Neural Networks to real-world problems.

Q. NO	QUESTION	Mark	CO	BL
1	A. Differentiate between Artificial Intelligence, Machine Learning, Neural Networks, and Deep Learning.	2.5	1	2
	A. Explain simple artificial Artificial Neuron structure.	2.5	1	1
2	A. Using McCulloch Pitts neuron, implement the admission criterion of a candidate. A candidate will be admitted if he/she satisfies any one of the criteria mentioned below. 1. The candidate has qualified GATE exam. 2. The candidate has qualified NET exam. 3. The candidate has qualified the admission exam conducted by the host institute. Also, shows whether the above implementation conditions are linearly separable or not.	5	4	6
	B. Show whether a 2-input XOR function is linearly separable. Implement the XOR function using perceptrons.	5	2	3
3	A. How have Convolutional Neural Networks (CNNs) revolutionized image processing and computer vision?	3	4	1
	B. Let matrix A and B represent the input and kernel, respectively.	7	4	2

A =

a	b	c	d
e	f	g	h
i	j	k	l

B=

w	x
y	z

I. Carry out the 2-D convolution operation on the above input.
II. Also, explicitly mention the formulae for the 2-D convolution.

4

A. Explain the gradient descent rules and write down the parameter equations. Also, provide proof that the given algorithm results in the steepest descent. **5** **3** **2**

B. Consider a simple quadratic function $f(x) = 3x^2 + 4x - 2$. Apply the gradient descent method to find the minimum value of this function. **5** **3** **3**

5

A. Describe the concept of entropy and cross-entropy. Explain how these concepts are used in comparing probability distribution. **4** **3** **1**

B. Let us consider a problem where we want to classify an image into one of the four classes, as shown in Fig. 1. **4** **3** **3**

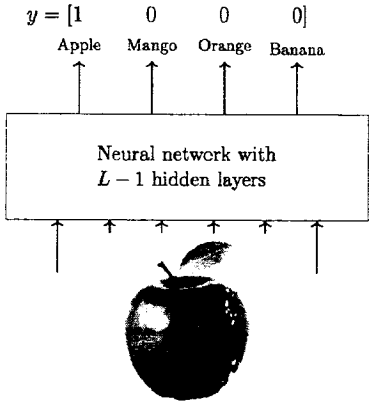


Fig. 1

Derive a loss function using the concept of cross-entropy.

C. Explain the backpropagation training algorithm with the help of a one-hidden layer feed-forward network. Consider the training sets as in Table 1 **7** **3** **4**

Table1. Training sets

Inputs		Weights								Bias		Outputs	
x_1	x_2	w_1	w_2	w_3	w_4	w_5	w_6	w_7	w_8	b_1	b_2	y_1	y2
.05	.10	.15	.20	.25	.30	.40	.45	.50	.55	.35	.60	.01	.99

Note: There are no biases provided to the neurons in the output layer

Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech 4th year (End Semester), 2023

Branch : CSE

Semester: 7th

Title of the Course: Data Communication and Network

Course Code: ECL 711

Time: 3 Hours

Maximum Marks: 50

Note: Attempt all questions

Q. No.	Question	Marks	CO	BL	PI
1	Describe the working principle of Packet switching and Circuit switching techniques with neat diagram	5	2	L4	
2	Explain UDP (User Datagram Protocol) and show its relationship to the other protocols in the TCP/IP protocol suite.	5	4	L2	
3	Define the sliding window protocol and Go-back N protocol of transport layer.	5	2	L4	
4	Find the CRC for the data block 100100 with the divisor 1101	5	3	L5	
5	List and explain the various congestion control techniques in TCP.	5	2	L4	
6	Explain the distance vector and link state routing.	5	4	L2	
7	Write short note on following (a) Wi-Fi (802.11) (b) IPv6 (c) DHCP (d) SMTP	10	4	L2	
8	Explain the OSI model for networking in brief. How does it differ from TCP/IP model?	10	1	L1	