B. Tech (Third Semester)

CYCLE TEST – II

Introduction to Data Science

Time: 90 Minutes | Maximum: 30 Marks

(The figures in the right-hand margin indicate marks.)

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions	CO #	Blooms Level
a. Define the term evaluation of model and represent Mean square error	3	1
b. List down some of the metrics used to evaluate a Regression Model.	3	2
c. What is the difference between simple linear and multiple linear regressions?	3	4
d. Discuss about Loss Function and Cost Function	4	2
e. Explain the concept of k-Fold cross-validation in one sentence	4	2

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions	Marks	CO#	Blooms Level
2.a. Define the term simple linear regression. Evaluate the regression from the given data and evaluate the standard error.	6	3	3

X	1	3	10	16	26	36
Y	42	50	75	100	150	200

b.	Define the term evaluation of the model. Describe Relative error and Absolute error.	4	3	1
	(OR)			
c.	Describe the importance of Polynomial regression. Find Polynomial regression of degree two from the given data.	6	3	3

X	3	4	5	6	7
Y	2.5	3.2	3.8	6.5	11.5

d.	Describe the different Plot to Visualized the data.	4	3	2
3.a.	Define the term multiple linear regression. Evaluate the regression line from the given data	5	3	3

X1	1	3	4	5	8
X2	3	5	8	10	13
Y	6	8	11	13	15

P.T.O

b. Calculate mean, median and mode from the following data pertaining to marks in IDS out of 140 marks for 80 students in a class.

Marks more than	0	20	40	60	80	100	120
No of Students	80	76	50	28	18	9	3

5 3 3

(OR)

c. Define Bias and variance. What is the need of Bias variance trade off. 6 4 1

d. How does cross-validation assist in identifying Overfitting or Underfitting in a model? 4 4 2

GIET UNIVERSITY, GUNUPUR

B. Tech - III Semester : **CYCLE TEST - II**

21BCSES23001 / 21BCMES23001 / 21BCDES23001 - Digital Electronics

CSE / CSE (AIML) / CSE (DS)

Time: 01:30 Hrs **Maximum: 30 Marks**

(The figures in the right hand margin indicate marks.)

PART - A

(2 × 5 = 10 Marks)

1. Answer ALL questions.

		CO #	Blooms Level
a.	What is the difference between combinational circuit and sequential circuit?	CO2	1
b.	Draw the logic diagram of 2-bit by 2-bit binary multiplier.	CO2	2
c.	What is meant by priority encoder? How is it different from encoder?	CO2	1
d.	State the difference between "latch" and "flip-flop".	CO3	1
e.	Write characteristics equation and excitation table for the *T* filp-flop.	CO3	2

PART - B

(10 × 2 = 20 Marks)

Answer ALL Questions.

		Marks	CO#	Blooms Level
2.a.	Simplify the following Boolean function using a four variable K-map: $F(A, B, C, D) = \Sigma (0, 1, 3, 4, 5, 7, 9, 11, 15)$ and then, realize the simplified functions using logic gates.	5	CO2	3
b.	Implement the following function: (iii) $F = A(CD + B) + BC'$ using NAND gates. (iv) $F = (A + B)(C + D)E$ using NOR gates.	5	CO2	3
	(OR)			
c.	What is a full adder circuit? Draw its truth table. Design a full adder circuits using two half adder circuits and 'OR' gate.	5	CO2	3

P T O

d.	Construct the 3 × 8 decoder using 2 × 4 decoders.	5	CO2	3
3.a.	Design a combinational circuit which will convert a 4 bit binary number to 4 bit gray code.	5	CO2	3
b.	Implement the Boolean function $F(x, y, z) = \Sigma(1, 2, 6, 7)$ with a multiplexer.	5	CO2	3
	(OR)			
c.	What is the race-around condition? How is it eliminated in a master-slave *J-K* flip-flop?	5	CO3	2
d.	Explain how a *J-K* can be constructed using *D* flip-flop.	5	CO3	3

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Third Semester)

CYCLE TEST – II

Object-Oriented Programming using JAVA

Time: 90 Minutes | Maximum: 30 Marks

(The figures in the right-hand margin indicate marks.)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ALL questions	CO #	Blooms Level
a. What is a daemon thread? How do you create a daemon thread in Java?	CO3	K1
b. Write a program to display "**Hello Friend**" using an applet	CO4	K2
c. List out the basic differences between checkbox and radio button. Write down the steps to create three checkboxes (Cricket, Football, Hockey) and two radio buttons (Yes, No).	CO4	K2
d. Differentiate between **sleep()** and **join()** methods with their syntax.	CO3	K1
e. What is an "anonymous inner class"? Explain with an example.	CO4	K1

PART – B **(10 x 2 = 20 Marks)**

Answer ALL Questions	Marks	CO#	Blooms Level
2.a. What is synchronization? Explain the role synchronized method with a suitable example.	5	CO3	K2
b. Write a program to display a sum of the values entered in two text-fields while clicking a button.	5	CO4	K2
(OR)			
ⓒ Write a program to create two threads, one thread to display all even numbers between 10 & 50, and another thread to display odd numbers between 10 & 50.	5	CO3	K2
d. Write a program to exhibit all the methods of **MouseListener** interface.	5	CO4	K2

P.T.O

3.a.	Explain the role of InputStream and OutputStream classes. Write a program to count the total characters present in a file (excluding the spaces).	5	CO3	K2
b.	Write a program to demonstrate event handling associated with "choicebox".	5	CO4	K2
	(OR)			
c.	Write a program to copy the contents of a file "one.txt" into "two.txt" and check the possible list of exceptions.	5	CO3	K2
d.	Write a program to draw a smiley using applet.	5	CO4	K2

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Third Semester)

CYCLE TEST – II

Discrete Mathematics

Time: 90 Minutes | Maximum: 30 Marks

(The figures in the right hand margin indicate marks.)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ALL questions

		CO #	Blooms Level
a.	Prove that in a lattice $(A, \leq)$, the complement of an element is unique.	CO3	K2
b.	Give an example of a set contains 3 elements which forms a group under multiplication. And justify.	CO3	K2
c.	Define Isomorphism of graphs.	CO4	K1
d.	Let $(A, *)$ be a group and a and b belongs to A. then show that $(a*b)^{-1} = b^{-1}*a^{-1}$	CO3	K1
e.	State and prove Handshaking theorem of graphs	CO4	K1

PART – B **(10 x 2 = 20 Marks)**

Answer ALL Questions

		Marks	CO#	Blooms Level
2.a.	For any a, b, c and d in a lattice $(A, \leq)$ if $a \leq b$ *and* $c \leq d$ then show that $a \vee c \leq b \vee d$ and $a \wedge c \leq b \wedge d$	5	CO3	K2
b.	Let $E(x_1, x_2, x_3) = (x_1 \wedge x_2) \vee (x_1 \wedge x_3) \vee (\bar{x}_2 \wedge x_3)$ be a Boolean expression. Find its disjunctive and conjunctive normal forms	5	CO3	K2
	(OR)			
c.	Show that the subgroup of an abelian group is normal	5	CO3	K2
d.	State and prove demorgan's property of distributive lattice	5	CO3	K2
3.a.	Prove the Euler's formula for the planner graph.	10	CO4	K3
	(OR)			
b.	If G is a connected planner graph with e edges and v vertices, where v is greater than 3 then show that $e \leq 3v - 6$	10	CO4	K3

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B. Tech (Third Semester)

CYCLE TEST – II

Database Management System

Time: 90 Minutes | Maximum: 30 Marks

(The figures in the right hand margin indicate marks.)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ALL questions		CO #	Blooms Level
a.	Explain Cache Memory.	CO3	2
b.	What is called mirroring?	CO3	1
c.	Define Isolation Property with example.	CO4	2
d.	Explain about Locking and Timestamp.	CO4	2
e.	Explain about database recovery system.	CO4	2

PART – B **(10 x 2 = 20 Marks)**

Answer ALL Questions

		Marks	CO#	Blooms Level
2.a.	Describe the different types of file organization?	5	CO3	2
b.	Discuss about network and object oriented data models?	5	CO3	2
	(OR)			
c.	Illustrate about RAID in detail	5	CO3	3
d.	Consider the universal relation R={A,B,C,D,E,F,G,H,I} and the set of functional dependencies F={AB→C, A→DE,B→F , F→GH, D→IJ} i. What is the key for R? ii. Decompose R into 2NF	5	CO3	3
3.a.	Explain about atomicity, Consistency property of a transaction with Bank accounts A and B, funds transfer example?	5	CO4	2
b.	Discuss about different states of a transaction?	5	CO4	2
	(OR)			
b.	Explain about 2PL and S2PL.	5	CO4	2
c.	Explain about normalisation and different type of normal form.	5	CO4	2