

	Question paper for Minor -2	Review Date:
	School of Engineering	Semester: 1 Session: (July-Dec)
	Programme: BSc Maths Course Name: C-programming Course Code :CSL-150	Maximum Marks: 20 Duration 1 hr
	15 OCT 2016	Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.		

Q1 Convert the following

3+1=4 marks (CO-4)

- a. $(10111001)_2 = (?)_{10}, (?)_{16}, (?)_8$
 b. $(25.2)_{10} = (?)_2$

Q2. Write output/ errors if any for the following with short justification

5X2=10marks (CO-3)

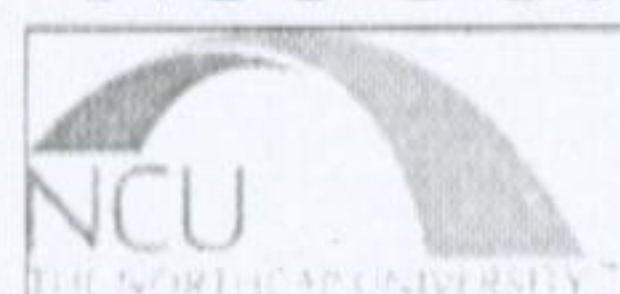
a #include<stdio.h> int main(){ int i,j; i=j=2,3; while(--i&& j++) printf("%d %d",i,j); return 0; }	b #include<stdio.h> int main() { int x = 10, y = 20; if(!(!x) && x) printf("x = %d\n", x); else printf("y = %d\n", y); return 0;}
c. #include<stdio.h> int main() { int i=0; for(; i<=5; i++); printf("%d", i); return 0;}	d) # #include<stdio.h> int main(){ char c=125; do printf("%d ",c); while(c++); return 0;}
e #include<stdio.h> int main() { int i=1; while() { printf("%d\n", i++); if(i>10) break; } return 0;}	

Q3. Write a program in C to find sum of following series using function and while loop

(6 marks)
CO-4)

$$1 + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} \dots\dots$$

Issued by:	Approved by:
Date:	Date:



Question paper for Minor Test II

Review Date:

School of Engineering & Technology

Programme: B-Tech

Course Name: Introduction to Digital Marketing

Course Code : CSL321

15 OCT 2016

Semester: Odd
V

Session: (July-Dec)

Maximum Marks: 15
Duration : 60 mins

Sheet 1 of 1

Note: 1. All sections are compulsory. *

2. Marks are indicated against the questions.

1. What is an email blast? Explain the process to develop and execute an email blast. [4]
2. What is 2 tier affiliate marketing? State four advantages and disadvantages of Affiliate Marketing? [3]
3. What are the attributes of good PPC campaign keywords and why negative keyword is important for PPC campaigns? [3]
4. Explain CPM in Online Advertising with its Pros and Cons. [2]
5. Explain the importance of content in a digital marketing plan [3]

Issued by: Ms. Sayani Ghosh

Approved by:

Date: 6-10-2016

Date:

	Format for		Review Date:
	Question paper for Minor-2		
	School of Engineering		Semester: ODD III&IV
	Programme: B-Tech(IT&CSE) Course Name: DWM Course Code :CSL-429/ITL-413	15 OCT 2016	Session: (July-Dec) Maximum Marks:20 Duration :1 hr
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			Sheet 1 of 1

(CO4, CO5) Q1. Answer the following Short Questions:

(5*2=10Marks)

- How Nominal Data different from Ordinal data? How does this difference effect similarity assessment?
- Define accuracy, error rate, and confusion matrix.
- How the value of K, affects clustering in K Means algorithm?
- Explain K -folds cross validation with example.
- Why Naive Bayesian classification called "Naive"?Explain.

(CO4) Q2. Given is the datasets for car theft:

(5 Marks)

Example No.	Color	Type	Origin	Stolen?
1	Red	Sports	Domestic	Yes
2	Red	Sports	Domestic	No
3	Red	Sports	Domestic	Yes
4	Yellow	Sports	Domestic	No
5	Yellow	Sports	Imported	Yes
6	Yellow	SUV	Imported	No
7	Yellow	SUV	Imported	Yes
8	Yellow	SUV	Domestic	No
9	Red	SUV	Imported	No
10	Red	Sports	Imported	Yes

Classify whether the car is stolen or not, for the test case: **X= (color=Red, Type=SUV, Origin=Domestic)** using Naïve's Bayesian Classification Algorithm. Illustrate the steps too.

(CO5) Q3. How can DBSCAN algorithm help in finding outliers? For a given dataset find out the clusters using DBSCAN algorithm .Illustrate each step with complete explanation of all density connected, direct density connected and density reachable points.

(5 Marks)

A(4,6), B(2,5) ,C(9,3), D(6,9), E(7,5) ,F(5,7) ,G(2,2) ,H(6,6)

Issued by:	Approved by:
Date:	Date:

	Question paper for Minor Test 2		Review Date:
	School of Engineering & Technology		Semester: Odd V
	Programme: B-Tech Course Name: Python Course Code : CSL206	15 OCT 2016	Session: (July-Dec) 2016
			Maximum Marks: 50 Duration :1 hrs
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

CO2 Question1. Write a function histogram that takes a list of integers as argument and prints a histogram to a text file. Read this text file and print its output on the screen. For example histogram([4, 9, 7]) should print the following: **(Marks-15)**

```
****
*****
*****
```

CO2 Question2. Define a class named Shape and its subclass Square. The Square class has an init function which takes a length as an optional argument (the default length is 10). Both classes have an area function which can print the area of the shape where Shape's area is 0 by default. **(Marks-10)**

CO2 Question3. Define a class named myDictionary. The class maintains a dictionary. Overload addition and multiplication operator for this class. Using these overloaded operators, one should be able to add and multiply two dictionary objects (values of same key should be added or multiplied). **(Marks-15)**

CO2 Question4. Explain the outputs of following code **(Marks-10)**

```
def deleteHead(list):
    del list[0]
numbers = [1,2,3]
deleteHead(numbers)
print(numbers)
```

```
def find(str, ch, start=0):
    index = start
    while index<len(str)
        if str[index] == ch:
            return index
        index = index+1
    return -1
x = find("apple","p",3)
print(x)
```

Issued by:	Approved by:
Date:	Date:

	Format for		Review Date:
	Question paper for Minor Test		
	School of Engineering		Semester: Odd(II Year)
	Programme: M.Tech Course Name: Risk Analytics Course Code : CSL641	15 OCT 2016	Session: (July-Dec)
			Maximum Marks: 20 Duration : 1 hr
Sheet 1 of 1			
Note: 1. All questions are compulsory.			

[CO2] Q1

[2+3+3]

An employee of a company under contract to process health insurance claims defrauded his employers of millions of dollars by exploiting weaknesses in the design and implementation of the company's business processes. The employee, who was responsible for claims processing, took advantage of the lack of oversight or two-person control for checking claims entered into the system to enable individuals involved in organized crime external to the organization to construct and submit fraudulent claims to be approved by the company. The scheme diverted nearly \$20 million from the company to the insider and his accomplices. An employee of a telecommunications firm's payroll department moved to a new position within the department in which she no longer would be required to have privileged access to payroll accounts. Upon switching positions, the employee's access rights to the payroll accounts were left unchanged. An associate told her that he was starting up a financial services business and needed some contact information. Using the privileged access rights that she had retained, the employee provided her associate with confidential information for 1500 of the firm's employees, including 401k account numbers, credit card account numbers, and social security numbers, which he then used to commit over 100 cases of identity theft. The insider's actions caused over \$1 million in damage to the company and its employees. One night, an employee of a large telecommunications company embarked on a series of acts that he believed would enable him to "save the day" and impress his new supervisor. First, this employee used a contractor's badge to gain unauthorized physical access to the company's Network Operations Center (NOC), where all of the computers were left logged in with system administrator access. He then used those computers to bring down the system that provided address information for emergency 911 calls based on the incoming phone number for emergency services. Before leaving the NOC, he stole the backup tapes for the system. On his departure from the NOC, he proceeded to the backup offsite storage facility, where he gained unauthorized physical access to

Issued by:	Approved by:
Date:	Date:



Question paper for Minor Test

Review Date:
01/03/2014

School of Engineering

Semester: Odd I Year

Programme: M Tech

Course Name: Advance Data Structure

15 OCT 2016

Session: (July-Dec)

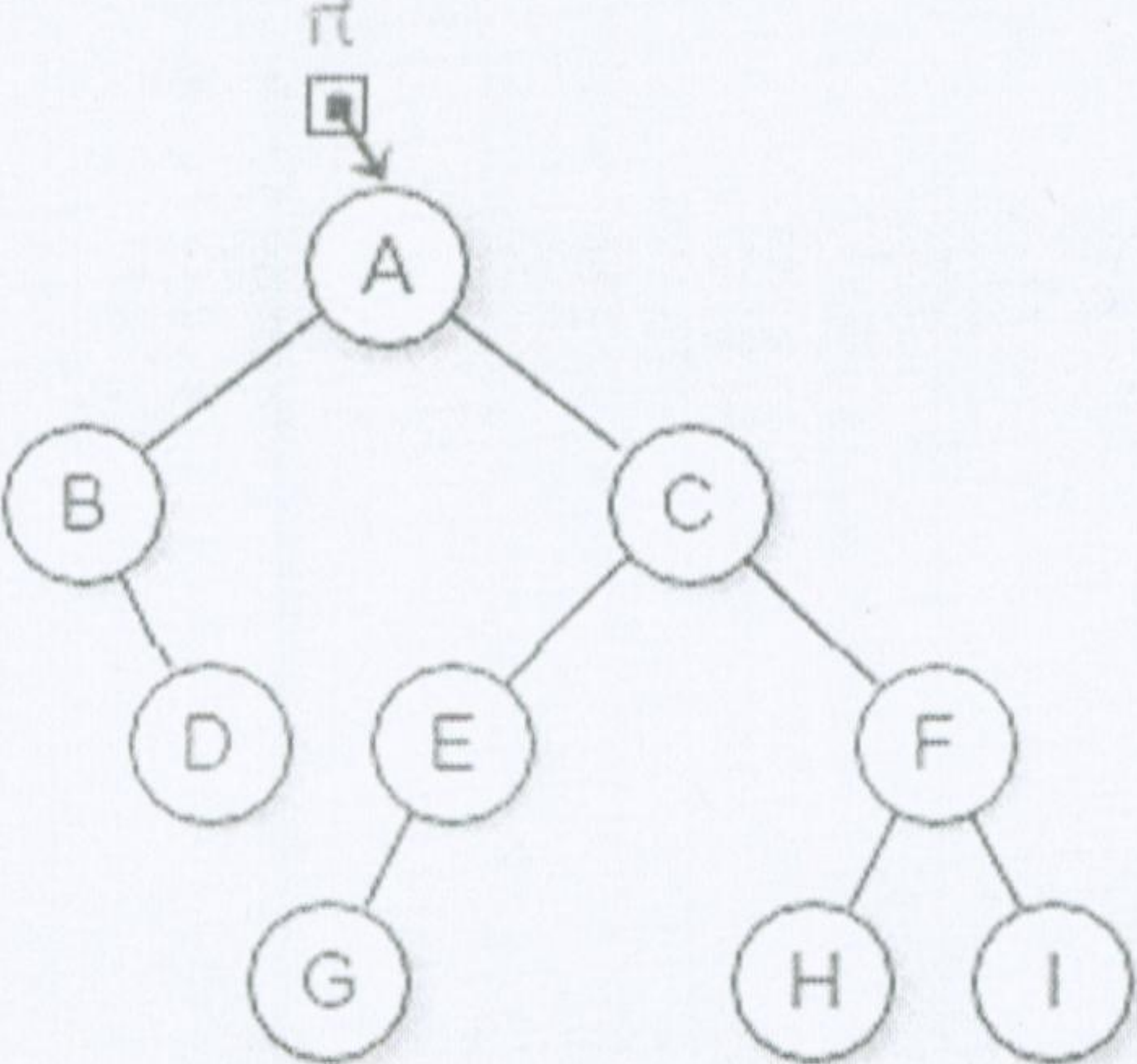
Course Code : CSL535/ CSL 529

Maximum Marks:20
Duration :1hr

Sheet 1 of 1

Note: 1. All questions are compulsory.

2. Marks are indicated against the questions.

CO2	1. Write an algorithm to insert an element in a circular queue. Also check its overflow condition	[4 Marks]
CO2	2. Write algorithm to convert infix expression to postfix. Also convert $(A + B) * C - (D - E) * (F + G)$ into postfix and show values in stack after each iteration	[3+3 = 6 Marks]
CO3	3. Given the following tree write its Pre Order, In Order And Post Order traversal. 	[3*2 = 6 Marks]
CO3	4. Construct a Binary tree and write its post order traversal, given following of its sequences: Inorder sequence: D B E A F C Preorder sequence: A B D E C F	[2+2 = 4 Marks]

Issued by:

Approved by:

Date:

Date:

	Reappear Question paper for Minor 2		Review Date:
	School of Engineering		Semester: Even II
	Programme: M-Tech(CSE) Course Name: Architecture of High Performance Computing Course Code : CSL504 15 OCT 2016		Session: (July-Dec)
			Maximum Marks:20 Duration :1 Hr
Note: 1. All questions are compulsory 2. Marks are indicated against the questions.			

CO4	1. Why there exists inconsistency between different levels of memory hierarchy? What is the efficient protocol to handle consistency in case of large multiprocessing environment?	(2+3=5)Marks
CO4	2. What are the properties of the program which makes the entire pipeline to stall? Explain with the help of example.	(2+3=5 Marks)
CO5	3. How does loop unrolling help improve the overall CPI of the program? Compare loop unrolling with loop reordering.	[3+2=5 Marks]
CO5	Discuss how increasing the size of cache would improve the performance of the system? What are the other ways to optimize the cache hit ratio?	[2.5+2.5 =5 marks]

Issued by:	Approved by:
Date:	Date:

	Question paper for Minor II		Review Date: 01/03/2014
	School of Engineering		Semester: Odd IV
	Programme: B-Tech		Session: (July-Dec)
	Course Name: Advanced Computer Architecture		Maximum Marks: 20
	Course Code : CSL401		Duration : 1hr
		15 OCT 2016	Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

CO3: Q1. Suppose that we want to enhance the processor used for web servicing. The new processor is 30 times faster on computation in the web serving application than the original processor. Assuming that the original processor is busy with computation 60% of the time, what is the overall speedup gained by incorporating the enhancement? **5 marks**

CO3: Q2. In a memory hierarchy for a multiprocessor system, data inconsistency may occur between adjacent levels or within the same level. How this problem is visualized and addressed? Suggest the possible solutions to overcome this? **5 Marks**

CO4: Q3. The following sequence of machine instruction is given. Instructions other than LOAD and STORE have three operands each, from left to right. Assume that (a) one instruction is issued per clock cycle (b) no resource constraints are limiting the instruction level parallelism (c) floating point operations take two clock cycles each to execute and (d) load/store memory operations take one clock cycle each.

Comment on the scope for operand forwarding within the sequence of instructions. Assume that load/store unit can also take part in operand forwarding. **5 Marks**

Sequence:	1	LOAD	mem-a,R1
	2	LOAD	mem-b,R2
	3	LOAD	mem-c,R3
	4	FADD	R2,R1,R1
	5	FSUB	R3,R1,R1
	6	STORE	mem-a,R1

CO4: Q4. With a single processor chip today containing a billion (10^9) or more transistors, system design is not possible in the absence of a target application. For example, the processor being designed for intensive scientific number crunching may be for a commercial server or for desktop applications. So, suggest the various design issues that should be addressed while designing such type of system? **5 Marks**

Issued by:	Approved by:
Date:	Date:

	Format for		Review Date:
	Question paper for Minor Test		
	School of Engineering		Semester: Odd(II Year)
	Programme: B.Tech Course Name: Discrete Structures Course Code : CSL201		Session: (July-Dec)
			Maximum Marks: 30
		Duration : 1 hrs	
		Sheet 1 of 1	
Note: 1. All questions are compulsory.			

CO2 Q1(a) Define a binary operation on a set S by $a * b = b$. Is $*$ associative? [6]
 Commutative?
 Idempotent?

(b) Let $(S, *)$ and $(T, *')$ be monoids with identities e and e' respectively. Let $f: S \rightarrow T$ be an isomorphism. Then show that $f(e) = e'$ [6]

CO2 Q2(a) Let Z be the group of integers under the operation of addition and let $G = Z \times Z$. [6]
 Consider the subgroup $H = \{(x, y) | x = y\}$ of G . Describe the left cosets of H .

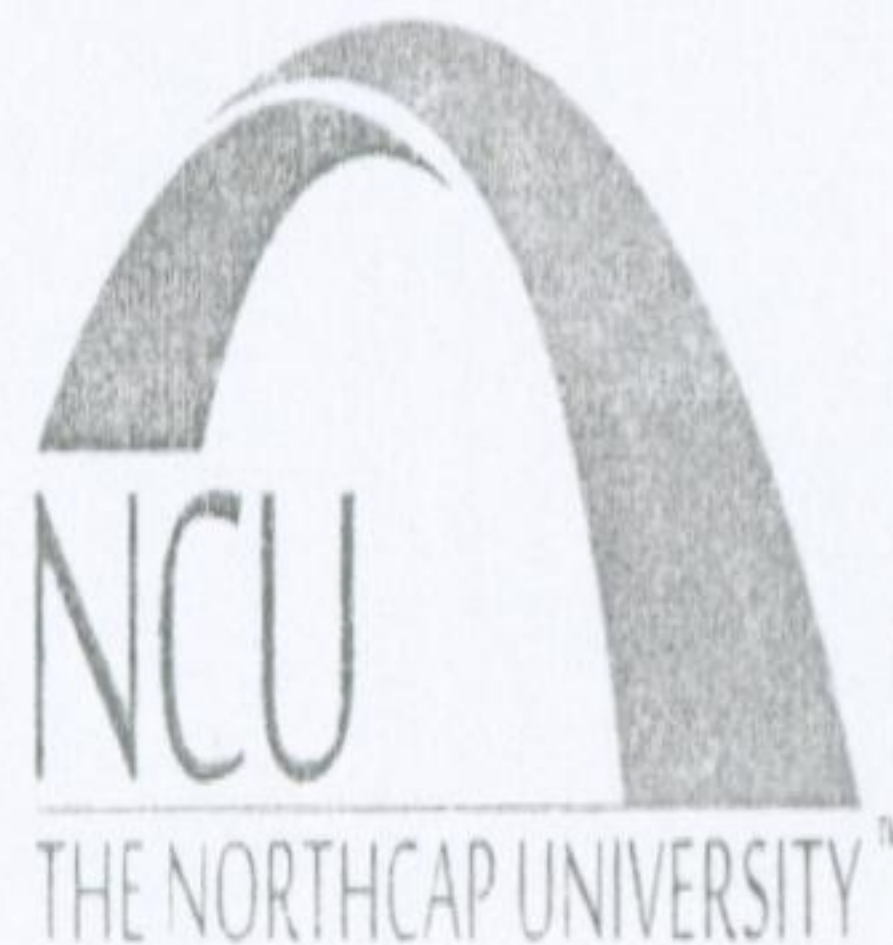
(b) Let $R \equiv \text{mod } 4$ be the congruence relation on the group $(Z, +)$. Then prove that [6]
 $(Z_4, \otimes)$ is a group, where the operation $\otimes$ is defined on z_4 by
 $[a] \otimes [b] = [a + b]$

CO1 Q3(a) Let x be a real number. Determine by proper reason if following argument is [3]
 valid ?
 X is positive or X is negative
 If X is positive, then $X^2 > 0$.
 If X is negative, then $X^2 > 0$.
 $\therefore X^2 > 0$.

CO1 (b) State whether the argument is valid or not. [3]
 If I graduate this semester, then I will have passed the physics course.
 If I do not study physics for 10 hours a week, then I will not pass physics.
 If I study physics for 10 hours a week, then I cannot play volleyball.

$\therefore$ If I play volleyball, I will not graduate this semester.

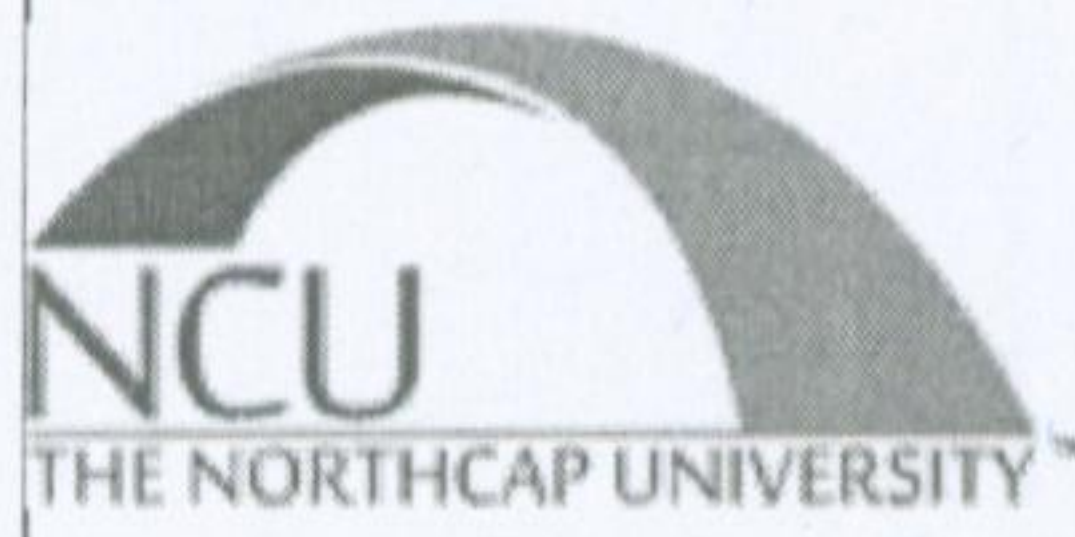
Issued by:	Approved by:
Date:	Date:

	Question paper for Minor 2		Review Date:
	School of Engineering		Semester: ODD (V) Session: (July-Dec)2016
	Programme: B-Tech Course Name: Computer Networks Course Code : CSL304	15 OCT 2016	Maximum Marks: 20 Duration : 1 Hr
			Sheet 1 of 1

Note: 1. All questions are compulsory
2. Marks are indicated against the questions.

(CO3)	Q1. When do we increment the back off in a network that uses ALOHA?	(2.5 Marks)
(CO4)	Q2. An IP datagram of size 1000 bytes arrives at a router. The router has to forward this packet on a link whose MTU (maximum transmission unit) is 100 bytes. Assume that the size of the IP header is 20 bytes. Find out the number of fragments that the IP datagram will be divided into for transmissions?	(5 Marks)
(CO2)	Q3. Computer A uses Stop and Wait ARQ to send packets to computer B. If the distance between A and B is 4000km. How long does it take Computer for A to receive Acknowledgement for a packet? Use speed of light as propagation speed and assume time for receiving and sending the acknowledgement is zero. How long does it take for a computer A to send out a packet of size 1000 bytes if the throughput is 100,000Kbps?	(5 Marks)
(CO2)	Q 4. The following Hamming coded (single bit correction) string was received: 010101010111 Is there an error? If yes, specify the position?	(2.5 Marks)
(CO4)	Q5. Why IP is called 'best-effort delivery' protocol? An IP packet has arrived in which the fragmentation offset value is 300, the value of HLEN is 10 and the value of total length field is 1000. What is the number of the last byte?	(5 Marks)

Issued by:	Approved by:
Date:	Date:

 NCU THE NORTHCAP UNIVERSITY™	Question paper for Minor 2 (Re-appear)		Review Date:
	School of Engineering		Semester: Odd, I yr Session: (Jul-Dec)
	Programme :	<i>B.Tech.</i>	Maximum Marks: 20
	Course Name :	<i>Basics of Computer and C Programming</i>	Duration : 1 Hr.
	Course Code :	<i>CSL120</i>	Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

15 OCT 2016

- 1.(a) Write a program to store individual digits of a 4 - digit number on each index of the integer array. The 4-digit number should be provided by user and pass it to the function as one integer variable. (4 marks)
- (b) Write short notes on the following system software: (2x2=4 marks)
- (i) assemblers
- (ii) loader
- 2.(a) Solve the following number system conversion by showing all intermediate steps: (4x2=8 marks)
- (i) $(1010110101)_2 = (?)_{10}$
- (ii) $(476)_{10} = (?)_8$
- (iii) $(1001)_{10} = (?)_2$
- (iv) $(10011010011)_2 = (?)_{16}$
- (b) Write short notes on the following devices: (2+2=4 marks)
- (i) Optical disk
- (ii) Solid state disk drive

Issued by:	Approved by:
Date:	Date:

 NCU THE NORTHCAP UNIVERSITY	Minor- II		Review Date:
	School of Engineering		Semester: Odd I/II
	Programme: Pre PhD		Session: (July-Dec)
	Course Name: Foundations of Data Science		2016-17
	Course Code : CSL- 551		Maximum Marks: 20
	15 OCT 2016		Duration : 1 hour
			Sheet 1

Note: 1. All questions are compulsory.
2. Marks are indicated against the questions.

CO2	1(a)	Most graduate schools of business require applicants for admission to take the Graduate Management Admission Council's GMAT examination. Scores on the GMAT are roughly normally distributed with a mean of 527 and a standard deviation of 112. What is the probability of an individual scoring above 500 on the GMAT?	[3]
CO2	(b)	The Edwards's Theater chain has studied its movie customers to determine how much money they spend on concessions. The study revealed that the spending distribution is approximately normally distributed with a mean of \$4.11 and a standard deviation of \$1.37. What percentage of customers will spend less than \$3.00 on concessions?	[3]
CO2	2	An urn contains 1 red ball and 10 blue balls. Other than their color, the balls are indistinguishable, so if one is to draw a ball from the urn without peeking - all the balls will be equally likely to be selected. If we draw 5 balls from the urn at once and without peeking. What is the probability that this collection of 5 balls contains the red ball?	[4]
CO2	3(a)	You are conducting a case-control study of smoking and lung cancer. If the probability of being a smoker among lung cancer cases is .6, what's the probability that in a group of 8 cases you have: (i). Less than 2 smokers? (ii). More than 5? (iii). What are the expected value and variance of the number of smokers?	[3]
CO2	(b)	Let $X_1, X_2, X_3, X_4, \dots, X_{100}$ be a random sample from an unknown distribution. After observing this sample, the sample mean and the sample variance are calculated to be $\bar{X} = 21.32, S^2 = 27.6$ Design a level 0.05 test to choose between $H_0: \mu = 20.$ $H_1: \mu > 20.$ Do you accept or reject H_0 ?	[3]
CO2	4	You have a coin and you would like to check whether it is fair or biased. More specifically, let θ be the probability of heads, $\theta = P(H)$. Suppose that you need to choose between the following hypotheses: H_0 (the null hypothesis): The coin is fair, i.e., $\theta = \theta_0 = 1/2.$ H_1 (the alternative hypothesis): The coin is not fair and $\theta > 1/2.$	[4]

Issued by:	Approved by:
Date:	Date:

		We toss the coin 50 times and observe 40 heads. (i). Can we reject H_0 at significance level $\alpha = 0.04$? (ii). Can we reject H_0 at significance level $\alpha = 0.01$? (iii). What is the P-value?	
--	--	--	--

Issued by:	Approved by:
Date:	Date:

 NCU THE NORTHCAP UNIVERSITY	Question Paper for Minor II		Review Date:
	School of Engineering		Semester: Odd III
	Programme: B-Tech (CSE) Course Name: Data Structure & Algorithms (DSA) Course Code : CSL209		*Session: (July-Dec 16)
	17 OCT 2016		*Maximum Marks: 20 *Duration :1 Hr.
Sheet 1 of 1			
Note: 1. All questions are compulsory.			

CO3	Q1: Write and explain the correct outcome produced by the following code. [if proper justification is not found, half of the marks will be deducted] (3+2=5 Marks) (i) An implementation of a queue Q, using two stacks S1 and S2, is given below: <pre> void insert(Q, x) { push (S1, x); } void delete(Q){ if(stack-empty(S2)) then if(stack-empty(S1)) then { print("Q is empty"); return; } else while (!(stack-empty(S1))){ x=pop(S1); push(S2,x); } x=pop(S2); } </pre> Let n insert and m ($\leq n$) delete operations be performed in an arbitrary order on an empty queue Q. Let x and y be the number of push and pop operations performed respectively in the process. Which one of the following is true for all m and n? (A) $n+m \leq x < 2n$ and $2m \leq y \leq n+m$ (B) $n+m \leq x < 2n$ and $2m \leq y \leq 2n$ (C) $2m \leq x < 2n$ and $2m \leq y \leq n+m$ (D) $2m \leq x < 2n$ and $2m \leq y \leq 2n$ (ii) Consider the following pseudo code. Assume that IntQueue is an integer queue. What does the function fun do? <pre> void fun(int n) { IntQueue q = new IntQueue(); q.enqueue(0); q.enqueue(1); for (int i = 0; i < n; i++) { int a = q.dequeue(); int b = q.dequeue(); q.enqueue(b); q.enqueue(a + b); ptint(a); } } </pre>
-----	---

Issued by:	Approved by:
Date:	Date:

CO4	Q2. Design an AVL tree with the following sequence of insert and delete instructions: Insert (2,11,9,6,6,56,20,23,34,34) and delete(2,20,56)	(5 Marks)
CO4	Q3. Construct full binary tree(In-order) from given Pre-order and Post-order traversal sequences: Pre-order[] = {1, 2, 4, 8, 9, 5, 3, 6, 7} and Post-order[] = {8, 9, 4, 5, 2, 6, 7, 3, 1}	(5 Marks)
CO3	Q4. Write an algorithm/program to find In-order predecessor and successor of given node in a binary search tree.	(5 Marks)

Issued by:	Approved by:
Date:	Date:

	Question paper for Minor Test		Review Date:
	School of Engineering		Semester: Odd IV
	Programme: B.Tech, M.Tech and Ph.D.		Session: (July-Dec)
	Course Name: Digital Forensics Course Code : CSL 440/CSL 539		Maximum Marks:20 Duration :1 hr
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			Sheet 1 of 1

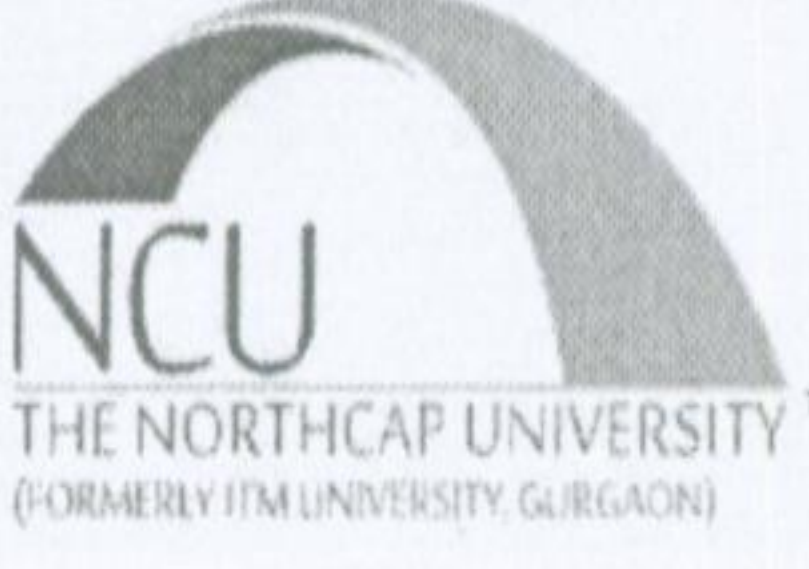
CO4	Q1. Why .ini files became obsolete nowadays? Why registry is preferred over .ini files in a computer? Validate your answer.	(3 marks)
CO4	Q2. In case of Windows NTFS registry forensics, different types of information are stored in different files. Determine the names of specific files where we can find the following information? a. Most recent entries in registry file. b. Information unique to a specific user such as Username, Logon count and Last logon time stored in registry file. c. Information related to browser such as Internet Explorer (IE) main settings, IE use count, URL history and recycle bin settings.	(3 marks)
CO4	Q3. Write the LZW encoding algorithm for lossless compression in 'Graphics Interchange format'. Also, demonstrate the steps used to encode data set 'wabba'?	(3+3 marks)
CO5	Q4. In case of network forensics, is it possible for you to download and save images opened by any other user on the same network? If yes, justify your answer by giving specific details.	(2 marks)
CO4	Q5. According to the 2015 report on "The Future of Mobile Forensics", is there any way with the help of which we can gain access to information stored on iPhone? Further, is it easy to perform Android Forensics with latest developments in Android?	(3+3 marks)

Issued by:	Approved by:
Date:	Date:

 NCU THE NORTHCAP UNIVERSITY	Question paper for Minor 2		Review Date:
	School of Engineering		Semester: III
	Programme: B-Tech Course Name: Data Structures and Algorithms Course Code : CSL-213		*Session: (July-Dec) *Maximum Marks: 20 *Duration :1 Hr.
	17 OCT 2016		Sheet 1 of 1
Note: 1. All questions are compulsory 2. Marks are indicated against the questions.			

CO2	Q1. Consider the priority queue P (Info , Priority_No) which is maintained as both one-way list and multiple queues. (a) Describe the list and multiple queues after adding (XYZ,2) ;(ABC,3); (SDF,2); (AWD,4) ;(OPQ,3)and (DEF,1). (b) Describe the list and multiple queues after deleting three elements.	(4 marks)
CO3	Q2. A binary tree T has 9 nodes. The in order and preorder traversals of T yield the following sequences of nodes: In order: E A C K F H D B G Preorder: F A E K C D H G B Draw the tree T.	(2 marks)
CO3	Q3. Construct a Binary Search Tree with values 21, 41, 16, 45, 32, 18, 36, 39, 27, 110, 112, 180, 50 Write the pre order, post order and in order traversal of the constructed binary search tree. Show the tree after deleting 32 and then 41 from the above BST.	(6 marks)
CO4	Q4. Write the algorithm for Binary Search Method. Use binary search method to search 22 in the given list. Show all the steps properly. 5, 22, 45, 65, 70, 89, 100, 120, 132	(4 marks)
CO2	Q5. Write a program to implement circular queue using array.	(4 marks)

Issued by:	Approved by:
Date:	Date:

 THE NORTHCAP UNIVERSITY™ (FORMERLY IITM UNIVERSITY, GURGAON)	Question paper for Minor II		Review Date: 01/03/2014
	School of Engineering		Semester: Odd Session: (July-Dec)
	Programme: Pre-PhD Course Name: Machine Learning Course Code : CSL603	17 OCT 2016	Maximum Marks:15 Duration :1hr
			Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

Q1. Explain the model of neural networks and also list the advantages of using a neural network.

[5 marks]

Q2. Use the k-means algorithm and Euclidean distance to cluster the following 8 examples into 3 clusters: A1=(2,10), A2=(2,5), A3=(8,4), A4=(5,8), A5=(7,5), A6=(6,4), A7=(1,2), A8=(4,9). The distance matrix based on the Euclidean distance is given below:

	A1	A2	A3	A4	A5	A6	A7	A8
A1	0	$\sqrt{25}$	$\sqrt{36}$	$\sqrt{13}$	$\sqrt{50}$	$\sqrt{52}$	$\sqrt{65}$	$\sqrt{5}$
A2		0	$\sqrt{37}$	$\sqrt{18}$	$\sqrt{25}$	$\sqrt{17}$	$\sqrt{10}$	$\sqrt{20}$
A3			0	$\sqrt{25}$	$\sqrt{2}$	$\sqrt{2}$	$\sqrt{53}$	$\sqrt{41}$
A4				0	$\sqrt{13}$	$\sqrt{17}$	$\sqrt{52}$	$\sqrt{2}$
A5					0	$\sqrt{2}$	$\sqrt{45}$	$\sqrt{25}$
A6						0	$\sqrt{29}$	$\sqrt{29}$
A7							0	$\sqrt{58}$
A8								0

Suppose that the initial seeds (centers of each cluster) are A1, A4 and A7. Run the k-means algorithm for 1 epoch only. At the end of this epoch show:

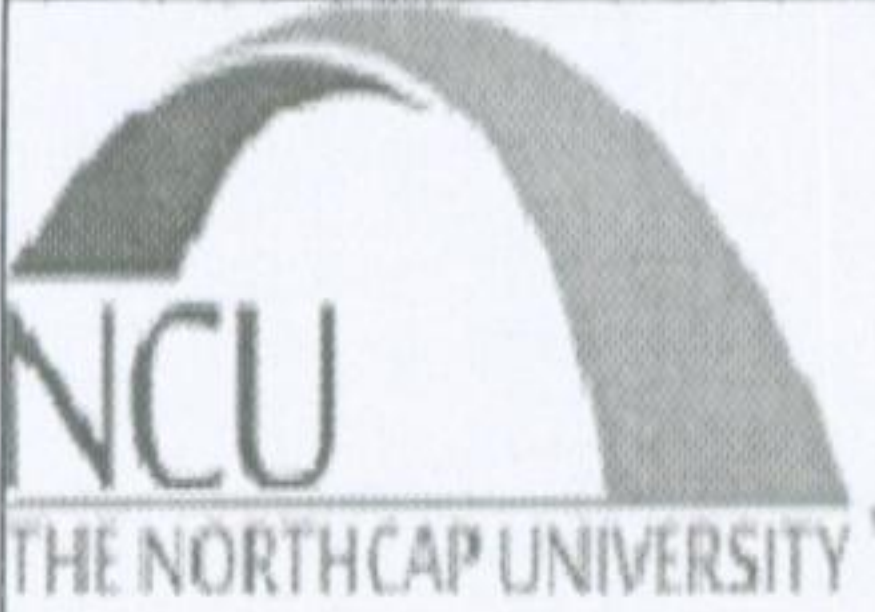
- The new clusters (i.e. the examples belonging to each cluster)
- The centers of the new clusters

[5 marks]

Q3. Explain Support Vector Machines. Give any one application area where you can use SVM and build an SVM for the same.

[5 marks]

Issued by:	Approved by:
Date:	Date:

 NCU THE NORTHCAP UNIVERSITY	Question paper for Minor II		Review Date: 01/03/2014
	School of Engineering		Semester: Even , VI
	Programme: B-Tech (Reappear) Course Name: Digital Image Analysis Course Code : CSL308		Session: (Jan-May)
			Maximum Marks: 15 Duration :1 hr
			Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

Q1. Write down the expression for the following frequency domain filters

- (a) Ideal low pass
- (b) Butterworth low pass filter
- (c) Gaussian low pass filter.

[5 marks]

Q2. What do you understand by edge detection? Explain the various filters available for edge detection using first order and second order derivative.

[6 marks]

Q3. Consider the following image segment, what will be the value of the central pixel after applying:

[4 marks]

- (a) 3x3 max filter
- (b) 3x3 min filter
- (c) 3x3 mean filter
- (d) 3x3 median filter

1	2	3	5	0
2	5	4	3	3
3	7	<u>2</u>	1	1
4	6	0	1	2
1	2	1	1	4

Issued by:	Approved by:
Date:	Date:



Question Paper for Minor Test

Review Date:

School of Engineering

Semester: Odd/IV

Programme: B-Tech

Session: (July-Dec)

Course Name: Cloud Computing

Course Code :CSL 436 / ITL 427

17 OCT 2016

Maximum Marks: 20

Duration :1 hr

Sheet 1 of 1

Note: 1. All questions are compulsory.

2. Marks are indicated against the questions.

CO6

1. Amit recently started a Clothing retail business. The business initially started well, however after 2 years he realized that there is tough competition in the market and he needs to make a more customer centric strategy to stand out in the market. Hence, he decides to collect the most granular details of the customer behaviour and build strategy accordingly. Here are some high level metrics indicating health of his business:

5 Marks

Total Customers	5000
Total No. of Purchases	12000
Total Revenue Generated	Rs. 250000
Infrastructure Cost	Rs. 150000
Investment in Clothing	Rs. 300000
Net Profit	Rs. -200000

Transaction ID	Customer ID	Item Code	Purchase date	Price
3242	A1234	I8768	13/02/2016	800
1232	B2123	I9819	14/02/2016	1200
2121	S8978	I8768	14/02/2016	900
3421	S7656	I8788	15/02/2016	800

List any three quantifiers that may be evaluated using data analytics to facilitate in identifying the changes Amit needs to make in his business. Also explain how distributed computing can help in getting the required insight.

CO2

2. Which of the following statements is correct with respect to the implementation of Pervasive computing. Justify your answer by illustrating the use of the computing paradigm involved.

3 Marks

- a) It involves Distributed computing.
- b) It involves Mobile computing.
- c) It involves both distributed and mobile computing.
- d) It involves none of these.

CO2

3. Explain the utility and the interplay of the following components of Eucalyptus Cloud middleware:

a) Walrus b) Storage Controller c) Cloud controller

5 Marks

CO4

4. Cloud Computing has led to an era of using commodity servers for data analytics. However commodity servers are prone to failures which may lead to loss of data and computation. How this problem is handled in Hadoop clusters?

4 Marks

CO5

5. Analysis of which of the following data is the most challenging and why? Structured data, semi structured data or unstructured data.

3 Marks

	Question paper for Minor Test 2		Review Date: _____
	School of Engineering		Semester: Odd
	Program: B-Tech		V
	Course Name: Operating System		Session: (July-Dec)
	Course Code :CSL 303		Maximum Marks: 20
			Duration :1:00 HRS
			Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

[CO3] Q1. Differentiate between fork() and clone(). How does Copy-on-Write (COW) handle the fork system call? [3 + 2 = 5 Marks]

[CO6] Q2. Consider a system with four processes and five resources. The current allocation and maximum need of the resources are as follows: [7 Marks]

Process	ALLOCATED	MAXIMUM	AVAILABLE
	A B C D E	A B C D E	A B C D E
A	1 0 2 1 1	1 1 2 1 3	0 0 x 1 1
B	2 0 1 1 0	2 2 2 1 0	
C	1 1 0 1 0	2 1 3 1 0	
D	1 1 1 1 0	1 1 2 2 1	

What is the smallest value of x for which the state is a SAFE STATE? Derive the Safe Sequence using Bankers Algorithm.

[CO6] Q3. Is cycle a necessary and sufficient condition for deadlock detection? Justify with an example. [4 Marks]

[CO3] Q4. (a) What extra costs are incurred by the creation and scheduling of a process as compared to the cost of a cloned thread? Also give examples for user level and kernel level threads. [4 Marks]

Issued by: _____	Approved by: _____
Date: _____	Date: _____

 NCU THE NORTHCAP UNIVERSITY	Question paper for Minor 2		Review Date: 01/03/2014
	School of Engineering		Semester: Odd
	Programme: B-Tech Course Name: OOPS 1(Introduction to Java) Course Code : CSL204		II
			Session: (July-Dec)
			Maximum Marks:20
		Duration :1hr	
		Sheet 1 of 1	

Note: 1. All questions are compulsory.
2. Marks are indicated against the questions.

17 OCT 2016

CO3:Q1 A shopkeeper has to maintain records for his books section. The book section has a maximum of 20 books. Each book has the following five attributes:

- Title
- Publisher
- Author
- Year of Publishing
- ISBN

Each Author has a name, author id and date of birth. The date of birth should have day, month and year information. If a user wants to search for a book he should be able to search the book using any of the above mentioned five attributes. The search result should display the complete information about the book. However in cases where the search gives more than one book (if user searches by year of publishing or Author), the information about all those books should be displayed. Your program should have menu driven search, function to add new books, and in all classes that you make a parametrized and a default constructor. The code should be efficient. **(7 Marks)**

CO4:Q2 Create a user defined Exception named CheckArgumentException to check the number of arguments passed through command line. If the number of arguments is less than five, throw the CheckArgumentException, else print the addition of all five numbers. **(5 Marks)**

CO5:Q3a) Implement the following Figure 1 using Java program. Also create suitable methods and constructors corresponding to each class. **(5 Marks)**

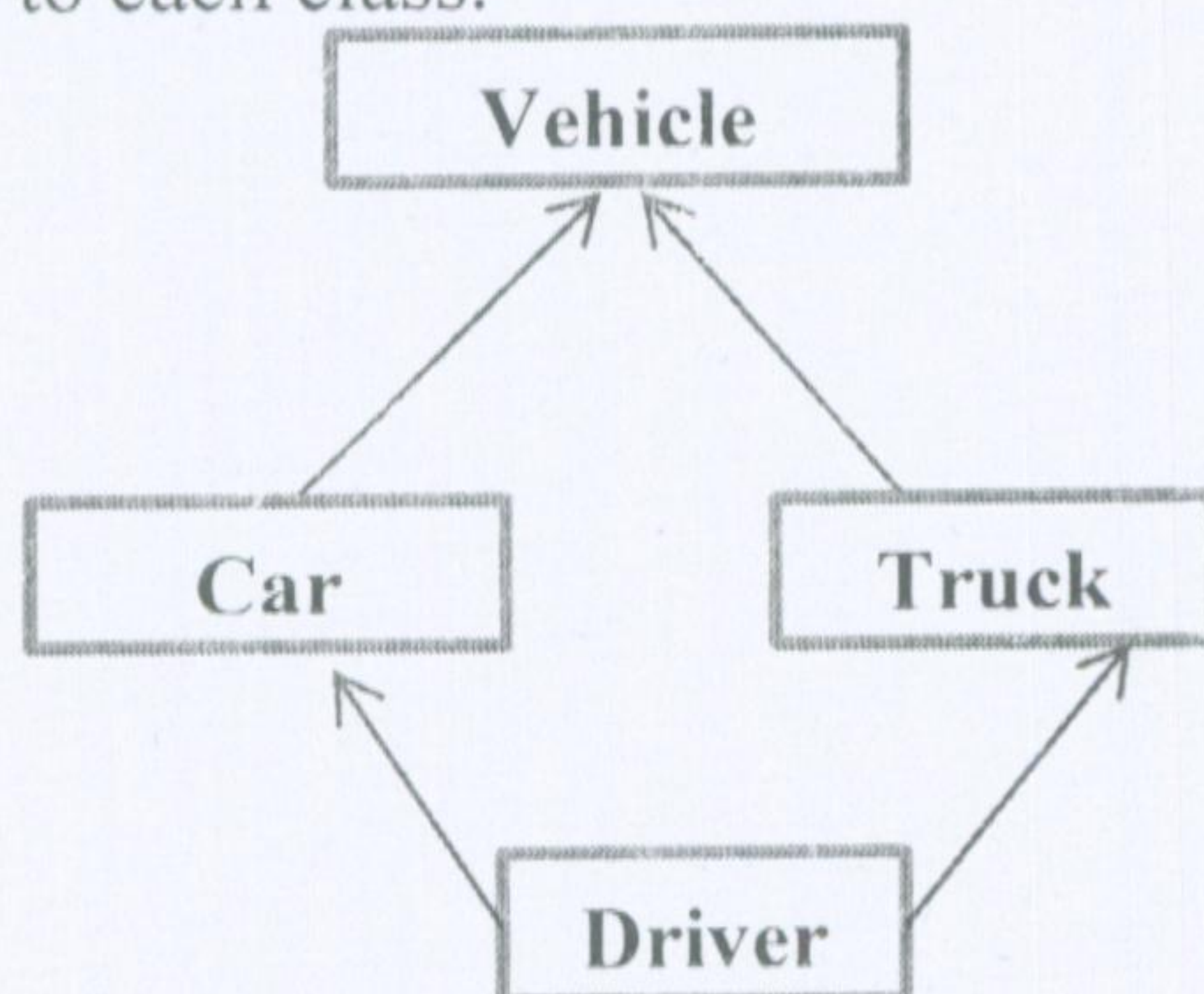
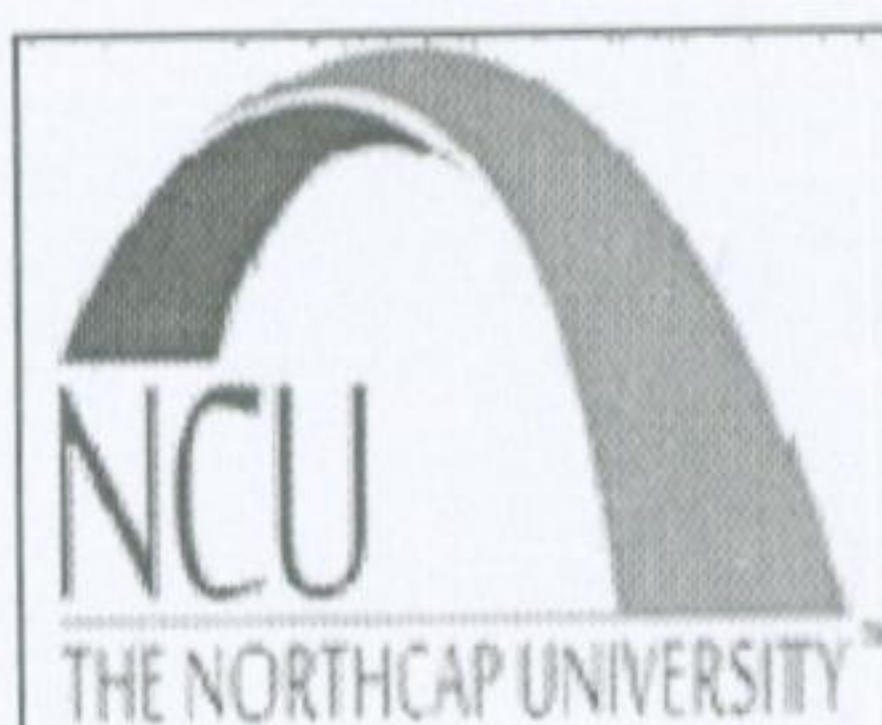


Figure 1

CO4: b) Can abstract classes implement interfaces in Java? If yes, give a suitable example. **(3 Marks)**

Issued by:	Approved by:
Date:	Date:



Minor-II

Review Date:

School of Engineering

Programme: B-Tech

Course Name: Analysis and Design of Algorithms

Course Code : CSL-301

18 OCT 2016

Semester: Odd V
Session: (July-Dec)

Maximum Marks: 20
Duration : 1 hr

Sheet 1 of 1

Note: 1. All questions are compulsory.
2. Marks are indicated against the questions.

CO3	1(a)	A draft report has five chapters. The table given below shows the lengths of the chapters and their importance where the scale is from 1(low) to 10(high). The report must be at most 600 pages long. The problem is to edit the report so that the overall importance is maximized. Implement the fractional knapsack algorithm using Greedy approach for the given problem. Compute its time complexity. <table><tr><th>Chapter</th><th>Pages</th><th>importance</th></tr><tr><td>1</td><td>120</td><td>5</td></tr><tr><td>2</td><td>150</td><td>5</td></tr><tr><td>3</td><td>200</td><td>4</td></tr><tr><td>4</td><td>150</td><td>8</td></tr><tr><td>5</td><td>140</td><td>3</td></tr></table>	Chapter	Pages	importance	1	120	5	2	150	5	3	200	4	4	150	8	5	140	3	[4]									
Chapter	Pages	importance																												
1	120	5																												
2	150	5																												
3	200	4																												
4	150	8																												
5	140	3																												
CO3	(b)	Describe how a greedy strategy approach that solve the activity-selection problem work, using the following example. Activities are sorted in increasing order of finish time: <table><tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>start_time_i</td><td>1</td><td>4</td><td>6</td><td>6</td><td>8</td><td>11</td><td>10</td><td>14</td></tr><tr><td>finish_time_i</td><td>5</td><td>7</td><td>7</td><td>8</td><td>10</td><td>15</td><td>13</td><td>20</td></tr></table>		1	2	3	4	5	6	7	8	start_time _i	1	4	6	6	8	11	10	14	finish_time _i	5	7	7	8	10	15	13	20	[3]
	1	2	3	4	5	6	7	8																						
start_time _i	1	4	6	6	8	11	10	14																						
finish_time _i	5	7	7	8	10	15	13	20																						
CO3	2(a)	Apply Prim's algorithm to find the minimum spanning tree from the following given graph and show the intermediate steps: Where S is the starting node. Compute its time complexity.	[4]																											
CO3	(b)	Consider a “reversed” Kruskal’s algorithm for computing a MST. Initialize T to be the set of all edges in the graph. Now, consider edges from largest to smallest cost. For each edge, delete it from T if that edge belongs to a cycle in T. (Never mind how to implement this. Just note that union-find does not allow deletions, so an inefficient implementation of this reversed Kruskal is not obvious.) Assuming all the edge costs are distinct, does this new algorithm correctly compute a MST?	[3]																											

Issued by:

Approved by:

Date:

Date:

CO4	3(a)	In the cases where both Greedy and Dynamic can be used for getting the optimal results, which one will be preferred and why?	[2]
CO4	(b)	Give a dynamic-programming solution to the 0–1 knapsack problem. Given a set S of 4 items, with each item x_i having benefit $b_i = \{8, 16, 24, 32\}$ with corresponding associated weights $\{w_1, w_2, w_3, w_4\} = \{5, 10, 15, 20\}$. Choose items with maximum total benefit but with total weight at most $W = 25$. Find the optimal solution using 0-1 knapsack.	[4]

Issued by:	Approved by:
Date:	Date:

	Question paper for Minor Test		Review Date:
	School of Engineering		Semester: Odd III
	Programme: Pre PhD Course Name: Cyber Security Course Code : CSL 543	18 OCT 2016	Session: (July-Dec)
			Maximum Marks: 20 Duration :1hr
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			
Sheet 1 of 1			

CO3	Q1. a. How is Nessus 'Internal Network Scan' policy different from 'External Network Scan'? What level of vulnerabilities need to be remediated in order to adhere to Security Standard Council? b. Write the command to add a user on NISSUS on kali Linux.	(2+2 =4 marks)
CO3	Q2. a. How will you detect that some unwanted packet is trying to check your ports and traverse your network, what steps you should perform in order to prevent your system from any further transmission to an unknown port? b. Is it possible for Wireshark to determine how many results Google provided on your search and how much you have opened and traversed? c. How can cookies help in session management and personalization?	(3+2+3=8 marks)
CO4	Q3. How the different modules of Metasploit help in exploiting a Windows or Linux machine? Provide specific details about each of the modules and interfaces used by Metasploit. Also, illustrate the architecture of Metasploit.	(5+3=8 marks)

Issued by:	Approved by:
Date:	Date:

 NCU THE NORTH CHINA UNIVERSITY	Question paper for Minor II		Review Date:
	School of Engineering.		Semester: Odd I sem
	Programme : M.Tech (CSE & IT)		Session: (July-Dec)
	Course Name : Mathematical Foundations of Computer Science		Maximum Marks: 30
	Course Code : CSL-501		Duration : 1 hrs
Note: 1. All questions are compulsory.			Sheet 1 of 1
2. Marks are indicated against the questions.			

18 OCT 2016

18 OCT 2016

CO4 Q.1.(a) Which of the following functions T from $\mathbb{R}^2$ into $\mathbb{R}^2$ are linear transformations:

i. $T(x_1, x_2) = (1+x_1, x_2)$

ii. $T(x_1, x_2) = (\sin x_1, x_2)$

iii. $T(x_1, x_2) = (x_1 - x_2, 0)$

(b) For linear transformation in (a) determine the null space and the range space [6 +4]

CO4 Q2.(a) Let T and U be linear operators on $\mathbb{R}^2$ defined by $T(x_1, x_2) = (x_2, x_1)$

and $U(x_1, x_2) = (x_1, 0)$

Give rules for defining $U+T$, UT and T^2

(b) Let $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$ for which

$Te_1 = (1, 0, 1)$, $Te_2 = (0, 1, 1)$, $Te_3 = (1, 1, 0)$

Where $\{e_1, e_2, e_3\}$, is the standard basis for $\mathbb{R}^3$. Is T invertible?

[6+3]

CO4 Q3. Let T be the linear operator on $\mathbb{R}^3$ defined by

$T(x_1, x_2, x_3) = (3x_1 + x_3, -2x_1 + x_2, -x_1 + 2x_2 + 4x_3)$

(a) What is the matrix of T in the standard ordered basis B of $\mathbb{R}^3$, i.e. what is

$[T]_{BB}$, where $B = \{e_1, e_2, e_3\}$.

(b) What is the matrix of T in the ordered basis $\{\alpha_1, \alpha_2, \alpha_3\}$

where $\alpha_1 = (1, 0, 1)$, $\alpha_2 = (-1, 2, 1)$ and $\alpha_3 = (2, 1, 1)$

[3+5]

CO5 Q.4. Let V be an inner product space and let $\|\alpha\|^2 = (\alpha, \alpha)$, $\alpha \in V$.

Prove the parallelogram law for the real case

[3]

Issued by:	Approved by:
Date:	Date:

	Question paper for Minor Test		Review Date: 01/03/2014
	School of Engineering		Semester: Odd III Year
	Programme: B-Tech Course Name: Advance Java Course Code : CSL423		Session: (July-Dec)
			Maximum Marks:20 Duration :1hr
			Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

18 OCT 2016

CO2 CO4	1. Answer the following in one or two lines of code a. How to create a new file using File class? b. Change the background color of first <code><p></code> tag with class ="Green" using javascript.	[2*2 = 4 Marks]
	2. Differentiate between margin and padding in box model of HTML.	[2 Marks]
CO3	3. Euler's Totient function, $\phi(n)$ [sometimes called the phi function], is used to determine the number of numbers less than n which are relatively prime to n . For example, for $n=9$ as 1,2,4,5,7 and 8, are all less than nine and relatively prime to nine, $\phi(9)=6$. Send an integer to Socket Server and server will return its Euler's Totient.	[3(Syntax) +3(Logic) =6 Marks]
CO2	4. A XYZ Company stored customer data in text file. Each row contains single customer's ID and NAME separated by space. Now, the company plans to use database to manage its customers. Assuming "Customer" table is already created in the database. Do the following step- a) Establish connection with the database of your choice.[1 Mark] b) Read the contents of the file and extract value of ID and name for all the customers [4 Marks] c) Insert the records into the table "Customer" till end of file. [2 Marks] d) After each insert print successful/ unsuccessful message on console. [1 Marks]	[1+4+2+1= 8 Marks]

Issued by:	Approved by:
Date:	Date:

 NCU THE NORTHCAP UNIVERSITY™	Question paper for Minor 2		Review Date:
	School of Engineering		Semester: Odd, IV yr Session: (Jul-Dec)
	Programme :	<i>B.Tech.</i>	Maximum Marks: 30
	Course Name :	<i>Simulation and Modelling</i>	Duration : 1 Hr.
	Course Code :	<i>CSL403</i>	Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

18 OCT 2016

- 1.(a) Write short notes on the following: (4x2 = 8 Marks)_{C02, C04}
- (i) Negative feedback systems with an example
 - (ii) Techniques to verify a simulation program
- (b) (i) Write predator-prey model and compare the growth of predator & prey using solution graphs. (3 Marks)_{C04}
- (ii) Write the equation of Gompertzian growth law. Compare it with Logistic growth and Exponential growth law with the help of graphs. (4 marks)_{C04}
- 2.(a) Write an algorithm to generate nonuniform continuous random numbers using uniform continuous random numbers by applying the inverse transformation method. (5 marks)_{C04}
- (b) Generate 15 uniformly distributed numbers for discrete values {-10, -5, 0, 5, 10}. Use uniformly distributed random numbers between 0 and 1 given overleaf in table - 1. (5 marks)_{C04}
3. Generate 10 nonuniform continuous random numbers using uniform continuous random numbers by applying the acceptance-rejection method. The given probability distribution function is: $f(x) = e^{-2x}/2$ for $x \geq 0$. Consider $a=0$, $b=2$ and $c=0.5$. Use uniformly distributed random numbers between 0 and 1 given overleaf in table - 2. (5 marks)_{C04}

Issued by:	Approved by:
Date:	Date:

Table – 1

0.34
0.39
0.98
0.79
0.75
0.08
0.83
0.54
0.97
0.52
0.41
0.29
0.04
0.12
0.48

Table – 2

U1	U2
0.10	0.39
0.19	0.58
0.51	0.10
0.06	0.40
0.70	0.16
0.53	0.05
0.39	0.18
0.22	0.24
0.69	0.23
0.16	0.80
0.19	0.28
0.15	0.07
0.52	0.29
0.46	0.11
0.44	0.15
0.25	0.21
0.49	0.02

Issued by:

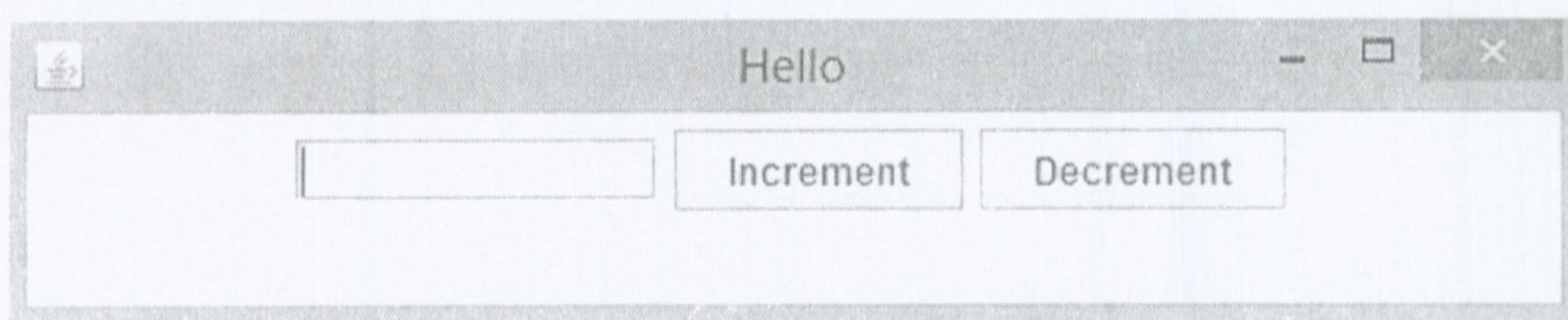
Date:

Approved by:

Date:

	Question paper for Minor Test		Review Date: 01/03/2014
	School of Engineering		Semester: Odd III Year
	Programme: B-Tech (Re-appear) Course Name: Core Java and Web Development Course Code : CSL307		Session: (July-Dec)
	18 OCT 2016		Maximum Marks:20 Duration :1hr
			Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

- Get two numbers from user and show how arithmetic exception is thrown in case of their division
[4 Marks]
- What are different types of access specifiers in Java.
[4 Marks]
- Design a swing application like following:



Textfield will contain any integer. Increment/Decrement button will increase/decrease its value.
Perform exception handling also.

[6 Marks]

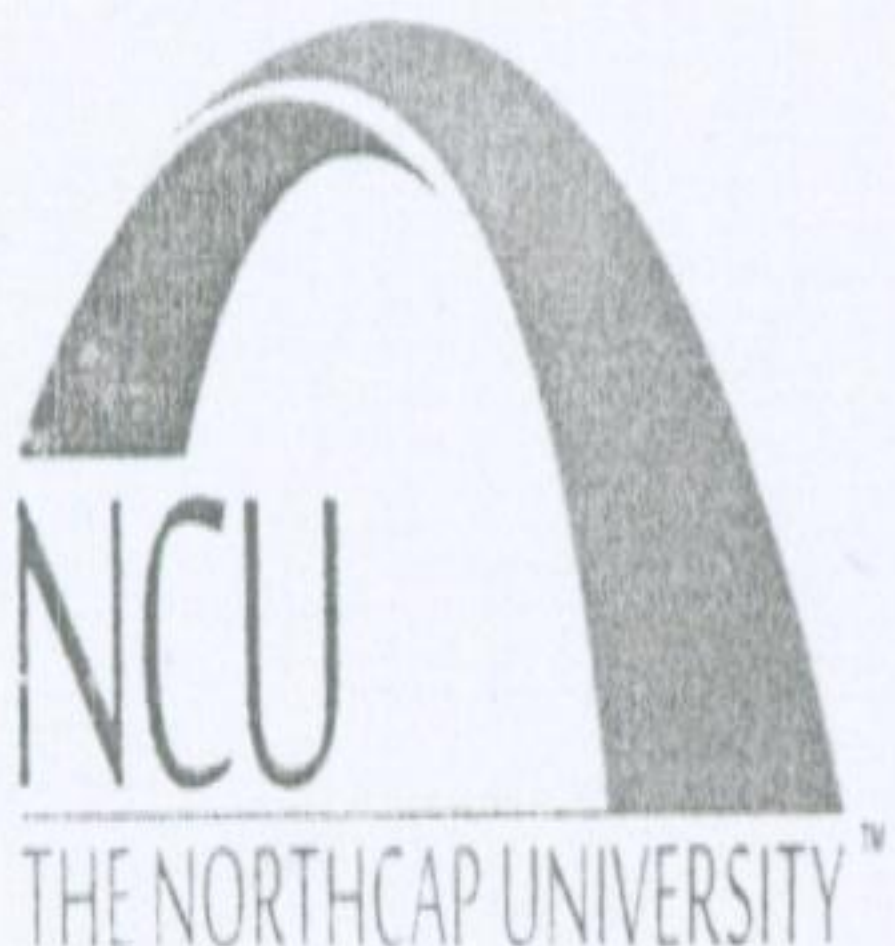
- Assume that a bank maintains two kinds of debit cards for its customers one called *Gold Card* and the other *Platinum Card*. With the Gold card, customer can make a purchase of maximum 10,000 Rs and there is no cash back facility. The Platinum card allows a transaction of maximum of 50,000Rs and give 1% cash back on every purchase.

Create a abstract class card that stores card number and abstract withdraw () function. From this derive the classes GoldCard and PlatinuCard with variables to store customer's name, account number. Include the necessary methods in order to achieve the following tasks:

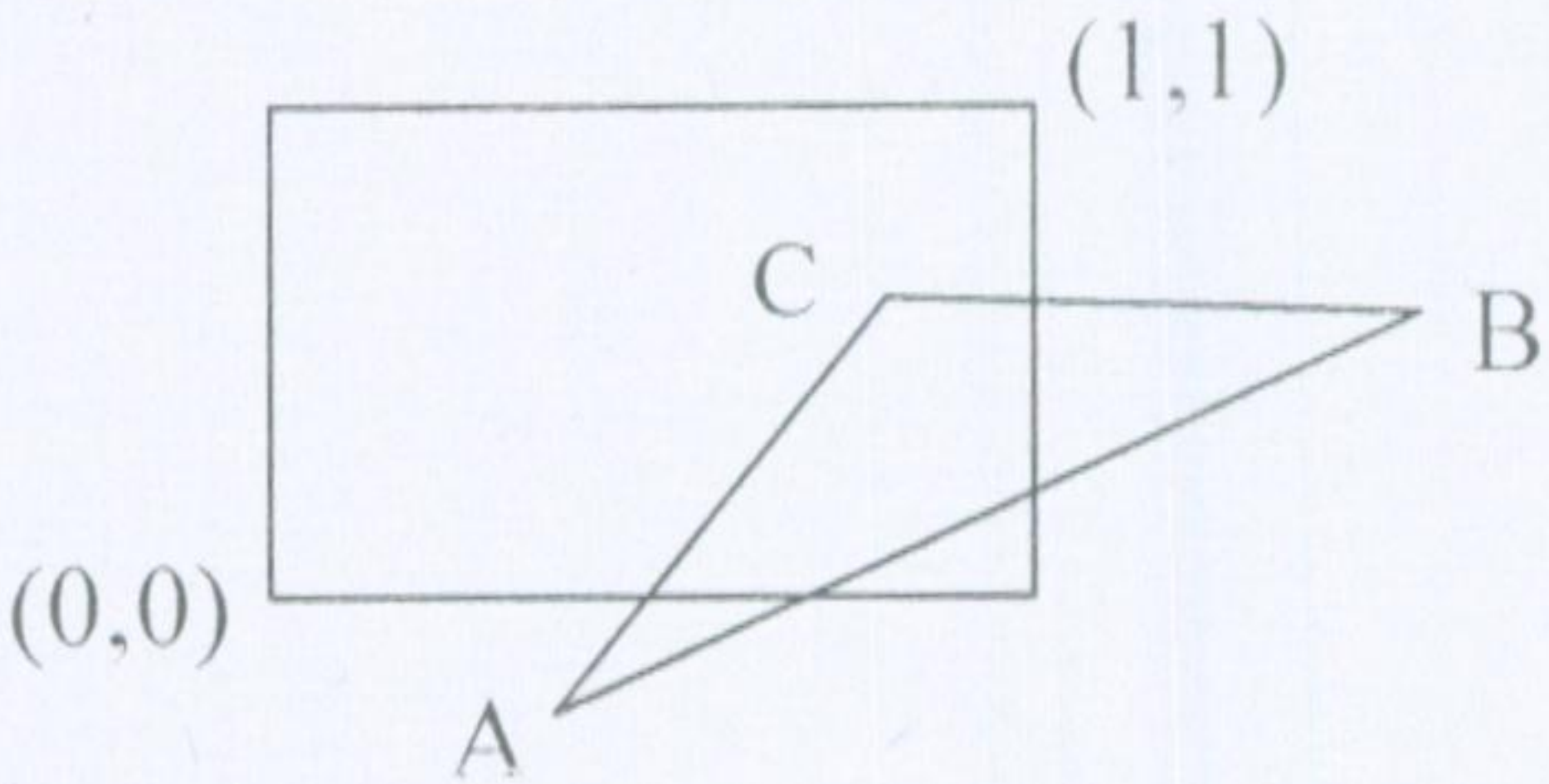
- Display the balance
- Compute and deposit cash back points
- Permit or deny Transaction and update the balance.

[6 Marks]

Issued by:	Approved by:
Date:	Date:

	Reappear Question paper for Minor 2	Review Date:
	School of Engineering	Semester: ODD (V) Session: (July-Dec)2016
	Programme: B-Tech Course Name: Computer Graphics Course Code : CSL305	Maximum Marks: 20 Duration :1 Hr
	18 OCT 2016	Sheet 1 of 1

Note: 1. All questions are compulsory
2. Marks are indicated against the questions.

(CO3)	Q1. Define homogeneous co-ordinates. Why is it required to represent the transformation matrices into homogeneous coordinates form?	(5 Marks)
(CO4)	Q2. What do you mean by vanishing point? How many vanishing points a projected view can have?	(5 Marks)
(CO3)	Q3. Find the normalization transformation that maps windows whose lower left corner is at (2,2) and upper right corner is at (5,5) onto (i) a viewport that is the entire normalized device screen. (ii) a viewport that has lower left corner at (0,0) and upper right corner $(\frac{1}{2}, \frac{1}{2})$.	(2.5 Marks) (2.5 Marks)
(CO3)	Q5. A window is defined (as shown below) in normalized device coordinates. The vertices of a triangle lie at the points A(0.1, -0.2), C(0.8,0.5) and B(1.2,0.4). Determine the sequence followed by the Sutherland Hodegeman in clipping the triangle. 	(5 Marks)

Issued by:	Approved by:
Date:	Date:

	Question paper for Minor -1	Review Date:
	School of Engineering	Semester: V
	Programme: B-Tech ECE	Session: (July-Dec)
	Course Name: DBMS	Maximum Marks: 20
	Course Code :CSL-214	Duration :1 hr
		Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.		

Q1. For the relations boat,sailor and reserve

(2X3=6 marks)

boat

bid	name	color
1	marine	red
4	clipper	blue
7	interlake	blue

sailor

sid	sname
S1	abc
S2	bcd
S3	cde

Reserve

sid	bid
S1	1
S2	7
S3	7

- Write relational algebra query to find bid of all boats of red color
- Write relational query to find the name of sailor who have reserved boat clipper.
- What will be the natural join of table boat and Reserve

Q2. Consider the following functional dependencies in a database (Roll_number, Name, Date_of_birth, Age)

(3+3=6marks)

Date_of_Birth->Age,

Age->Eligibility

Name->Roll_number

Roll_number->Name

Course_number->Course_name

Course_number->Instructor

(Roll_number, Course_number)->Grade .

for a relation (Roll_number, Name, Date_of_birth, Age)

- find all candidate keys for the relation
- Decompose the relation in 3NF

3. Differentiate between following with help of an example

(3+3+2=8marks)

- Superkey and candidate key
- inner join and outer join
- 1NF and 2NF

Issued by:	Approved by:
Date:	Date:



Minor-II

Review Date:

School of Engineering

Programme: B-Tech

Course Name: Analysis and Design of Algorithms

Course Code : CSL-301

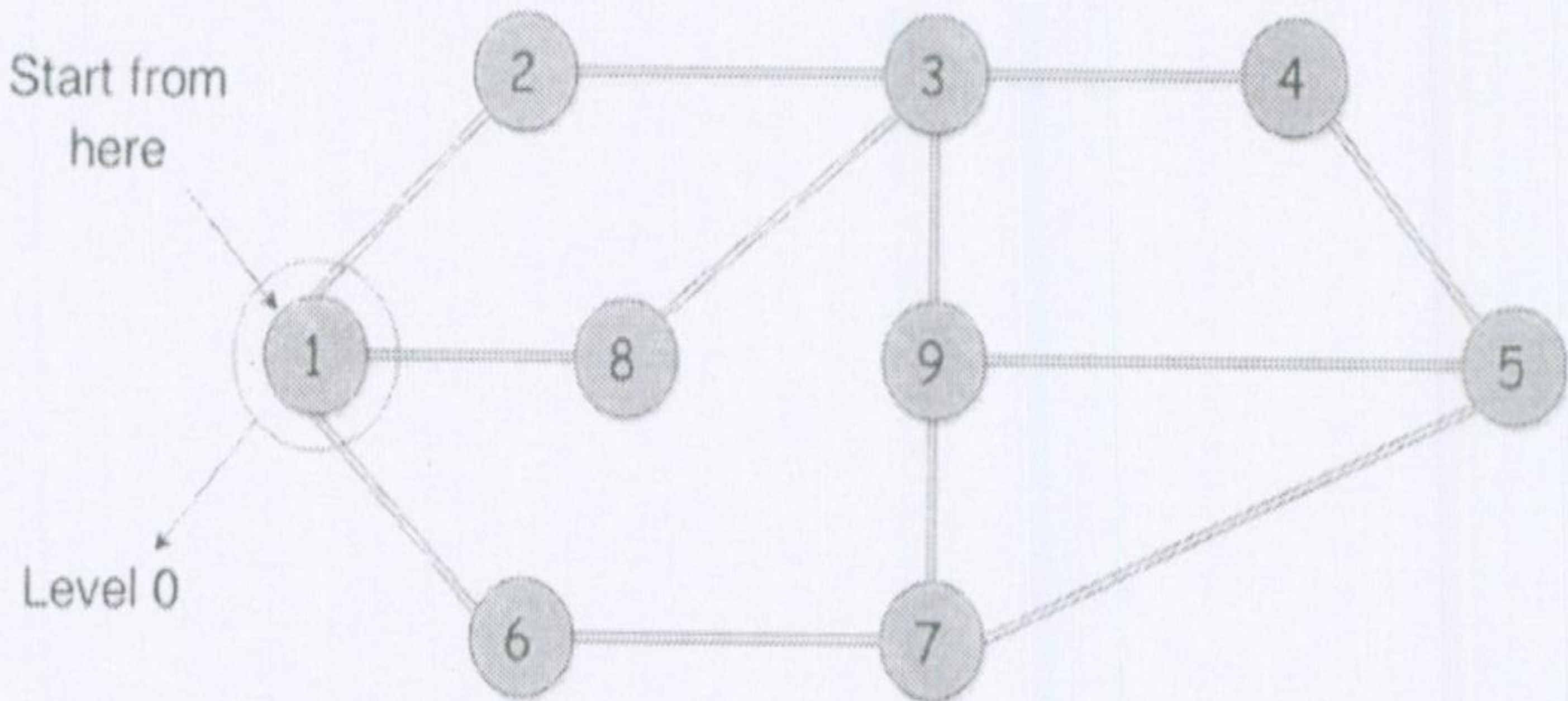
Semester: Odd V
Session: (July-Dec)

Maximum Marks: 20
Duration : 1 hr

Sheet 1 of 1

Note: 1. All questions are compulsory.

2. Marks are indicated against the questions.

CO3	1.	It is intended to network five computers at a large theme park. There is one computer in the office and one at each of the four different entrances. Cables need to be laid to link the computers. Cable laying is expensive, so a minimum length of cable is required. The table shows the shortest distances, in meters, between the various sites <table><tr><td></td><td>Office</td><td>Entrance 1</td><td>Entrance 2</td><td>Entrance 3</td><td>Entrance 4</td></tr><tr><td>Office</td><td>-</td><td>1514</td><td>488</td><td>980</td><td>945</td></tr><tr><td>Entrance 1</td><td>1524</td><td>-</td><td>1724</td><td>2446</td><td>2125</td></tr><tr><td>Entrance 2</td><td>488</td><td>1724</td><td>-</td><td>884</td><td>587</td></tr><tr><td>Entrance 3</td><td>980</td><td>2445</td><td>884</td><td>-</td><td>523</td></tr><tr><td>Entrance 4</td><td>945</td><td>2125</td><td>587</td><td>523</td><td>-</td></tr></table> (a) Starting at the Entrance 2, demonstrate the use of Prim's algorithm and hence find a minimum spanning tree. You must make your method clear, indicating the order in which you selected the arcs in your final tree (USE THE TABLE ABOVE). (b) Calculate the minimum total length of cable required. (c) Cable costs £50 per meter, what is the total cost of the minimum length of cable required?		Office	Entrance 1	Entrance 2	Entrance 3	Entrance 4	Office	-	1514	488	980	945	Entrance 1	1524	-	1724	2446	2125	Entrance 2	488	1724	-	884	587	Entrance 3	980	2445	884	-	523	Entrance 4	945	2125	587	523	-	[5]
	Office	Entrance 1	Entrance 2	Entrance 3	Entrance 4																																		
Office	-	1514	488	980	945																																		
Entrance 1	1524	-	1724	2446	2125																																		
Entrance 2	488	1724	-	884	587																																		
Entrance 3	980	2445	884	-	523																																		
Entrance 4	945	2125	587	523	-																																		
CO3	2.	Suppose there are 5 jobs in job pool having deadline (30, 10, 20, 40, 20) with corresponding profits (300, 220, 160, 250, 90). Find the feasible optimum job completion sequence to maximize the profit.	[4]																																				
CO3	3.	Given the following graph where (1) is the starting node. Search the following graph breadth wise, in anti clock wise direction. Trace Graph-Search algorithm using BFS strategies. In each case, show the order in which nodes are added to the fringe as well as the generated tree and the solution path. Leftmost nodes are added before rightmost ones. Indicate if found solutions are optimal. 	[4]																																				

Issued by:

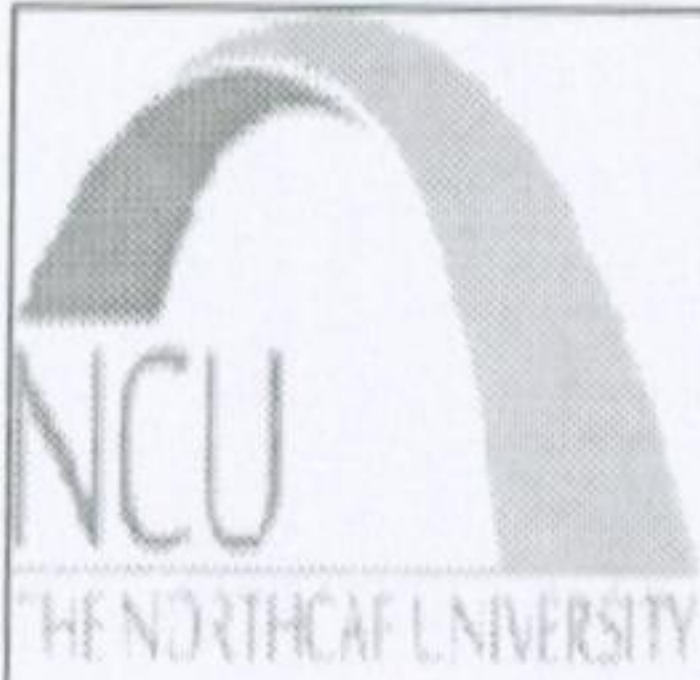
Date:

Approved by:

Date:

CO4	4(a)	Apply Dijkstra's algorithm for single source shortest paths problem and find pair of shortest paths of the following directed graph, using vertex A as the source. <pre> graph LR A((A)) -- 3 --> B((B)) A -- 7 --> D((D)) B -- 4 --> C((C)) B -- 2 --> D C -- 6 --> E((E)) D -- 4 --> E </pre>	[3]
CO4	(b)	Give a dynamic-programming solution to the 0–1 knapsack problem. Assume that $W = 40$, $n = 3$, weights are $\{w_1, w_2, w_3\} = \{10, 30, 40\}$ and profit are $\{p_1, p_2, p_3\} = \{12, 20, 24\}$. Find the optimal solution using 0/1 knapsack technique.	[4]

Issued by:	Approved by:
Date:	Date:

 NCU THE NORTHEASTERN UNIVERSITY	Format for Question paper for Minor Test-2	Review Date:
	School of Engineering	Semester: Odd
	Programme: B-Tech Course Name: FOCP-1 (Re-Appeal) Course Code : CSL106	Session: (July-Dec)
		Maximum Marks: 20 Duration :1hrs
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.		

1. Find the output of the following programs: [1x3]

```
#include<stdio.h>
int main()
{
    char j=1;
    while(j < 5)
    {
        printf("%d, ", j);
        j = j+1;
    }
    printf("\n");
    return 0;
}
```

```
#include<stdio.h>
#include<string.h>
int main()
{
    printf("%d\n", strlen("123456"));
    return 0;
}
```

```
#include<stdio.h>
#include<string.h>
int main()
{
    char str[] = "India\0\Jai\0";
    printf("%s\n", str);
    return 0;
}
```

2. Write a C program to implement the following pattern

[5]

```
*****
****
***
**
*
```

3. Write a C program to remove repeated characters in a string and then display the resulted string. [5]
4. Write down the one real time application where only do-while loop can be used. [3]
5. Write a C program to calculate the sum of the elements of an array. [4]

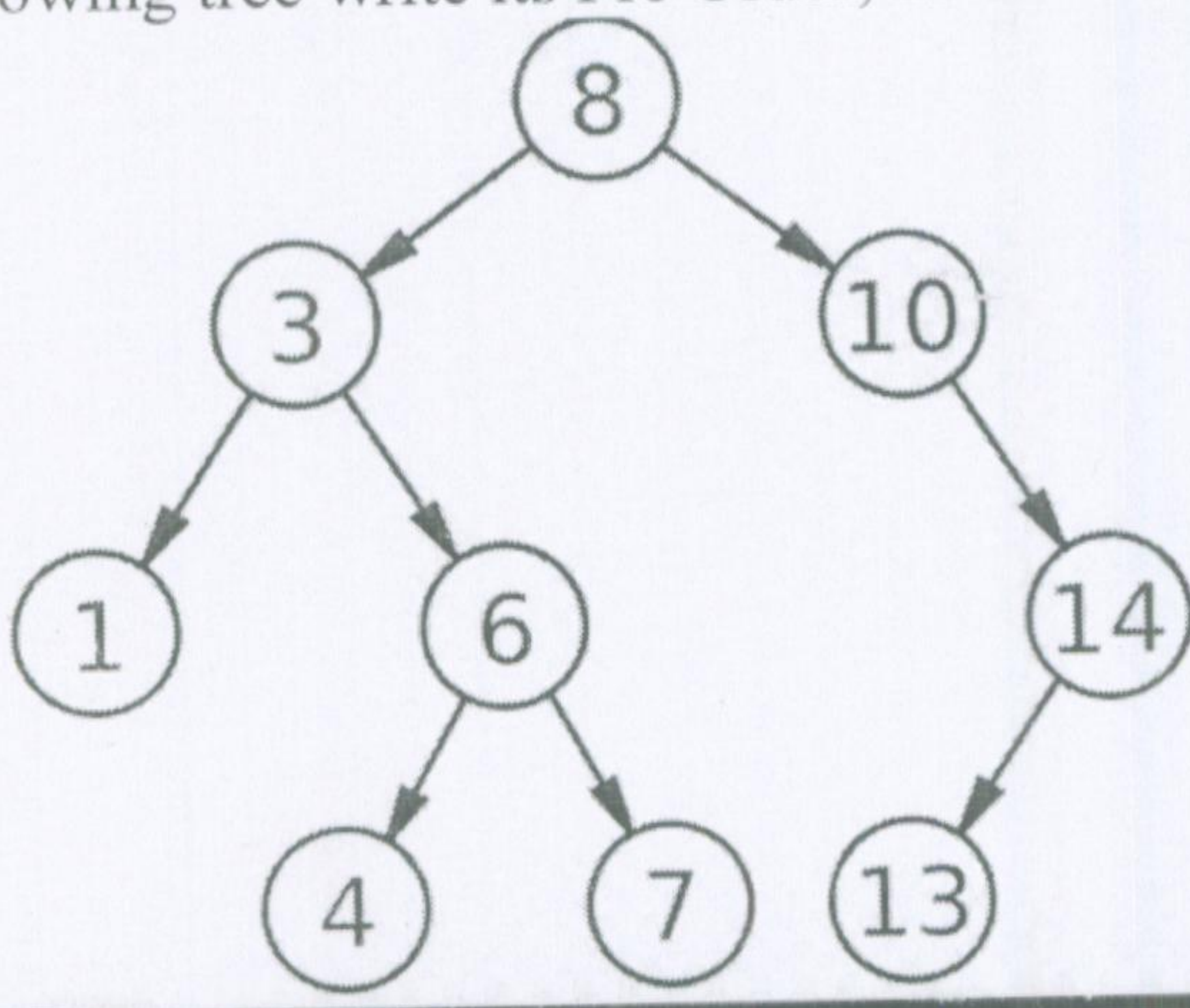
Issued by:	Approved by:
Date:	Date:

	Format for		Review Date:
	Question paper for Minor Test		
	School of Engineering		Semester: Odd(II Year)
	Programme: BTech Course Name: Discrete Structures Course Code :CSL210 20 Oct 2016		Session: (July-Dec)
			Maximum Marks:30 Duration :1
			Sheet 1 of 1
Note: 1. All questions are compulsory.			

- CO2 Q1(a) Show that the set $G=\{0,1,2,3,4\}$ is an abelian group with respect to addition modulo 5 [6]
- (b) Consider an algebraic system $(Q,*)$, where Q is the set of rational numbers and $*$ is a binary operation defined by $a * b = a + b - ab$ for all $a, b \in Q$. Prove that $(Q,+)$ is a group [6]
- CO2 Q2(a) Prove that $(Z,+, \cdot)$ is a ring under the operation addition and multiplication respectively, where Z is the set of integers. [6]
- (b) Let T be the set of all even integers. Show that the semigroups $(Z,+)$ and $(T,+)$ are isomorphic. [6]
- CO1 Q3 Check the following argument for Validity: [6]
 If I study, then I will not fail in mathematics
 If I do not play basketball, then I will study
 But I failed in mathematics
 $\therefore$ I must have Played Basketball

Issued by:	Approved by:
Date:	Date:

	Question paper for Minor Test		Review Date: 01/03/2014
	School of Engineering		Semester: Odd III Year
	Programme: M Tech Course Name: Advance Data Structure Course Code : CSL535/ CSL 529		Session: (July-Dec)
			Maximum Marks:20 Duration :1hr
			Sheet 1 of 1
Note: 1. All questions are compulsory. 2. Marks are indicated against the questions.			

CO2	1. Write algorithm to convert infix expression to postfix. Also convert (A-B)+C/D-E*F into prefix and show values in stack after each iteration	[3+3 Marks]
CO2	2. Write an algorithm to insert an element in a queue. Also check overflow condition	[4 Marks]
CO3	3. Given the following tree write its Pre Order, In Order And Post Order traversal.. 	[3*2 = 6 Marks]
CO3	4. Construct a Binary tree and write its post order traversal, given following of its sequences: Inorder traversal of 5 nodes(1-5) is : 4 2 5 1 3 Postorder traversal : 4 5 2 3 1	[2+2 = 4 Marks]

Issued by:	Approved by:
Date:	Date: