

Register Number 1 | 9 | S | 0 | 0 | 1 | 0 | 2 | 3

Sri Sivasubramaniya Nadar College of Engineering, Kalavakkam – 603 110

(An Autonomous Institution, Affiliated to Anna University, Chennai)

Department of Computer Science and Engineering

Continuous Assessment Test – I

Question Paper

Degree & Branch	B.E Computer Science and Engineering				Semester	VI
Subject Code & Name	UCS1601 – Internet Programming				Regulation:	2018
Academic Year	2021-2022 (Even)	Batch	2019-2023	Date	30.03.2022	FN
Time: 90 Minutes	Answer All Questions				Maximum: 50 Marks	

Part – A (6×2 = 12 Marks)

<KL3>	1. Identify the pattern to obtain the telephone number from user that matches ##### - ##### - #####.		<CO1>
<KL2>	2. Explain rule cascading.		<CO1>
<KL2>	3. Show how responsive layout is achieved in HTML.		<CO1>
	4. For the following JavaScript code snippets identify outputs. Provide the appropriate reasoning.		
Code Snippet 1: var z= 312 + 2 + “SSN”; console.log(z);			<CO2>
Code Snippet 2: var z= “SSN” + 312 + 2; console.log(z);			
<KL2>	5. Identify various parts of the URL given below and explain whether that part of the URL is mandatory or optional. Write the same URL for a secured way of communication with the appropriate protocol. http://www.webtutorials.com:80/webbasics/webservers.html		<CO1>
<KL3>	6. Develop an external JavaScript code to search for a word “HOME” in the given string and replace it with “SSN”. The string could be initialized in the program.		<CO2>

Part – B (3×6 = 18 Marks)

<KL2>	7. Outline the structure of HTTP Request and Response with a neat diagram		<CO1>
<KL3>	8. Consider a web page which looks like the content below. When the webpage is loaded, the ordered list contents of the page alone are to be displayed. Only after hovering on the ordered list, display its unordered items. i.e. Initially, hide the contents of unordered list. Develop the web page for this scenario.		<CO1>

1. Website Structure

- Linear
- Tree
- Web linked
- Hybrid

2. Website Type

- i. Static
- ii. Dynamic

9. a. Consider the code snippets given below.

Code snippet in the stylesheet:

```
h1 {color: white}  
h1.ICCIDS {color: yellow}  
h1.SSN {color: blue}  
h1.CSE {color: red}
```

<KL3>

Code Snippet in the HTML file:

```
< h1 class= "ICCIDS SSN CSE">Hello1</h1>  
< h1 class= "SSN CSE ICCIDS">Hello2</h1>
```

<CO

- i) Identify the colors of the word "Hello1" and "Hello2" in h1 tags?
- ii) Open the CSS file and move the h1.ICCIDS rule to the bottom of the file. Identify the color of the content in the h1 tag for the following:
< h1 class= "CSE ICCIDS SSN">

b. Develop a webpage by including a video that will automatically play when the page is getting loaded.

Part – C (2×10 = 20 Marks)

10. Develop a CSS file for the following HTML snippet using appropriate Selectors.

```
<p class="language" id="lang" >  
    <span class="C"> C </span>is a procedural  
    programming language. It was initially developed by Dennis Ritchie  
    as a system programming language to write operating system. The main  
    features of <span class="C"> C </span> language include low-level  
    access to memory, simple set of keywords, and clean style, these  
    features make <span class="C"> C </span> language suitable for  
    system programming like operating system or compiler development.  
</p>
```

<KL3>

- i) Write a rule that would display the above paragraph, and all other paragraphs in the same html file, to appear in font size 14.
- ii) Write a rule that would display the above paragraph, and all other paragraphs in the same class to appear in italic type.
- iii) Write a rule that would display a blue coloured border only for the above paragraph.
- iv) Write a rule that would display "C" in red colour only for the above paragraph.
- v) Write a rule that would display text shadow effect only for the above paragraph.

<CO1>

<KL3>	<p>11. Develop a workshop registration form using HTML form elements.</p> <ul style="list-style-type: none"> i) Obtain user's name, gender, e-mail address, DOB, phone number. ii) E-mail address should be validated such that the email address is a string separated into two parts by @ symbol. iii) DoB should be validated such that it follows the pattern DD/MM/YYYY iv) Gender should be designed with radio button for a) Male, b) Female c) Not interested in revealing. v) Place the optional survey question in the  element, where the user can expand the element to see the question. 	<CO1>
<KL3>	<p>12. Construct a JavaScript to read names and marks of 5 students from the user, using the window prompt. Calculate the  based on the ranges given below. Print the names and grades of those 5 students in the table format.</p> <p>mark>90 grade= "A" mark between 80 and 90 grade= "B" mark between 70 and 80 grade= "C" mark between 60 and 70 grade= "D" mark between 50 and 60 grade= "E" mark between < 50 grade= "E"</p>	<CO2>
(OR)		
<KL3>	<p>13. Construct an external JavaScript to replace an image element with an id "click me" with the following. The image should be replaced with a prompt window to get a lucky number from the user. After submitting the lucky number through a button click, the system should display the lucky color for the user.</p>	<CO2>

Register Number 195001023

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Department of Computer Science and Engineering

Continuous Assessment Test – I

Question Paper

Degree & Branch	BE (CSE)				Semester	VI
Subject Code & Name	UCS1602 – Compiler Design				Regulation:	2018
Academic Year	2021-2022	Batch	2019-2023	Date	31-03-2022	FN
Time: 90 Minutes 8.30 – 10.00 am	Answer All Questions				Maximum: 50 Marks	

Part – A (6×2 = 12 Marks)

<KL3>	1. Estimate the correct number of LOC(lines of code) after applying appropriate code optimization techniques for the given three address code. t1=t1*30 t2=t1+0 t3=t2+c t4=t3		<CO1>																		
<KL1>	2. What is the correct sequence of processes involved in program execution?		<CO1>																		
<KL2>	3. Illustrate the use of the global variables yytext, yyleng and yylval used in LEX with examples.		<CO1>																		
<KL3>	4. Consider a language L generates the following: It starts with \$ followed by float values with both whole number and fractional part. eg. \\$1234.56 It can start with \$ followed by integer values. e.g. \\$56 It can start with \$ followed by float values with only fractional part e.g. \\$45 Construct a regular expression to generate L.		<CO1>																		
<KL3>	5. Consider a regular expression $(a/b)^*abb(a/b)^*$. Let the follow position table be <table border="0"><tr><td>Node</td><td>followpos</td></tr><tr><td>1</td><td>1,2,3</td></tr><tr><td>2</td><td>1,2,3</td></tr><tr><td>3</td><td>4</td></tr><tr><td>4</td><td>5</td></tr><tr><td>5</td><td>6,7,8</td></tr><tr><td>6</td><td>6,7,8</td></tr><tr><td>7</td><td>6,7,8</td></tr><tr><td>8</td><td>-</td></tr></table> Apply DFA construction algorithm to find the next state for the input symbol ‘a’ from a state {1,2,3,5}.	Node	followpos	1	1,2,3	2	1,2,3	3	4	4	5	5	6,7,8	6	6,7,8	7	6,7,8	8	-		<CO1>
Node	followpos																				
1	1,2,3																				
2	1,2,3																				
3	4																				
4	5																				
5	6,7,8																				
6	6,7,8																				
7	6,7,8																				
8	-																				
<KL2>	6. Explain ambiguous grammar with an example.		<CO2>																		

Part – B ($3 \times 6 = 18$ Marks)

<KL2>	<p>7. Explain the phases of a compiler. Illustrate the output of each phase for the following code segment.</p> <pre style="margin-left: 40px;">int a,b; float c,d; d=a+c*b-20;</pre>	<CO1>
<KL2>	<p>8. Write a LEX specification to recognize the identifier, numeric constants including fraction and exponentiation, keywords and operators</p>	<CO1>
<KL2>	<p>9. Show that the grammar G1 is not suitable for implementing top down parser. Rewrite the grammar to overcome this problem.</p> <p>G1: $A \rightarrow AB1 \mid B0 \mid 1$ $B \rightarrow B1 \mid A0 \mid 0$</p>	<CO2>

Part – C ($2 \times 10 = 20$ Marks)

<KL3>	<p>10. Apply direct method to construct DFA for the regular expression $((a c)^*)ac(ba)^*$</p>	<CO1>
	<p>(OR)</p>	
<KL3>	<p>11. Apply direct method to construct DFA for the regular expression $(a b c)^*(a b)^*$.</p>	<CO1>
<KL3>	<p>12. Construct parse tree for the sentence S using grammar G. Grammar G:</p> $\begin{aligned} S &\rightarrow \text{if } E \text{ then } S \mid \text{if } E \text{ then } S \text{ else } S \mid \text{while } E \text{ do } S \mid \text{begin } L \text{ end } \mid AS \\ L &\rightarrow L \ S \mid S \\ E &\rightarrow E \ R \ E \mid E \ A \ E \mid \text{id} \\ R &\rightarrow < \mid <= \mid > \mid >= \mid != \mid == \\ A &\rightarrow + \mid - \mid * \mid / \mid \% \\ AS &\rightarrow AS=E \mid id \end{aligned}$ <p>Sentence S:</p> <pre style="margin-left: 40px;">begin while a > b do begin x = y + z a = a - b end x = y - z end</pre>	<CO1>
<KL3>	<p>(OR)</p>	<CO2>
<KL3>	<p>13. Construct recursive descent parser for the grammar G. Parse the string id / id - (id - id)</p> <p>G: $E \rightarrow E - T \mid T$ $T \rightarrow T / F \mid F$ $F \rightarrow (E) \mid id$</p>	<CO2>

Register Number 1 | 9 | 5 | 0 | 0 | 1 | 0 | 2 | 3

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Department of Computer Science and Engineering

Continuous Assessment Test – I

Question Paper

Degree & Branch	B.E. & CSE			Semester	VI
Subject Code & Name	UCS1603 & Introduction to Machine Learning			Regulation:	2018
Academic Year	2021-2022	Batch	2019-2023	Date	01.04.2022 FN
Time: 90 minutes (8.30-10.00 AM)	Answer All Questions			Maximum: 50 Marks	

Part – A (6×2 = 12 Marks)

<K1>	1. List any four sub domains of Artificial Intelligence.	<CO1>
<K2>	2. Compare the characteristics of Human brain with ANN?	<CO2>
<K3>	3. A ROC curve is plotted for a heart disease prediction problem. It is observed that on the plot area, we get a point instead of a curve. How will you solve this problem to get a curve?	<CO1>
<K3>	4. "Demand for a commodity goes down when its price rises". Identify the nature of the covariance value with proper justification.	<CO1>
<K1>	5. Define Hebb's rule.	<CO2>
<K3>	6. Write the formula for MCC and compute it for the given inputs: Actual = [1,1,1,1,1,1,1,1,0,0,0,0] Predicted = [1,1,1,1,1,1,1,0,0,1,1,0,0]	<CO1>

Part – B (3×6 = 18 Marks)

<K3>	7. Consider the given case study to decide whether to buy a computer or not based on their age, income, student and credit rating. Apply the Baye's rule to find the outcome for the given X. Explain the basics of turning data into probabilities.					<CO1>																																																																										
	$X = (\text{age} > 40, \text{Income} = \text{low}, \text{Student} = \text{no}, \text{Credit_rating} = \text{excellent})$																																																																															
	Note: Refer to the following table.																																																																															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>age</th> <th>income</th> <th>student</th> <th>credit_rating</th> <th>buys_computer</th> </tr> </thead> <tbody> <tr><td><=30</td><td>high</td><td>no</td><td>fair</td><td>no</td></tr> <tr><td><=30</td><td>high</td><td>no</td><td>excellent</td><td>no</td></tr> <tr><td>30..40</td><td>high</td><td>no</td><td>fair</td><td>yes</td></tr> <tr><td>>40</td><td>medium</td><td>no</td><td>fair</td><td>yes</td></tr> <tr><td>>40</td><td>low</td><td>yes</td><td>fair</td><td>yes</td></tr> <tr><td>>40</td><td>low</td><td>yes</td><td>excellent</td><td>no</td></tr> <tr><td>31..40</td><td>low</td><td>yes</td><td>excellent</td><td>yes</td></tr> <tr><td><=30</td><td>medium</td><td>no</td><td>fair</td><td>no</td></tr> <tr><td><=30</td><td>low</td><td>yes</td><td>fair</td><td>yes</td></tr> <tr><td>>40</td><td>medium</td><td>yes</td><td>fair</td><td>yes</td></tr> <tr><td><=30</td><td>medium</td><td>yes</td><td>excellent</td><td>yes</td></tr> <tr><td>31..40</td><td>medium</td><td>no</td><td>excellent</td><td>yes</td></tr> <tr><td>31..40</td><td>high</td><td>yes</td><td>fair</td><td>yes</td></tr> <tr><td>>40</td><td>medium</td><td>no</td><td>excellent</td><td>no</td></tr> </tbody> </table>						age	income	student	credit_rating	buys_computer	<=30	high	no	fair	no	<=30	high	no	excellent	no	30..40	high	no	fair	yes	>40	medium	no	fair	yes	>40	low	yes	fair	yes	>40	low	yes	excellent	no	31..40	low	yes	excellent	yes	<=30	medium	no	fair	no	<=30	low	yes	fair	yes	>40	medium	yes	fair	yes	<=30	medium	yes	excellent	yes	31..40	medium	no	excellent	yes	31..40	high	yes	fair	yes	>40	medium	no	excellent
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<K2>	8. Explain the McCulloch and Pitts Neural Network Model with its structure and limitations.	<CO2>
<K3>	9. Make use of the following confusion matrix to compute the accuracy, sensitivity and specificity for each class of the given multi class problem and find their overall percentage.	<CO1>

Actual	Predicted		
	C1	C2	C3
C1	10	5	5
C2	2	15	3
C3	1	1	18

Part – C (2×10 = 20 Marks)

<K2>	10. Explain five types of learning with appropriate diagram and state their uniqueness. List out any two applications in each type.	<CO1>
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(OR)

<K2>	11. Explain the importance of the curse of dimensionality and ROC curve.	<CO1>
<K3>	12. Apply the perceptron learning algorithm for the given OR network and estimate the updated weights and output of each sample for two epochs. Consider the following inputs X_1, X_2 and output T for the OR network with learning rate = 0.1, theta = 1.0, $W_0 = W_1 = W_2 = \text{bias} = 0.5$. Output = 1 if $y_j \geq \theta$ -1 if $y_j < \theta$ Note: $y_j = \text{output of weighted liner function and output} = g(y_j)$	<CO2>

X_1	X_2	T
1	1	1
1	-1	1
-1	1	1
-1	-1	-1

(OR)

<K3>	13. Explain the perceptron learning algorithm with structure and apply to model the OR network. Consider the following inputs X_1, X_2 and output T for the OR network.	<CO2>															
<K3>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>X_1</th> <th>X_2</th> <th>T</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <p>Assume: $W_0 = -0.03$, $W_1 = -0.02$, $W_2 = 0.02$, bias = -1, learning rate = 0.25, theta = 0 Estimate the updated weights and the error of each sample for one epoch.</p>	X_1	X_2	T	0	0	0	0	1	1	1	0	1	1	1	1	<CO2>
X_1	X_2	T															
0	0	0															
0	1	1															
1	0	1															
1	1	1															

Register Number 195001023

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Computer Science and Engineering

Continuous Assessment Test – I

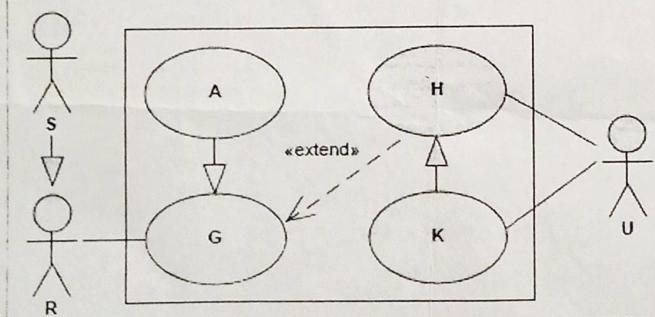
Question Paper

Degree & Branch	B.E. CSE			Semester	6
Subject Code & Name	UCS1604 - Object Oriented Analysis and Design			Regulation:	2018
Academic Year	2021-2022	Batch	2019-2023	Date	4/4/2022 FN
Time: 90 Minutes	Answer All Questions			Maximum: 50 Marks	

Part – A (6×2 = 12 Marks)

<K1>	1. What are the 3 ways to apply UML and list the 3 perspectives of UML?	<CO1>
<K2>	2. Outline the differences between OOA and OOD.	<CO1>
<K2>	3. Explain the strategies used in finding the conceptual classes.	<CO2>
<K2>	4. Explain the relationships that are possible between use cases, in use case modelling.	<CO1>
<K3>	5. Make use of the following situation and draw a UML use case diagram: <i>A person goes for lunch. On his way, the person might withdraw cash from an ATM.</i>	<CO1>
<K2>	6. Compare business object model and domain model.	<CO2>

Part – B (3×6 = 18 Marks)

<K2>	7. Explain the steps involved in the Inception process and discuss their artifacts.	<CO1>
<K2>	8. Show a Unified Process Sample Artifact for Monopoly Game and explain the same	<CO1>
<K3>	9. Identify which use cases does actor S communicate irrespective of other actors involvement in the use case. Justify your answer. 	<CO1>

Part – C ($2 \times 10 = 20$ Marks)

<K3>	10. Identify the classes and their associations for Airline Reservation System using appropriate concepts and draw the domain model diagram.	<CO2>
(OR)		
<K3>	11. Identify the classes and their associations for Library Management System using appropriate concepts and draw the domain model diagram.	<CO2>
<K3>	12. Identify the use cases and draw the use case diagram for the following scenario. For the e-police station system, display the status of the passport with respect to the following constraints. a) Victim should file a complaint and the inspector should process it and maintain the status file. b) Passport eligibility done by age constraint and criminal history.	<CO1>
(OR)		
<K3>	13. Identify the use cases and draw the use case diagram for the following scenario. Consider the Hospital Management System application with the following requirements. a) System should handle in-patient and out-patient details through a receptionist. b) Doctors are allowed to view the patients' history and give prescriptions.	<CO1>

Sri Sivasubramaniya Nadar College of Engineering, Kalavakkam – 603 110

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Computer Science and Engineering

Continuous Assessment Test -I

Question Paper

Degree & Branch	B.E CSE				Semester	VI
Subject Code & Name	UCS1625 – Foundations of Data Science				Regulation:	2018
Academic Year	2021-2022	Batch	2019-2023	Date	05-04-2022	FN
Time: 08:30 AM to 10: 00 AM	Answer All Questions				Maximum: 50 Marks	

Part – A (6×2 = 12Marks)

KL2	1. Outline the need for the data science.	CO1
KL2	2. Compare and contrast between normal Array and NumPy Arrays	CO1
KL2	3. The cost in dollars of few essentials is given in a dictionary named "old_price" Old_price –{'milk':1.54, 'coffee':2.78, 'bread': 2.5} Outline a python code that converts the cost in dollars to cost in pounds and stores the results in another dictionary using dictionary comprehension.	CO1
KL2	4. Write the python program to check for one or more occurrences of the pattern “AGTC” in a gene sequence as a string.	CO1
KL2	5. Illustrate the need for conditional statements and iteration in Randomness.	CO2
KL1	6. Why should a data scientist conduct random experiments?	CO2

Part – B (3×6 = 18 Marks)

KL2	7. List all the Python packages used for Machine Learning and Deep Learning. Explain each package and its importance.	CO1
KL2	8. Explain the roles of Data Engineer, Data Scientist, Business Analyst and Visualizer.	CO1
KL3	9. Build a python program to generate random numbers which follow Normal Distribution.	CO2

Part – C (2×10 = 20 Marks)

KL3	10. Consider a scenario in which the education will help you to gain a qualification. Based on your qualification, you are recruited by the organization of your interest. You are assigned roles and responsibilities based on your designation. Apply the concept of causality and effect between education and income. What is confounding? How do you handle this situation in the above scenario based on the factors such as education, qualification, designation, experience, and income?	CO1
(OR)		
KL3	11. Build a logistic classifier model using vectorization in python to predict if a	CO1

	<p>customer is likely to quit (customer attrition) ABC network services. The input has 8 features like <i>customer ID, location, services opted, joining date, cost of service, data usage, number of complaints and number of years a customer has been using the service</i>. Use only the last two features by slicing the input feature vector to build the model. The logistic model applies a linear combination and finally applies a non-linear transformation through the sigmoid function. The following are the required mathematical expressions</p> $Z = W^T X + b$ $Y = \frac{1}{1 + e^{-z}}$ <p>Assumptions are: (i) The number of training input as 1000. (ii) Weight vector and bias are fixed.</p>	
KL3	<p>12. Consider a game show name "Monty Hall Problem". The setting is a game show in which the contestant is faced with three closed doors. Behind one of the doors is a fancy car, and behind each of the other two there is a goat. The contestant doesn't know where the car is and has to attempt to find it under the following rules.</p> <ol style="list-style-type: none"> 1. The contestant makes an initial choice, but that door isn't opened. 2. At least one of the other two doors must have a goat behind it. Monty opens one of these doors to reveal a goat. 3. There are two doors left, one of which was the contestant's original choice. One of the doors has the car behind it, and the other one has a goat. The contestant now gets to choose which of the two doors to open. <p>The contestant has a decision to make. Which door should he/she choose to open if he/she wants the car? Should he/she stick with his/her initial choice, or switch to the other door?</p> <p>Apply randomness to the above scenario and come to a decision on whether to switch the door or go with the initial choice of door.</p>	CO2
(OR)	<p>13. Consider a case where patient is having certain symptoms of a disease. When the patient approaches a doctor for treatment, patient is asked to take up certain blood tests in order to diagnose the health problem. Make use of probability for disease diagnosis (result is either positive or negative) based on certain test parameters. If the patient is diagnosed with a particular disease, how could the doctor choose a certain type of treatment for the patient? Identify the concepts which could be suitably used to select the type of treatment and predicated the outcome of the treatment.</p>	CO2

----- ALL THE BEST -----