

Name: Samikshya
Enrolment No: R103217042

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2019

Course: Data Mining & Prediction Modeling
Program: B.Tech CSE BAO
Course Code: CSBA3001

Semester: V
Time : 03 hrs.
Max. Marks: 100

Instructions:

SECTION A

S. No.		Marks	CO
Q 1	In real world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem	4	CO1
Q 2	What are the major challenges of mining a huge amount of data (millions of tuples) in comparison with mining a small amount of data (hundred tuples)?	4	CO2
Q 3	Explain how the predictive accuracy of classification methods be estimated.	4	CO3
Q 4	What does it mean to deploy a machine learning model?	4	CO4
Q 5	Explain concept of CRISP-data mining with the help of suitable diagram.	4	CO1

SECTION B

Q 5	<p>For a given Symptoms and Diagnosis dataset - Classify whether patient has flu or not for input given below <i>Input: - (Yes, No, Mild, yes,?)</i></p> <table border="1"> <thead> <tr> <th>CHILLS</th><th>RUNNY NOSE</th><th>HEADACHE</th><th>FEVER</th><th>FLU</th></tr> </thead> <tbody> <tr> <td>YES</td><td>NO</td><td>MILD</td><td>YES</td><td>NO</td></tr> <tr> <td>YES</td><td>YES</td><td>NO</td><td>NO</td><td>YES</td></tr> <tr> <td>YES</td><td>NO</td><td>STRONG</td><td>YES</td><td>YES</td></tr> <tr> <td>NO</td><td>YES</td><td>MILD</td><td>YES</td><td>YES</td></tr> <tr> <td>NO</td><td>NO</td><td>NO</td><td>NO</td><td>NO</td></tr> <tr> <td>NO</td><td>YES</td><td>STRONG</td><td>YES</td><td>YES</td></tr> <tr> <td>NO</td><td>YES</td><td>STRONG</td><td>NO</td><td>NO</td></tr> <tr> <td>YES</td><td>YES</td><td>MILD</td><td>YES</td><td>YES</td></tr> </tbody> </table>	CHILLS	RUNNY NOSE	HEADACHE	FEVER	FLU	YES	NO	MILD	YES	NO	YES	YES	NO	NO	YES	YES	NO	STRONG	YES	YES	NO	YES	MILD	YES	YES	NO	NO	NO	NO	NO	NO	YES	STRONG	YES	YES	NO	YES	STRONG	NO	NO	YES	YES	MILD	YES	YES	10	CO3
CHILLS	RUNNY NOSE	HEADACHE	FEVER	FLU																																												
YES	NO	MILD	YES	NO																																												
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NO	YES	STRONG	YES	YES																																												
NO	YES	STRONG	NO	NO																																												
YES	YES	MILD	YES	YES																																												
Q 7	Outliers are often discarded as noise. However, one person's garbage could be another's treasure. For example, exceptions in credit card transactions can help us detect the fraudulent use of credit cards. Using fraudulence detection as an example, propose a method that can be used to detect outliers.	10	C02																																													
Q 8	Write an algorithm for k-nearest neighbor classification given k , the nearest number of neighbors, and n , the number of attributes describing each tuple. <i>OR</i> Illustrate Neural Network Classifier. Discuss Back Propagation Algorithm and its working philosophy by taking suitable example.	10	C03																																													

Q9

Explain the terms: a) Model evaluation
e) Model Deployment

b) Model Validation
d) Model Performance

10

C04

Q10

Create a complete decision tree of the following data set using C 4.5 algorithm (based on the parameter **Gain Ratio**)

OR

Create a complete decision tree of the following data set using ID3 algorithm. (based on the parameter **Information Gain**)

20

CO3

OUTLOOK	TEMP	HUMIDITY	WIND	DECISION
Sunny	Hot	High	Weak	No
Sunny	Hot	High	Strong	No
Overcast	Hot	High	Weak	Yes
Rain	Mild	High	Weak	Yes
Rain	Cool	Normal	Weak	Yes
Rain	Cool	Normal	Strong	No
Overcast	Cool	Normal	Strong	Yes
Sunny	Mild	High	Weak	No
Sunny	Cool	Normal	Weak	Yes
Rain	Mild	Normal	Weak	Yes
Sunny	Mild	Normal	Strong	Yes
Overcast	Mild	High	Strong	Yes
Overcast	Hot	Normal	Weak	Yes
Rain	Mild	High	Strong	No

Q 11

A database has five transactions. Let $\min_sup=60\%$ and $\min_Conf=80\%$

not for FP

TID	Items
T1	{A,B,C,D,E,F}
T2	{X,B,C,D,E,F}
T3	{A,Y,D,E}
T4	{A,U,Z,D,F}
T5	{Z,O,O,D,I,E}

9+9+2

CO3,
CO4

Find all frequent item sets using Apriori and FP-growth, respectively. Comment on the efficiency of these two mining processes.

Name:

Enrolment No:

92



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES School of Computer Science

Mid Semester Examination, October 2019

Course : Data Mining & Prediction Modeling

Program : B.Tech CSE BAO

Course Code : CSBA 3001

Semester : V

Time : 01 Hour

Max. Marks : 20

Instructions :

SECTION A

		Marks	
Q1	Discuss various steps involved in knowledge discovery process. Where does data mining fit in this entire process?	02	CO1
Q2	Rewrite the drawback of <i>Apriori</i> algorithm and propose two solutions through which the efficiency of this algorithm can be improved?	02	CO3
Q3	"Data preprocessing is a major challenge in data mining", critically comment on this statement by laying down various major tasks involved in data preprocessing.	02	CO2
Q4	Discuss some of the challenges of data mining.	02	CO1

SECTION B

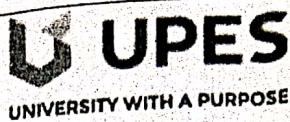
Q5	Explain the terms, preferably by taking suitable examples: a) Noise vs Outlier b) Binning c) Sampling d) Association Rule	06	CO2, CO3
Q6	Draw a decision tree based on Information Gain of the following data set:	06	CO3

Customer ID	Gender	Car Type	Shirt Size	Class
1	M	Family	Small	C0
2	M	Sports	Medium	C0
3	M	Sports	Medium	C0
4	M	Sports	Large	C0
5	M	Sports	Extra Large	C0
6	M	Sports	Extra Large	C0
7	F	Sports	Small	C0
8	F	Sports	Small	C0
9	F	Sports	Medium	C0
10	F	Luxury	Large	C1
11	M	Family	Large	C1
12	M	Family	Extra Large	C1
13	M	Family	Medium	C1
14	M	Luxury	Extra Large	C1
15	F	Luxury	Small	C1
16	F	Luxury	Small	C1
17	F	Luxury	Medium	C1
18	F	Luxury	Medium	C1
19	F	Luxury	Medium	C1
20	F	Luxury	Large	C1

Name:

Enrolment No:

92



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
School of Computer Science

Mid Semester Examination, October 2019

Course Program : Data ware housing and Multi dimensional Modeling
Program : B.Tech(CSE-BAO)
Course Code : CSIB251

Semester : V
Time : 01 Hour
Max. Marks: 20

Instructions : All questions are compulsory.

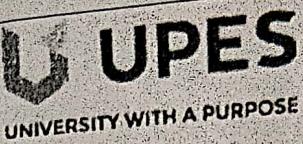
SECTION A

		Marks	
Q1	Design an algorithm and flow chart for KDD process.	02	CO1
Q2	Discuss some of the features of Mid tier architecture of Data ware house	02	CO1,C O2
Q3	Design a star schema for an university system	02	CO1,C O2
Q4	What are the important features of Data Mart.	02	CO1,C O3

SECTION B

Q5	Compare OLAP and OLTP in detail.	06	CO1
Q6	Design a HOLAP system considering any scenario.	06	CO3

Name: Samarth Gang
Enrolment No: R103217092



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
School of Computer Science

Mid Semester Examination, October 2019

Course Program : Computer Graphics
: B.Tech. (CSE)
(CCVT/GG/MFT/Big Data/BFSI/ BAO/CSF/OSS/DevOps)
Course Code : CSEG3003

Semester : 5th
Time : 01 Hour

Max. Marks: 20

Instructions : Calculators are allowed.

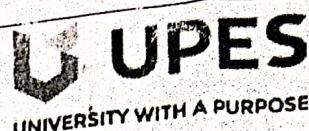
SECTION A

		Marks	
Q1	How much memory would be required to design a 1280×1024 pixels monochrome display?	02	CO1
Q2	Define a frame buffer.	02	CO1
Q3	Differentiate between Flood Fill and Boundary Fill region filling algorithms essentially on the following parameters: (i) Target region definition (ii) Recursion termination condition	02	CO2
Q4	Specify the conditions to identify the line segments under 'invisible' and 'partially-visible' categories for Cohen-Sutherland clipping algorithm.	02	CO3

SECTION B

Q5	Scan convert a circle represented through an equation $(y-5)^2 + (x-10)^2 = 64$ for the first quadrant using mid-point algorithm. Indicate all coordinates in tabular form with corresponding calculations.	06	CO2
Q6	Apply 2-D reflection over a triangle ABC with vertices A(5, 1), B(8, 3), and C(10, 1) about a straight line PQ. Line PQ can be formed by applying rotation over a straight line $Y = -X$ through an angle of 75 degrees in anticlockwise direction.	06	CO3

Name: Sambhav.
Enrolment No: R103217092



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2019

Course: Object Oriented Analysis and Design
Program: B.Tech – CSE + All Branches
Course Code: CSEG 3002

Semester: V
Time 03 hrs.
Max. Marks: 100

Instructions: Attempt all questions. Internal choice is given, wherever applicable. Diagrams should be neat and clean.

SECTION A

S. No.		Marks	CO
Q 1	Present an analytical contrast between behavioral and structural models of a system.	4	CO1
Q 2	Enumerate total number of diagrams in UML. Who are the three amigos of UML?	[1+3]	CO1
Q 3	Explain requirements engineering. Which diagram of UML is best suited for requirements modeling at functional level? [] ?	4	CO2
Q 4	Explain how CRC cards are helpful in system modeling. Design a CRC card for Customer placing and Order.	4	CO2
Q 5	Explain swim lane architecture with a suitable example.	4	CO3

SECTION B

Q 6	Give your critical comments on 'object dimension' and 'time dimension' of a sequence diagram. Draw a sequence diagram for a room reservation system through a hotel chain. System should be operated using a GUI. It should handle the reservation for multiple days after checking availability and other constraints.	[4+6]	CO4
Q 7	Discuss two aspects of an object. Differentiate object diagram and class diagram. Make an object diagram for the point of sales (POS) scenario.	[2+2+6] 1	CO2
Q 8	List the key advantages of incremental models as a better choice for project development. Explain in detail all 4 phases of RUP.	[4+6]	CO1
Q 9	Differentiate between activity and action. State the scenario of the use of activity diagram. List the basic symbols used in it. Explain preconditions and post conditions. OR Explain the meaning of 'event' and 'state'. Elaborate state machine diagram with a suitable example.	[2+2+2+4] [3+7]	CO3 CO4

SECTION-C

Q 10	Recognize the use of component diagram. Elaborate its usefulness in modeling the physical aspects of the system. List five limitations of top-down approach of system design. Make a component diagram for an online store.	[4+4+5+7]	CO5
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Q 11	<p>Explain in detail the object-oriented approach for analysis and design. Explain UML and its basic building blocks. <u>Discuss the need of collaboration diagrams in interaction modeling.</u></p> <p>CR</p> <p>List the different phases of SDLC. Explain the major activities in deployment and maintenance phases. Make a deployment diagram for a typical enterprise web application on a server architecture.</p>	[8+6+6] [4+6+1 0]	CO3 CO5
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Name:

Enrolment No:

92



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES School of Computer Science

Mid Semester Examination, October 2019

Course : .Net Technologies
Program : B.Tech. CSE-All IBM Branches
Course Code : CSEG3010

Semester : Vth
Time : 01 Hour
Max. Marks: 20

Instructions : 1. Attempt all the questions.
2. For every programming question, write the algorithm and C# code.

SECTION A

		Marks	
Q1	Why C# language is most adopted language in .net technology?	02	CO1
Q2	What is role of CLR and CLS in .net framework and where is the position of it?	02	CO1
Q3	What is the use of Garbage Collection in C#?	02	CO1
Q4	Illustrate the difference between ADO.NET and ADO?	02	CO3

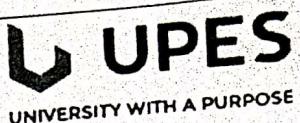
SECTION B

Q5	Elaborate the steps involve in designing the window form GUI and write the C# for the following: 1) Accept five numbers in Textbox. 2) Find total and print the result on label. 3) Calculate average of Numbers and print the result on label. 4) Find out the Maximum Number and print the result on label.	(1 Marks) (1 Marks) (1 Marks) (1 Marks)	06	2 CO2
Q6	Illustrate the steps involved in designing the following window form and write C# for the following Registration and Login form:			

REGISTRATION	
NAME	<input type="text"/>
EMP ID	<input type="text"/>
DOB	<input type="text"/>
PASSWORD	<input type="text"/>
CONFIRM PASSWORD	<input type="text"/>
<input type="button" value="CLICK TO REGISTER"/>	
LOGIN FORM	
EMP ID	<input type="text"/>
PASSWORD	<input type="text"/>
<input type="button" value="LOGIN"/>	

Data from the Registration form store in SQL Server database table and based on the detail available in the table login authentication (emp id and password) performed. If user is a legitimate user then display a login successful message.

Name: *92*
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
School of Computer Science

Mid Semester Examination, October 2019

Course : Object Oriented Analysis and Design
Program : B.Tech-CSE + All Branches
Course Code : CSEG-3002

Semester : V
Time : 01 Hour
Max. Marks: 20

Instructions : Attempt all questions. Make neat and clean diagrams, wherever required.

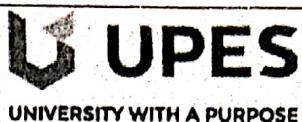
SECTION A

		Marks	
Q1	Why OOAD is a bottom-up approach? List its key advantages.	02	CO1
Q2	Elaborate the stages of SDLC.	02	CO1
Q3	What is the difference between a use case and a class? What aspects of a system do they model?	02	CO2
Q4	Critically analyze the pros and cons of RUP? What are the key tasks in 'elaboration phase'?	02	CO2

SECTION B

Q5	What is a class diagram and how is it different from an object diagram? Make the object diagram of a hotel room reservation system that operates through a web interface.	06	CO1
Q6	How are CRC cards helpful? What aspect of a system do they model? Make CRC cards for food ordering system. What can be the possible collaborators to Customer class in this scenario?	06	CO2

Name: Samarth
Enrolment No: 92



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2019

Course: Data Ware Housing and Multidimensional Modeling

Program: B.Tech(CSE-BAO)

Course Code: CSBA3002

Semester: V

Time : 03 hrs.

Max. Marks: 100

Instructions: Answer all questions

SECTION A

S. No.		Marks	CO
Q 1	Dimension reduction is one of the very important phase during data preprocessing. Justify.	4	CO1
Q 2	Compare data base and data warehouse.	4	CO1
Q 3	What is the level of granularity in the fact table? Discuss with example.	4	CO2,C O5
Q 4	Propose an algorithm in pseudo code or in any programming language for the automatic generation of concept hierarchy schema. You can take any example to represent this fact.	4	CO4,C O5
Q 5	Compare ROLAP and MOLAP.	4	CO3

SECTION B

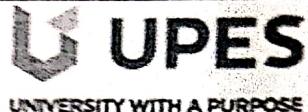
Q 6	Write an algorithm and pseudo code to represent drill down data cube computation technique with suitable example.	10	CO3,C O4,CO 1
Q 7	A data cube consists of a lattice of cuboids, each corresponding to a different degree of summarization of the given multidimensional data. Justify with suitable example.	10	CO4,C O1
Q 8	Design a three tier architecture of data ware house, considering any example and brief the responsibilities of each tier.	10	CO1,C O5
Q 9	Consider a data ware house for a big university consists of the four dimensions students, course, semester and instructor, and two measures count and avg_grade. Draw a snow flake schema diagram for the data ware house and explain in brief.	10	CO2,C O5
	OR		
	Discuss the similarities and differences in star and snow flake schema with suitable example.	10	CO2,C O5

SECTION-C

Q 10	Design a data ware house for any financial institution using top down and bottom up approach. Discuss in detail the various incremental phases during your design process in each approach.	20	CO1,C O2,C 3,CO3
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Q 11	<p>Discuss in detail the various design principles of local and global data ware houses with suitable example and their architectural topology.</p> <p style="text-align: center;">OR</p> <p>Discuss in detail IBM Cognos three tier architecture. Which component is responsible for modeling?</p>	20	CO1,C O5
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Name: ARS
Enrolment No: 002



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Dec 2019

Course: XML Programming
Program: BTech CSE CCVT
Course Code: CSEG 3007

Semester: V
Time 03 hrs.
Max. Marks: 100

Instructions: Attempt all Questions. Internal choice in Que 8 and 10

SECTION A

S. No.		Marks	CO
Q 1 ✓	Develop a XML code for restaurant menu.	5	CO1
Q 2 ✓	Compare commonly used parsers of XML.	5	CO1
Q 3 ✓	Define pre-defined entity references in XML.	5	CO2
Q 4 ✓	State any two real time XML files alongwith its usage in parent application.	5	CO4

SECTION B

Q 5 ✓	Describe the role of XML XSD over XML DTD .Explain in detail various Indicators in XSD with example of each.	10	CO3
Q 6 ✓	Discuss the significance of CSS in XML ?Define two types of selectors in CSS? State how various background effects are defined in CSS.	10	CO5
Q 7 ✓	Demonstrate step by step how AJAX works? What are the functionalities provided by AJAX?Describe various XMLHttpRequest Object Properties?	10	CO5
Q 8 ✓	Describe the function of XPATH? Illustrate various path expression used. Explain these XPath statements :- <code>/grocerystore/item[last()] and //section[@beverages='juices']</code>		
OR		10	CO2,C 04
Describe various components of XSL?Explain <code><xsl:template></code> . Develop xml code for the employee details and then make an XSLT file to show its data in the proper table format in the browser.			

Name:

Enrolment No: 002

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2019

Course: Object Oriented Analysis and Design

Semester: V

Program: B.Tech – CSE + All Branches

Time 03 hrs.

Course Code: CSEG 3002

Max. Marks: 100

Instructions: Attempt all questions. Internal choice is given, wherever applicable. Diagrams should be neat and clean.

SECTION A

S. No		Marks	CO
Q1	Present an analytical contrast between behavioral and structural models of a system.	4	CO1
Q2	Enumerate total number of diagrams in UML. Who are the three amigos of UML?	[1+3]	CO1
Q3	Explain requirements engineering. Which diagram of UML is best suited for requirements modeling at functional level?	4	CO2
Q4	Explain how CRC cards are helpful in system modeling. Design a CRC card for Customer placing and Order.	4	CO2
Q5	Explain swim lane architecture with a suitable example.	4	CO3

SECTION B

Q6	Give your critical comments on 'object dimension' and 'time dimension' of a sequence diagram. Draw a sequence diagram for a room reservation system through a hotel chain. System should be operated using a GUI. It should handle the reservation for multiple days after checking availability and other constraints.	[4+6]	CO4
Q7	Discuss two aspects of an object. Differentiate object diagram and class diagram. Make an object diagram for the point of sales (POS) scenario.	[2+2+6] 1	CO2
Q8	List the key advantages of incremental models as a better choice for project development. Explain in detail all 4 phases of RUP.	[4+6]	CO1
Q9	Differentiate between activity and action. State the scenario of the use of activity diagram. List the basic symbols used in it. Explain preconditions and post conditions. OR Explain the meaning of 'event' and 'state'. Elaborate state machine diagram with a suitable example.	[2+2+2 +4] [3+7]	CO3 CO4

SECTION-C

Q10	Recognize the use of component diagram. Elaborate its usefulness in modeling the physical aspects of the system. List <u>five limitations</u> of top-down approach of system design. Make a component diagram for an online store.	[4+4+5 +7]	CO5
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Q11 <hr/> <p>Explain in detail the object-oriented approach for analysis and design. Explain UML and its basic building blocks. Discuss the need of collaboration diagrams in interaction modeling.</p> <p style="text-align: center;">OR</p> <p>List the different phases of SDLC. Explain the major activities in deployment and maintenance phases. Make a deployment diagram for a typical enterprise web application on a server architecture.</p>	[8+6+6]]	CO3
	[4+6+1 0]	CO5

Name: *Vishal*
 Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
School of Computer Science

Mid Semester Examination, October 2019

Course : Formal Languages and Automata Theory
 Program : B Tech CSE+AI IBM/Xebia
 Course Code : CSEG3004

Semester : V
 Time : 01 Hour
 Max. Marks : 20

SECTION A

		Marks	
Q1	Define Chomsky classification of languages.	02	CO2
Q2	Construct an automaton to accept only the word ϵ over the alphabet $\Sigma = \{a, b\}$, given $Q = \{q_0, q_1\}$.	02	CO1
Q3	Find the shortest string that is not in the language, represented by the regular expression $a^*(ab)^*b^*$.	02	CO2
Q4	Design a mealy machine to find 2's compliment of a given binary number.	02	CO2

SECTION B

Q5	Minimize the following DFA using Myhill-Nerode theorem.	06	CO2
Q6	Construct a NFA over $\Sigma = \{0, 1\}$ such that it accepts every string that ends with 1 if start with 0 OR end with 0 if start with 1. Also convert this NFA into DFA.	06	CO1

Name: *V36*
 Enrolment No:

UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
 End Semester Examination, December 2019

Course: Formal Language and Automata (CSEG3004)

Semester: V

Programme: B.Tech (CS+ All IBM courses)

Time: 03 hrs.

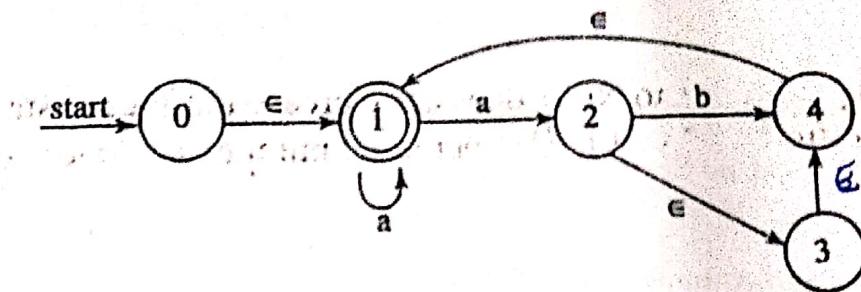
Max. Marks: 100

SECTION A

S. No.		Marks	CO
Q1	Check if the two finite automata given in the following figures are equivalent. Give reason to support your answer.	4	CO1
Q2	Differentiate between FA/PDA vs. TM with respect to: a) Tape and head b) Halt state and final state	4	CO4
Q3	Discuss P, NP and NPC class problem.	4	CO4
Q4	How many different DFA can be designed with fixed initial states over $\Sigma = \{a, b\}$ and number of states are 2.	4	CO1
Q5	Design a Moore machine for recognizing all even integers between 100 and 1000.	4	CO2

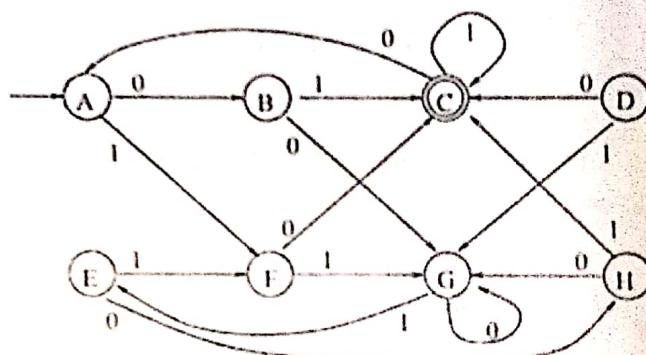
SECTION B

Q 6	Construct a Turing machine that finds the product of two natural numbers.	10	CO4
Q 7	Convert the following grammar into CNF: $A \rightarrow BAB \mid B \mid \epsilon$ $B \rightarrow 00 \mid \epsilon$	10	CO3
Q 8	Find the regular expression corresponding to the following automata:	10	CO2
Q 9	Convert the NFA- ϵ , given in the following figure, to DFA.	10	CO1



OR

Construct a minimum state automata for the following DFA-



SECTION-C

Q 10. For the following regular expression, draw a ϵ -NFA and convert into the equivalent DFA.

- a) $(a+b)^*(abb+ababab)(a+b)^*$
- b) $(\epsilon + 0+1+00+01+11+10)((0+1)(0+1)^*)$

20 CO2

~~Q 11~~ Write transition rules for a PDA corresponding to the following Context Free Language:

$L = \{ w w^R \mid w \text{ is in } (0+1)^* \text{ and } w^R \text{ represents reverse } w \}$.
Also, obtain Context Free grammar for this PDA.

OR

Write the CFG for the following language:

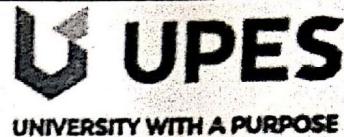
- i) $L = \{ a^x b^y \mid x \neq y \}$
- ii) $L = \{ a^n b^m c^m a^n \mid n, m \geq 1 \}$
- iii) $L = \{ (a^n b^n c^m d^m \mid n \geq 1, m \geq 1) \cup (a^n b^m c^m d^n \mid n \geq 1, m \geq 1) \}$
- iv) $L = \{ 0^i 1^j 2^k \mid k \leq i \text{ or } k \leq j \}$

20 CO3

ame:

Sankhav.

Enrolment No: R103217092



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2019

Course : Computer Graphics **Semester : V**
Program : B.Tech. (CSE) **Time : 03 hrs.**
(CCVT/GG/MFT/Big Data/BFSI/ BAO/CS^E/OSS/DevOps)
Course Code : CSEG3003 **Max. Marks : 100**

Instructions : Calculators are allowed

SECTION A

S. No.		Marks	CO
Q 1	How much time is spent in scanning across each row of pixel during screen refresh on a raster system with resolution of 1280×1024 and a refresh rate of 60 frames per second?	4	CO1
Q 2	Differentiate between Digital Differential Analyzer and Bresenham's algorithms for scan converting line segments.	4	CO2
Q 3	Determine transformation matrices for applying (a) clockwise rotation on a 2D object by 30° about origin, (b) shear in x -direction on a 2D object by 2 units.	2+2	CO3
Q 4	Differentiate between Bezier and B-Spline curves.	4	CO4
Q 5	Discuss local and global illumination with suitable example.	4	CO5

SECTION B

Q 6	Construct a Bezier curve with control points A (0, 0), B(1, 2), C(3, 2), and D(2, 0). Generate five points of the curve.	10	CO4
Q 7	Draw the interactive graphics architecture for raster scan display and discuss its various components. Also, mention its drawbacks over random scan display.	8+2	CO1
Q 8	The spatial arrangement in Fig. 1 shows a region defined by the pixels in the set $R = \{a, b, c, d\}$. The boundary of region R is defined as $B = \{1, 2, 3, 4, 5, 6, 7, 8\}$. R is defined by 4-connectivity whereas B is defined by 8-connectivity. Apply the boundary fill algorithm on region R to show the sequence of pixels picked up for filling at each recursion step. Show the content of stack S at each step. Initial state of S is shown in Fig. 1 with pixel a selected as seed.	10	CO2

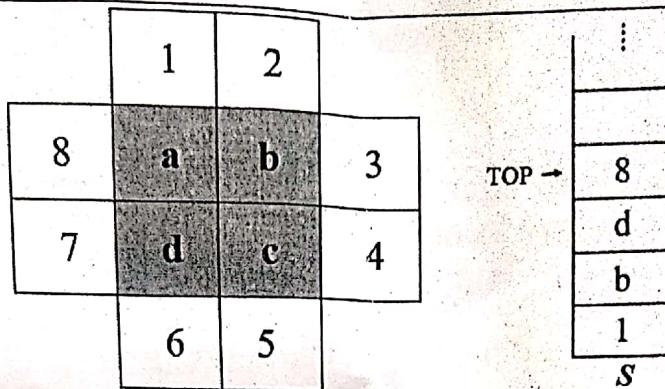


Fig. 1

Q 9

Determine a composite transformation matrix to align a vector $V = 3I - 2J + K$ with $N = I + J + K$.

10

OR

Define affine transformations with example. Perform a 45 degree rotation of a triangle A (0, 0), B (1, 1), C (5, 2) about its center.

3+7

SECTION-C

Q 10

(a) Determine the transformation matrix to map a 2D object defined in world coordinates (wx, wy) to its corresponding device coordinates (vx, vy) . Find the normalization transformation that maps a window whose lower left corner is at (1, 1) and upper right corner is at (3, 5) onto a viewport that has lower left corner at (-1, -1) and upper right corner at (1, 1).

4+4

(b) Execute the z-buffer algorithm to illuminate the pixels on an 8×8 display. The surfaces to be probed for visibility are:

- A: (1, 4, 3), (3, 4, 3), (3, 6, 3), (1, 6, 3).
- B: (2, 3, 2), (4, 3, 2), (4, 5, 2), (2, 5, 2).
- C: (4, 1, 1), (7, 1, 1), (4, 4, 1).

Assume the intensities of the surfaces A, B, and C as 10, 20, and 30, respectively. Show the content of depth and frame buffer upon each surface processing.

8

(c) Discuss the way z-buffer algorithm computes the depth at each pixel.

4

CO3

Q 11

(a) Explain Cohen-Sutherland line clipping algorithm by giving suitable example.

10

(b) Differentiate between geometric and coordinate transformations.

6

(c) Is flat shading the most efficient amongst the available shading schemes? Justify your answer.

4

CO2,
CO3,
CO5

OR

(a) Explain the working of scan-line filling algorithm by discussing its execution on the polyline region given in Fig. 2.

10

CO2,

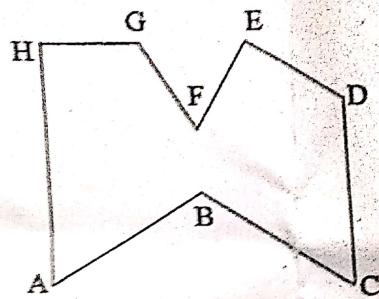


Fig. 2

(b) Brief the significance of homogeneous coordinates in graphics transformations.

5

CO3,

(c) Discuss a technique to determine the back faces of a polyhedron.

5

CO5

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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019

Course: .Net Technologies

Program: B.Tech. CSE-QS-& OS *All branches*

Course Code: CSEG3010

Semester: Vth
Time : 03 hrs.
Max. Marks: 100

Instructions:

SECTION A

S. No.		Marks	CO
Q1	Explain the architecture of ADO.NET.	4	CO 3
Q2	Write a C# program code that read data from dataset and print all the data on console using DataReader.	4	CO 2
Q3	Justify with an appropriate example that ADO.NET is having disconnected architecture.	4	CO 3
Q4	Write a C# program to sort a list of names in chronological order.	4	CO 1
Q5	Write a C# program code that convert two dimensional array into one dimensional array.	4	CO 1

SECTION B

Q6	Describe how the following concepts have been implemented in C# (with suitable example). 1) Encapsulation 2) Inheritance	5+5	CO 2 CO 1
Q7	a) Elaborates the steps involve in designing the window form GUI and write the C# for the following : 1) Request to add Item identification Number: 2) Item Name 3) Item Price 4) Quantity and save these details in Item table b) Elaborates the steps involve in designing the window form GUI and write the C# for the following : 1) Randomly generates three Number in three textboxes 2) Determine the prime number among them 3) Display the prime number in the message box	5+5	CO 3 CO 2
Q8	Explain the following a) Windows Communication Foundation (WCF) services Vs Web Services. b) Describe Master page. Explain syntax of creating master page.	5+5	CO 4 CO 3

	Illustrate the following: a) UDDI b) SOAP	OR	<u>5+5</u>	
<u>Q9</u>	(a) Describe the ASP life cycle. (b) Demonstrate the multilevel inheritance with virtual methods, using C# programming.		<u>5+5</u>	CO 1 CO 2
SECTION-C				
<u>Q10</u>	(a) Describe GDI+ application development with example. (b) Write ASP.NET program code to get age and work experience from user. Validate the form so that the entered age must be between 25 and 40 and work experience must be between 2 to 4 (Use appropriate validation control). (c) Explain briefly WPF.		10+5 +5	CO 3 CO 4
<u>Q11</u>	(a) Illustrate WCF Architecture (b) Write a C# program to print a Diamond filled with '*', using nested loop.	OR		
	a) Elaborate the steps involve in designing the window form GUI and write the C# for the following : 1) Randomly generate a number of five digit number and display it on window form using second label. 2) Determine the largest number i.e. (the combination of these number) and display it on window form using second label.		10+10	CO 4 CO 1
	Example: Generated number: 29834 Largest number: 98432.			