Nirma University

Institute of Technology

Sessional Examination, April 2023

B. Tech. in CS/EC/IC, Semester-VI

2CLOE02 REMOTE SENSING, GIS & GPS

Roll / Exam No.		Supervisor's initial with date	

Time: 1 Hour 15 Minutes | Max. Marks: 35

Instructions:
1. Attempt all questions.
2. Figures to right indicate full marks.
3. Assume suitable data whenever required.
4. Draw neat sketches wherever necessary.

Q.1 CO1 BL2	What do you mean by orbit of satellite? Differentiate between polar and geosynchronous orbits. Explain using a suitable diagram.	[07]
Q.2 CO1 BL2	Explain difference between multispectral whiskbroom and push broom scanning method.	[07]
Q.3 CO1 BL3	Describe the elements of visual image interpretation and list the activities of image interpretation.	[07]
Q.4 CO2 BL2	Define Geographical Information System and its components. Explain the importance of GIS in planning.	[07]
Q.5 CO2 BL2	Explain the steps involved to download the Landsat datasets from USGS (Path- 149 Row-43; Date- March 4th 2012).	[07]

CO# is Course Outcomes as defined in syllabus for the subject. BL is Bloom Taxonomy Level

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Sessional Examination, April 2023

B. Tech. in Computer Science & Engineering, Semester - VI

2CSDE69 LAMP TECHNOLOGY

Roll/ Exam No. _____ Supervisor's initial with date _____

Time: 1 Hour 15 Minutes Max.Marks: 35

Instructions:
1. Attempt all questions & use appropriate indentations in code.
2. Figures to right indicate full marks.
3. Draw neat sketches wherever necessary.
4. Assume suitable data wherever required and mention those.
5. Ensure you write optimized code.

Q-1. CO 1 BL 2 Discuss different ways to access global variable in the function. Discuss get_class_methods() and list() functions with sample code snippet. [10]

Q-2. CO 3 BL 3 **Write PHP code as per scenario given below:** [10]

Create a class SearchDisplayArticle. The class SearchDisplayArticle has following members:

- String strval - which is used to store string value.
- Parameterized constructor - which is used to initialize the value of strval variable.
- void DisplayArticle() - which will display the article (a, an, the) details from strval variable as mentioned below:

  Article Count_of_each_article

  Sample example:

  strval: "Department of Computer Science and Engineering was established in 1997 and since then is the most sought-after Department of the Institute. The BTech programme is accredited by the National Board of Accreditation (NBA) under Tier-I category."

Article	Count_of_each_article
a	0
an	0
the	4

Create the object of SearchDisplayArticle class, call constructor which will initialize the strval variable and call DisplayArticle() method.

Q-3. CO 3 BL 3 Write down PHP code to design Vehicle Service Registration Page which contains following fields: [15]

Sr. No.	Field name	PHP Validations, Necessary conditions
1.	Vehicle Registration Number	• Required field validation • Validation: Only accept alphabets, digits, blank space
2.	Name of owner	• Required field validation • Validation: Length of name must be less than 80 characters
3.	Date	Required field validation
4.	Address	-
5.	State	• Required field validation • Condition: Use select tag
6.	Mobile number	Validation: Length of the mobile number must be 10 digits
7.	Vehicle service components	Condition: Use multiple checkbox tags. Use different values like: Basic service, oil, oil filters, wheel rotating and balancing.
8.	Approximate bill amount	-
9.	Submit button	-

Implement PHP validations and necessary conditions as mentioned in the above table for respective fields. Repopulate all the form fields which is entered by the user in case of wrong input otherwise display the entered data on the same page. Use POST method for form submission.

****** Best of Luck ******

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Sessional Examination, April 2023

*B. Tech. in Computer Science and Engineering, Semester-VI

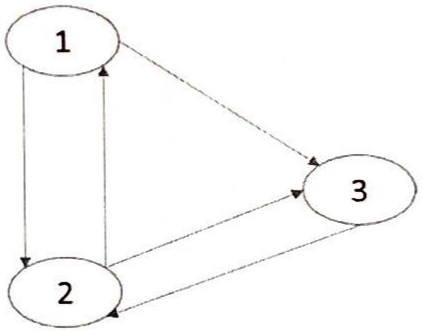
2CSDE53 INFORMATION RETRIEVAL SYSTEMS

Roll / Exam No.		Supervisor's initial with date	6/4/23

Time: 1 Hour 15 Minutes | Max. Marks: 35

Instructions:
1. Attempt all questions.
2. Figures to right indicate full marks.
3. Assume suitable data wherever necessary and specify them.

Q-1 **CLO2** Discuss the importance of page rank in information retrieval system and calculate the page rank of the web pages for the following web graph using power iteration method. Perform calculations up to five iterations. **[7]**



Q-2 **CLO1** Discuss in detail how web crawler deal with two parameters politeness and freshness. Explain the role of data structures in achieving above-mentioned parameters. **[7]**

Q-3 **CLO3** Initial Query =" costly gold costly diamond very costly gold". **[7]**

D1=" gold costly showroom costly gold"

D2=" costly silver diamond "

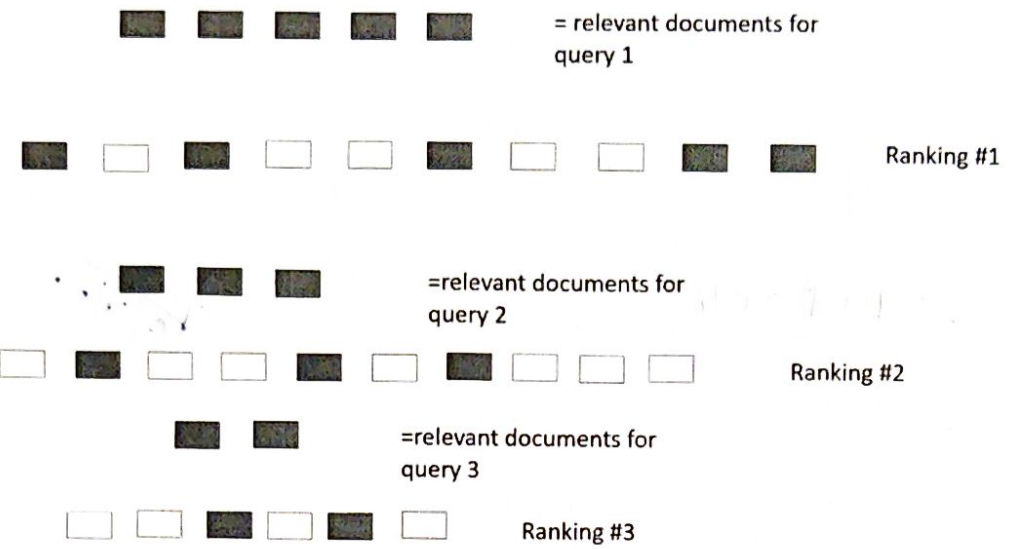
What would the revised query vector after applying Rocchio relevance feedback mechanism if document D1 is judged as relevant and D2 is judged as not relevant?

Assume $\alpha=1$, $\beta=0.75$, and $\gamma = 0.25$.

Also Discuss the problem occur with pseudo relevance feedback approach in brief.

Q-4
CLO2

[7]



What is the role of recall and precision in information retrieval discuss with confusion matrix? Calculate the mean average precision for all relevance level mentioned in above figure.

Q-5
CLO3

Consider technique collaborative filtering to implement recommender system. Utility matrix given below represents the rating for certain movies given by users. Predict the rating for Movie **M3** by User **U3** by user-user and item-item collaborative filtering using centered cosine similarity measure (Pearson correlation). Consider $|N| = 3$. Which technique is better user-user or item-item collaborative filtering? Justify your answer. **[7]**

		Users						
		U1	**U2**	**U3**	**U4**	**U5**	**U6**	**U7**
Movies	**M1**	3		2	1		4	
	M2			4	5			4
	M3	4	2		2	1		3
	M4		2	4		5		
	M5			4	3	4	2	
	M6	1		3		3		

Nirma University

Institute of Technology

Sessional Examination (IR), April 2023

B.Tech in Computer Science & Engineering, Semester: VI

2CSDE67: Cloud Computing

Roll/ Exam No

Supervisor's initial with date

Time : 75 minutes

Max Marks: 35

Instructions:
1. Attempt all questions.
2. Figures to right indicate full marks.
3. Draw neat sketches wherever necessary.

Q-1 Answer the following **[20]**

A CLO3 BL2 State TRUE or FALSE for the following statements. If the statement is TRUE, then give an example (with the support of the diagram) for the same and if the Statement is FALSE, justify the same (with the support of the diagram). (14)

(i) The IaaS delivery model represents a pre-defined "ready-to-use" environment typically comprised of already deployed and configured IT resources.

(ii) The logical network perimeter establishes a virtual network boundary that can encompass and isolate a group of related cloud-based IT resources that may be physically distributed.

(iii) All three cloud delivery models [IaaS, PaaS, and SaaS] cannot be combined to establish layers of IT resources that build upon each other.

(iv) SaaS is a cloud delivery model for shared cloud services that can be positioned as commercialized products hosted by clouds.

(v) The cloud resource administrator can be (or belong to) the cloud consumer or cloud provider of the cloud within which the cloud service resides.

(vi) Admission control algorithms play an important role in deciding the set of requests that should be admitted into the application server when the server experiences very low loads.

(vii) In the Rules-Based Engine, the operation policy defines a sequence of actions to be enacted under different conditions/trigger points.

B CLO4 BL4 — Why SLAs are an important factor in Cloud Computing? Mention the steps (also explain each step) associated with the life cycle of SLA. (06)

Q-2 Do as directed **[15]**

A CLO1 BL5 — Illustrate with the diagram the main mechanisms besides the "*Elastic Resource Capacity Architecture*". Also, mention how the "*Intelligent Automation Engine*" support's the mentioned architecture. (06)

B CLO2 BL3 — For the following problem, how the exchange of "*heartbeat messages*" can found to be effective? Illustrate the same with the diagram and the concepts of the Cloud Computing architecture. (06)

"Hypervisors can be responsible for creating and hosting multiple virtual servers. Because of this dependency, any failure conditions that affect a hypervisor can cascade to its virtual servers."

C CLO3 BL5 — Mention any two case study that supports the utility and need of the "*Resource Reservation Architecture*". [you need to mention any two problems, which can be solved by using the implementation of the "*Resource Reservation Architecture*"]. (03)

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Sessional Examination, April - 2023

B.Tech. in Computer Science & Engineering, Semester-VI

2CS601 – Theory of Computation (THOC)

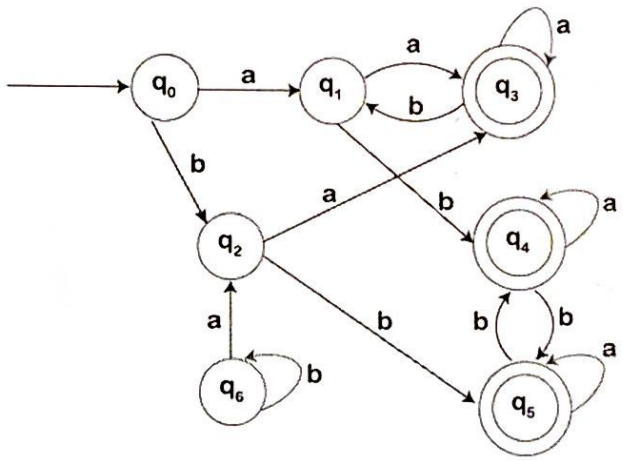
Roll/ Exam No. | Supervisor's initial with date

Time: 1 Hour 15 minutes | Max. Marks: 35

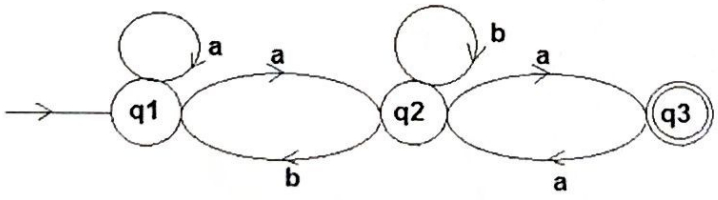
Instructions:
1. Attempt all questions.
2. Figures to the right indicate full marks.
3. Draw neat sketches wherever necessary.
4. Make suitable assumptions wherever necessary and specify them.

Q-1 **Do as directed:** **[20]**

(A) CO1 Minimize the following finite automata (05)



(B) CO3 Find the regular expression of given automata using Arden's method (05)



(C) CO4 Check whether string **"ababba"** belongs to the given CFG or not (using CYK algo) (05)

S → AB | BC
A → BA | a
B → CC | b
C → AB | a

(D) CO1 Transform the following context free grammer (CFG) into greibach normal (GNF) form. (Note: **'S'** is the start symbol) (05)

$S \rightarrow FD \mid EE$
$E \rightarrow e \mid SE$
$F \rightarrow e$
$D \rightarrow d$

Q-2 **Do as directed:** **[15]**

(A) CO3 Construct context free grammer for the given language (05)

$L=\{ x^a y^b z^c \mid a<b$ **or** $a>c \}$

(B) CO3 Prove the language $L=\{a^x b^y a^z \mid z=x+y \}$ is not regular using the pumping lemma. (05)

(C) CO2 Draw DFA for given the Regular Expression (RE) (05)

(a+b+ca) ((bab)*+(a+b)*)* (ab)*

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