

Veermata Jijabai Technological Institute

ESE B. Tech Final Year (Semester VII)

181070901

01/12/2020

This is the subjective part of your examination. Write the answers on a paper, then scan and upload it in the appropriate classroom. All questions are compulsory.

CE4106S - Open Elective - Sustainable Development

Section 1: 8 marks per question

8

1. The population of a city in three consecutive decades i.e. 1981, 1991 and 2001 is 60,000; 150,000 and 380,000, respectively. Determine (a) The saturation population, (b) The equation of logistic curve, (c) The expected population in 2011.

Section 2: 8 marks per question

8

1. Predict population of the year 2081, 2091, 2101 from the following population data using incremental increase method

Year	2021	2031	2041	2051	2061	2071
Population	12,80,378	16,43,580	18,59,902	22,32,469	28,58,579	34,11,628

Section 3: 8 marks per question

8

1. The population data for a town is given below. Find out the population in the year 2011, 2061 and 2091 by arithmetical increase method

Year	1941	1951	1961	1971	1981	1991
Population	89000	115000	152000	218000	282000	363000

Section 4: 8 marks per question

8

1. The following information is available for a seeded 5-day BOD test conducted on a wastewater sample. 18 mL of waste sample was added directly into 300-mL BOD incubation bottle. The initial DO of the diluted sample was 8.7 mg/L and the final DO after 5 days was 2.2 mg/L. The corresponding initial and final DO of the seeded dilution water was 9.1 and 7.9 mg/L respectively. What is the 5-day BOD of the wastewater sample?

Section 5: 8 marks per question

8

1. Enumerate and discuss second, third, fifth, and seventh goals of MDG's

▼ Click here for save to pdf instructions:

- Chrome : Click [here](#) to view instructions.
- Firefox : Click [here](#) to view instructions.
- Other Platforms: Use the screenshot feature to take a screenshot of the webpage.

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CO4001S - Software Architecture

Section 1: 8 marks per question 8

1. What is the relationship between mobility and security? Explain in detail.

Section 2: 8 marks per question 8

1. Describe how the layered pattern makes use of these tactics: abstract common services, encapsulate, and use an intermediary.

Section 3: 8 marks per question 8

1. Consider the Java virtual machine JVM. Redesign the Java virtual machine JVM using the abstract data type style and discuss the advantages and disadvantages of your design.

Section 4: 8 marks per question 8

1. Generally speaking, the scalability of a software system refers to the property that the system can be scaled up to a large scale system, for example to handle a large number of users simultaneously or to store and process a large volume of data.
 - (i) Discuss various kinds of specific scalabilities;
 - (ii) For each kind of scalability, discuss which architectural style will support it.

Section 5: 8 marks per question 8

1. For each of the following generic scenarios, derive some concrete scenarios as its instances by following the steps given below:
 - (i) Identify the parameters contained in the scenario;

- (ii) Give some instant values of the parameters;
- (iii) Substitute the instant values into the generic scenarios to replace the parameters.

The generic scenarios are:

- (a) The computer that the software system is executing on is upgraded to a more powerful one with larger memory space and high processing speed, but completely compatible with the existing one.
- (b) A new computer is added into the network as an additional server to improve the system's performance. The new server is of the same type as the existing ones.

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B Tech (CE-1)

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE (VJTI)

Department of CE & IT

Guidelines: (MST -1st October 2020)

1. Duration of examination: 1-hour, Maximum Marks-20, All questions are compulsory.
2. Assume suitable/appropriate data wherever required.
3. Clearly specify the assumptions, if any.

Q. No	Question	Marks
1	There are 10 students who applied for higher studies. The data set attributes are Name, Gender, Age, CPI, GRE score, work experience. Design a Decision Tree model to predict whether a student will get an admit or not? Assume attribute values in appropriate range.	8
2	You are appointed as data scientist in a company which manufacture a vaccine for COVID-19 Corona virus. Your job is to decide strategy for testing the vaccine. Suggest most appropriate strategy so that the results can be further analysed. Justify your answer.	8
3	Consider a vector $X = \{\text{alphabets in your first name}\}$ and $Y = \{\text{alphabets in your surname}\}$ then find the cosine similarity between these vectors. Alphabet A to Z are coded as 1 to 26 respectively.	3
4	For skewed right distributions and/or datasets with high outliers has ----- --- .	1
	Mean > Median	
	Mean < Median	
	Mean = Median	
	Mean > Median > Mode	

Veermata Jijabai Technological Institute**ESE B. Tech Final Year (Semester VII)****181070901****04/12/2020**

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CO4003T - Data Mining and Data Warehousing**Section 1: 10 marks per question****10**

1. Describe the possible negative effects of proceeding directly to mine data that has not been pre-processed. Give appropriate examples of data pre-processing. (Take examples not discussed in this paper set).

Section 2: 10 marks per question**10**

1. Consider the training data in the Table-4. It is used to train a robot to predict whether or not a college office contains a dustbin. (A) Give characteristics of naïve bayes Classifier. (B) Construct a naïve bayes classifier for the aforementioned table. (C) Show how this classifier will classify the instance {Student, Four, CS, Small}

Table-4

Status	Floor	Department	Office Size	Dust Bin?
Faculty	Four	CS	Medium	Yes
Student	Four	EE	Large	Yes
Staff	Five	CS	Medium	No
Student	Three	EE	Small	Yes
Staff	Four	CS	Medium	No

Section 3: 10 marks per question**10**

1. What is Medoid? Consider a dataset of ten records having two attributes. Obtain two sub-clusters using K-Medoids. Compare K-Medoids with K-Means and show how K-Medoids take care of Outliers.

Section 4: 10 marks per question

10

1. What are the major challenges faced in bringing data mining to market? Illustrate one data mining issue that, in your view, may have a strong impact on the market and on society. Discuss how to approach such a issue.
-

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CO4118T - Blockchain Technologies

Section 1: 6 marks per question 6

1. Create a table with three columns (parameters, Block#, Block#) and with rows representing five parameters of Bitcoin Blockchain (timestamp, difficulty, transaction volume, block reward, fee reward). Use any Bitcoin explorer and fill in the values of block number (last five digits of your ID) and of any block of 5th Dec 2020 (Bitcoin blockchain). Write your three critical observations using this data.

Section 2: 5 marks per question 5

1. Discuss Proof-of-Work and Proof-of-Stake consensus mechanisms

Section 3: 4 marks per question 4

1. Explain DLT taxonomy and its importance

Section 4: 2 marks per question 10

1. List three functions of an ideal Stable coin.
2. What is Eth 2.0 deposit contract?
3. What is the key management problem in Symmetric Key Cryptography?
4. What are the Mainnet and Testnet of Bitcoin blockchain?
5. Explain Non-Fungible Token with suitable example.

Section 5: 5 marks per question 5

1. Provide ER diagram of a typical Container Shipping Management use case. How Blockchain and IoT are suitable for this use case?

Section 6: 4 marks per question**4**

1. Give the 4 necessary and sufficient conditions (Coffman - 1971) to obtain a deadlock situation.

Section 7: 6 marks per question**6**

1. Write a Solidity code (Consensus contract), that: a. Has 10 owners (a list of owners in constructor) b. A function to transfer funds to an account (make it a struct) c. For the transfer to be accepted, each owner must agree in the order defined in the list d. For the second owner to agree, the first one has to agree first. The same logic for all owners e. If all owners agree within 5 minutes of the idea to transfer the funds, the transfer is accepted and the funds are transferred

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CO4002T - Information Security

Section 1: 10 marks per question

40

1. Illustrate the Creation of the virtual host to deploy two web sides first :
https://www.vjti.edu and
second : https://www.vjticmp.org using Linux Red Hat based Apache name-based virtual hosts.
How can you harden web server just to give the access to the students of department of computer engineering using ssh Password and authentication of the web site: https://www.vjticmp.org.
OR
Illustrate user authentication and file protection mechanisms in red hat linux operating systems.
2. Illustrate the http protocol header field vulnerabilities, attacks and defense mechanism.

OR
You are appointed to design the Network of your company . Your company have three departments namely (1)Project Implementation department having 3 floors, each floor have requirement of 80 computers ,(2) Research Department having 2 floors, each floor have requirement of 40 computers and (3) Finance and placement department having 1 floor above the Research Department having requirement of 40 computers. What are the different active and passive components requirement for intranet connectivity within your company, design the network and prepare the design document.
3. Illustrate any 5 ways to do SQL Injection attacks and give one protection mechanisms against every way to mitigate SQL Injection attack .
4. Illustrate DAC, MAC and RBAC with suitable SQL Security Model. What are the locations of paths where the DAC, MAC, RBAC access information about the user is

stored in oracle data base.

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VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
[Central Technological Institute, Maharashtra State]
Matunga, Mumbai-400 019

SEMESTER EXAMINATION *Mid Semester Examination-Sept 2020*

DATE :

30/09/2020

SEMESTER & PROGRAM *Sem-VII B.Tech (Computer Engg)*

TIME 12.00 PM

to 1.00 PM

TIME ALLOWED

1.00 Hr

MARKS

20

COURSE (Course Code)

Information Security (CO4002_T)

Instructions

1. **Solve any two questions.**
2. All questions carry equal marks.
3. Figures to the right indicate full marks.
4. Answer to sub question should be answered one below the other.
5. Use the answer sheet format send to you on google classroom of Information Security and forward answer sheet in pdf format from your official login to classroom.google.com of Information security before 1.10 pm .
6. Figures may be drawn by hand or any software tool and photocopy or image may be fixed with answer sheet.
7. Cut Paste Material Or Cut Paste Figures Will Be Considered As Copy.

Que 1	(a) How the preserving confidentiality, integrity and availability of Google classroom Systems relate to the concerns over interception, Interruption, confidentiality ,Modification and Fabrication.? Justify with reasons. ? (b) How you can build “Multilevel Physical and Personal Access Control Systems” to the data centre of any software Industry say TCS or Google Data Centre ?	10
Que 2	Apply Security Requirements Engineering Process (SREP) by integrating common criteria components security requirements into the UML software engineering process in a systematic and intuitive way on the following case study :List all the milestones and their content. E-learning tool which would enable the participating actor, say a professor to create his own synchronous interactive learning material using multimedia resources. This when coupled with database management is intended to serve as a repository of lectures in video (along with audio) and text in various file types on the website that would enable aspiring students from remote centers all around the nation to acquire knowledge and pursue their education just by registering with minimum cost for the required course .	10
Que 3	(a) Illustrate the Creation of the virtual host to deploy two web sides first : https://www.vjti.edu and second : https://www.vjtcomp.org using Linux Red Hat based Apache name-based virtual hosts. How can you harden web server just to give the access to the students of department of computer engineering using ssh Password and authentication of the web site: https://www.vjtcomp.org . (b)When a Programmer write a program, then how it is feeded to the computer and how it actually works ? How the operating systems and the computer architecture interact with each other for the execution of the program ? Where the operating system is stored on the computer or how it is being used by CPU ?	10

=====The Start=====