

Roll No.

TIT-801

B. TECH. (IT) (EIGHTH SEMESTER)

MID SEMESTER EXAMINATION, April, 2023

IT-INFRASTRUCTURE MANAGEMENT

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) Who are responsible to manage the IT infrastructure activities ? Discuss specific skillsets required for the *three* important components of IT Infrastructure. (CO1)

OR

- (b) Discuss about the today's computing complexity. List the areas where it are visualized. (CO1)

2. (a) Who are responsible to manage the IT infrastructure activities ? Discuss specific skillsets required for the three important components of IT Infrastructure. (CO1)

OR

- (b) Explain cluster computing and grid computing with suitable example. List the various applications of these technologies. (CO1)

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3. (a) What is In-depth Interview ? How does it work to obtain a qualitative research for identification of customer requirements ? (CO2)

OR

- (b) Why is ITIL required ? List the areas where ITIL plays an effective role. (CO2)

4. (a) Discuss about the IT system Management Process with its important component involved in the attainment of the common task. (CO2)

OR

- (b) Discuss about the following organizational development approach : (CO2)

(i) People-Process-Technology Approach

(ii) Strategy-Tactics Operational Approach

5. (a) What are key volumes of ITIL v3 Library ? Explain about service strategies, service design. (CO2)

OR

- (b) What are the alternatives of ITIL ? Compare and contrast ITIL and MoF. (CO2)

Roll No.

TDM-881

B. TECH. (CSE/IT) (EIGHTH SEMESTER) MID SEMESTER EXAMINATION, April, 2023

DISASTER MANAGEMENT

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) What is a Hazard ? Also explain the terms risk, vulnerability and resilience. (CO1, CO2)

OR

- (b) What is Risk ? Explain the process of Risk Management. (CO1, CO2)

2. (a) What are natural disasters ? List and explain the various types of natural disasters. (CO1, CO3)

OR

- (b) What is vulnerability ? Discuss how to mitigate the effect of disasters by reducing vulnerabilities. (CO1, CO3)

3. (a) What is a cloud burst ? Explain the effects of cloud burst and how to mitigate the effects of this disaster. (CO2, CO3)

OR

- (b) What is man-made disasters ? Discuss the major reasons of this category of disasters. (CO2, CO3)

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4. (a) What is Disaster Management Act, 2005 ? Discuss the Environmental legislations related to disaster management in India. (CO2, CO5)

OR

- (b) Explain the role of Assessment surveys for the planning and mitigation of Disaster. (CO2, CO5)

5. (a) What is Tsunami ? Discuss the reasons of Tsunami in Indian coasts.

(CO4, CO5)

OR

- (b) What is planning ? Explain the role of Planning and the Disaster Management Cycle at the different levels. (CO4, CO5)

Roll No.

TCS-802

B. TECH. (CSE) (EIGHTH SEMESTER)

MID SEMESTER EXAMINATION, April, 2023

MOBILE COMPUTING

Time : 1½ Hours

Maximum Marks : 50

- Note :** (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) What do you understand by wireless technology ? Discuss any *three* critical issues related to wireless technology. (CO1)

OR

- (b) What do you understand by Multiplexing and why is it used ? Discuss any *two* multiplexing techniques. (CO1)

2. (a) What is handover in cellular communication and why is it important ? How does the receiver signal strength affect the handover decision ? (CO2)

OR

- (b) Differentiate between GSM and GPRS. Discuss the network elements that are different in GMS and GPRS. (CO2)

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3. (a) Illustrate the 802.11 protocol stack and explain its various components.
(CO1)

OR

- (b) Discuss any *four* Data Management issues encountered in Mobile Computing. (CO4)
4. (a) With the help of a diagram, discuss the Bluetooth protocol stack in terms of its various layers and how they are used. (CO2)

OR

- (b) Discuss the advantages and disadvantages of CDMA over other techniques. (CO2)
5. (a) Differentiate between Fixed Channel Allocation and Dynamic Channel Allocation. (CO2)

OR

- (b) Why are different size cells used in wireless networking ? Discuss any *two* disadvantages of having different cell sizes. (CO2)

TCS-812

B. TECH. (CSE) (EIGHTH SEMESTER)

MID SEMESTER EXAMINATION, April, 2023

GRAPH DATABASE

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) What is a Graph Database ? Explain with examples.

OR

- (b) Discuss any *five* use cases of Graph Databases.

2. (a) What are the major challenges associated with the Graph Database ?

OR

- (b) Discuss some of the tools and techniques used in Graph Databases.

3. (a) Explain the key differences between RDBMS and Graph Database.

OR

- (b) What are the main advantages and disadvantages of using Graph Databases ?

4. (a) What is Graph Data Modelling ? Explain with an example.

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OR

- (b) Design the Graph Data Model for any *one* use case.
5. (a) Discuss Graph Database Modeling Guidelines.

OR

- (b) Consider a RDBMS model of your own choice and convert it into a Graph Database Model.

Roll No.

TCS-822

B. TECH. (CSE) (EIGHTH SEMESTER)
MID SEMESTER EXAMINATION, April, 2023
MOBILE APPLICATIONS DEVELOPMENT

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) Develop an application to store student details like roll no, name, branch, marks, percentage and retrieve student information using roll no. in SQLite databases. (CO1)

OR

- (b) Explain the services in Android operating system. (CO1)
2. (a) Write the directory path where images are stored while developing Android application. (CO2)

OR

- (b) Develop a program to send an e-mail. (CO2)
3. (a) Describe the significance of SQLite database in Android. (CO2)

OR

- (b) List all attributes to develop a simple button. (CO2)

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4. (a) Explain the activity life cycle. (CO1)

OR

- (b) Enlist the steps to Publish the Android application. (CO1)

5. (a) Describe the Android architecture in detail. (CO1)

OR

- (b) List sensors in Android and explain any *one* in detail. (CO2)

Roll No.

TCS-826

B. TECH. (CSE) (EIGHTH SEMESTER) MID SEMESTER EXAMINATION, April, 2023

UNIX SYSTEMS PROGRAMMING

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) How does a bash shell use fork() and wait() system calls to run a command that you enter on terminal ? Explain with the help of a suitable diagram. (CO1)

OR

- (b) How does Copy on Write (COW) mechanism work with fork() system call ? How does it improve the normal fork() system call ? Explain. (CO1)
2. (a) With suitable code examples, differentiate between a binary semaphore and mutex. (CO2)

OR

- (b) In Linux systems, in what kind of situations are First Come First Serve (FCFS) and Round Robin (RR) scheduling used ? Write a small code to show the working of Round Robin scheduling in Linux. (CO2)

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3. (a) Write C code to implement the following Unix pipeline between two child processes : (CO3)

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OR

- (b) Write C code in which a child process writes a string to a pipe and the parent reads the string from the pipe and prints it on the screen. (CO3)

4. (a) Write a code in which the main() function creates five threads that simultaneously run a function func() while main() waits. Each thread increments a global variable 1000 times so that at the end the global variable contains value of 5000. Note that a thread may need multiple time slices before it could finish incrementing the variable 1000 times.

(CO2)

OR

- (b) Explain the difference between the following POSIX functions with suitable examples, if required : (CO2)
pthread_create(), pthread_join(), pthread_wait(), pthread_exit().

5. (a) In Message Queue IPC mechanism, what is the key and how is it created using ftok() ? Write the message structure for Message Queue.

(CO2)

OR

- (b) Write a program in which a parent process and a child process communicate through Shared Memory IPC mechanism i.e. The parent writes a string to shared memory and the child reads the string and prints it. (CO2)

Roll No.

TCS-828

**B. TECH. (CSE/CE) (EIGHTH SEMESTER)
MID SEMESTER EXAMINATION, April, 2023**

ADVANCE MICROPROCESSOR SYSTEM AND DESIGN

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) Explain the internal architecture of 8086. (CO1)

OR

- (b) Write an assembly language program for performing the Multiplication and Division of 16 bit numbers using 8086 Microprocessor. (CO1)

2. (a) Explain Flag register of 8086. (CO1, CO2)

OR

- (b) Explain different addressing modes of 8086. (CO1, CO2)

3. (a) Differentiate between 8086 and 8088. (CO2)

OR

- (b) Write down the comparison of minimum mode a maximum mode pins in 8086. (CO2)

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4. (a) Explain different program development tools. (CO2)

OR

- (b) What is MASM ? List few features of MASM. (CO2)

5. (a) What are the various schemes used to solve the bus arbitration problem in multiprocessors ? (CO2)

OR

- (b) Write an assembly language program for transfer 10 bytes of data from 2060 to 3060 location. (CO2)

Roll No.

TCE-851

B. TECH. (CSE) (EIGHTH SEMESTER)
MID SEMESTER EXAMINATION, April, 2023

DISASTER MANAGEMENT

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) How would you describe PRI and its role in disaster management ?

(CO1)

OR

(b) How would you describe disaster management on national level ?

(CO1)

2. (a) What facts would you suggest explaining positive realms of a disaster on the development ?

(CO1)

OR

(b) Development can decrease the vulnerability. Is the statement correct ?

List down some points to support your answer.

(CO1)

3. (a) How would you contrast the impact of disaster on victims and on the society (not on the nature) ?

(CO1)

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(2)

OR

- (b) Classify natural disasters that your country deals with and enlist various such disasters that your region (State) has faced in past as per their year of occurrence. (CO1)

4. (a) Explain the term Sustainable Development goals. How can they be achieved ? (CO2)

OR

- (b) How would you describe 'Hazards' and 'Vulnerability' ? Write *five* possible causes of forest fires. (CO2)

5. (a) What elements would you choose to explain differential impacts of a disaster ? (CO2)

OR

- (b) How would you contrast the impact of climate change on disaster in terms of declining biodiversity, human migration and decrease in agricultural yield ? (CO2)

Roll No.

TCS-851

B. TECH. (CSE) (EIGHTH SEMESTER) MID SEMESTER EXAMINATION, April, 2023

STORAGE NETWORKS

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) Illustrate server centric IT architecture and storage centric IT architecture with advantages and limitations. (CO1)

OR

- (b) What is a protocol ? Explain the popular interface protocols used for host to storage communication. (CO1)

2. (a) What is DAS ? Illustrate DAS, benefits and limitations. (CO2)

OR

- (b) Explain the evolution of storage architecture with a neat diagram. (CO2)

3. (a) What is FC-SAN ? Discuss the components of FC-SAN with a neat diagram. (CO2)

OR

- (b) Discuss the activities in developing the ILM strategy. (CO2)

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4. (a) "A disk drive is an electromechanical device that governs the overall performance of the storage system environment." Justify the statement.

(CO3)

OR

- (b) Explain the core elements of the data center with a suitable example.

(CO3)

5. (a) What are the components of the RAID array ? Discuss in detail.

(CO2, CO3)

OR

- (b) Discuss the configuration of RAID 0 and RAID 1 level. (CO2, CO3)

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TCS-855

B. TECH. (EIGHTH SEMESTER)
MID SEMESTER EXAMINATION, April, 2023
AGILE SOFTWARE ENGINEERING

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) How can Agile teams optimize collaboration, communication, and productivity by adopting best practices for efficient and effective interaction ? (CO1)

OR

- (b) What are the distinct phases of the Scrum framework as defined in the SBOK® Guide, and how does each phase contribute to the successful delivery of high quality products in an Agile environment ? (CO1)
2. (a) What is the data flow diagram of the Implement phase in project management and how can it be used to ensure efficient execution of project tasks, effective communication with stakeholders, and timely resolution of issues and risks during project implementation ? (CO2, CO3)

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OR

- (b) What are the distinct roles and the associated non-scrum specific roles, in the Scrum framework how do they contribute to the success of Agile projects and what are the key responsibilities and competencies associated with each role ? (CO2, CO3)
3. (a) What are the tangible deliverables and events that are commonly associated with the Scrum framework, how do they help Agile teams to efficiently plan, track, and execute project tasks, and what are the key benefits of using these artifacts and ceremonies in project management ? (CO2, CO3)
4. (a) What are the various Agile methodologies that are commonly used in software development, how do they differ in terms of their core principles, values, practices, and applications ? (CO4)

OR

- (b) What are some of the key practices that need to be practiced in Extreme Programming (XP) to ensure high-quality software delivery, and how can they be effectively implemented to promote collaboration and efficiency within the development team ? (CO4)

(3)

5. (a) What are the principles of Lean Software Development (LSD) and how do they differ from other Agile methodologies in promoting a lean and efficient approach to software development ? (CO5)

OR

- (b) What are the MoSCoW Rules, and how can they be effectively applied in DSDM to prioritize requirements ? (CO5)

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TCS-859

B. TECH. (CSE) (EIGHTH SEMESTER)
MID SEMESTER EXAMINATION, April, 2023

SERVICE ORIENTED CLOUD ARCHITECTURE

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) Discover how mobile and measurement attribution company AppsFlyer is running high-throughput advertising workloads in the cloud using Amazon EKS, reducing latency by 30-90 percent. Evaluate satellite assemblies in above mentioned organization. (CO1)

OR

- (b) Investor servicing and compliance solutions supplier Deep Pool Financial Solutions unlocked insights from its project-management software using Amazon QuickSight. Evaluate web services framework in above mentioned organization. Evaluate interface in above mentioned organization. (CO1)

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(2)

2. (a) Commercial vehicle manufacturer MAN Truck & Bus used features of Amazon EC2 to build a payment processing system that speeds up transactions in and around vehicles and helps optimize fleet management. Evaluate client side and server side in above mentioned organization. (CO3)

OR

- (b) Automotive technology company Cox Automotive used data from the AWS Well Architected Tool to secure executive sponsorship to invest in increased security across its workloads and to reduce risk. Evaluate namespaces in above mentioned organization. (CO2)

3. (a) Rackspace Technology used AWS Systems Manager to automate management of multicloud and hybrid infrastructures, saving hundreds of labor hours monthly, cutting costs, and reducing complexity. Evaluate SOLID principles in above mentioned organization. (CO1)

OR

- (b) Gilead Sciences Inc. (Gilead) modernized its data infrastructure and improved its operational performance through a data mesh framework built on AWS, reducing data search times by over 50 percent. Evaluate Cloud service SLA's in above mentioned organization. (CO2)

4. (a) Neeva, an ad-free search engine, uses Karpenter and Amazon EC2 Spot Instances to maintain cost optimization and reduce the time spent waiting on infrastructure management by 10-100 hours per week. Evaluate the Distributed applications in above mentioned organization. (CO3)

2. (a) Commercial vehicle manufacturer MAN Truck & Bus used features of Amazon EC2 to build a payment processing system that speeds up transactions in and around vehicles and helps optimize fleet management. Evaluate client side and server side in above mentioned organization. (CO3)

OR

- (b) Automotive technology company Cox Automotive used data from the AWS Well Architected Tool to secure executive sponsorship to invest in increased security across its workloads and to reduce risk. Evaluate namespaces in above mentioned organization. (CO2)

3. (a) Rackspace Technology used AWS Systems Manager to automate management of multicloud and hybrid infrastructures, saving hundreds of labor hours monthly, cutting costs, and reducing complexity. Evaluate SOLID principles in above mentioned organization. (CO1)

OR

- (b) Gilead Sciences Inc. (Gilead) modernized its data infrastructure and improved its operational performance through a data mesh framework built on AWS, reducing data search times by over 50 percent. Evaluate Cloud service SLA's in above mentioned organization. (CO2)

4. (a) Neeva, an ad-free search engine, uses Karpenter and Amazon EC2 Spot Instances to maintain cost optimization and reduce the time spent waiting on infrastructure management by 10-100 hours per week. Evaluate the Distributed applications in above mentioned organization. (CO3)

(3)

OR

- (b) Merck KGaA, Darmstadt, Germany improves its time to data insights with a connected data and analytics platform on AWS, helping data teams access secure, custom environments faster. Evaluate SOA policy management techniques in above mentioned organization. (CO3)
5. (a) Mircom, a global designer, manufacturer, and distributor of intelligent building solutions, wanted to modernize its Open Graphic Navigator (OpenGN)—a single-site digital twin and on-premises Internet of Things (IoT) software platform. Evaluate IoC containers in above mentioned organization. (CO2)

OR

- (b) Fatshark, a Swedish video game developer, wanted to build its most complex game yet— Warhammer 40,000 : Darktide. To build on the success of the studio's Warhammer : Vermintide series, the combat-focused cooperative multiplayer game must offer ultralow latency to over 1,00,000 concurrent players. Evaluate web services disadvantages in above mentioned organization. (CO3)

Roll No.

TCS-881

**B. TECH. (CSE-SE) (EIGHTH SEMESTER)
MID SEMESTER EXAMINATION, April, 2023**

SOFTWARE MAINTENANCE AND REUSE

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) What are the key components of a software maintenance framework and how do they contribute to effective software maintenance practices ?

(CO1)

OR

- (b) What are the personnel aspects that can impact software maintenance activities, and how can software development teams manage these factors ?

(CO1)

2. (a) How can software maintenance measures such as maintenance effort, maintenance cost, MTBF, MTTR, and code complexity be effectively tracked and analyzed in order to identify areas for improvement in the software maintenance process ?

(CO2, CO3)

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OR

- (b) What are the different types of software changes that can occur during the maintenance phase ? (CO2, CO3)

3. (a) What are Lehman's eight laws of software evolution, and how do they describe the evolutionary process of software systems over time ?

(CO2, CO3)

OR

- (b) What is the Quick-Fix Model in software maintenance and how does it differ from other maintenance models ? (CO2, CO3)

4. (a) What is Boehm's model for software maintenance ? What are the key stages of Boehm's model ? (CO4)

OR

- (b) What are some of the common tools used for software maintenance and how do they assist in tasks such as bug fixing, code refactoring, and version control ? (CO4)

5. (a) What are the five levels of the Capability Maturity Model Integration (CMMI) for software development established by the Software Engineering Institute (SEI) ? (CO5)

OR

- (b) Write notes on the following : (CO5)

- (i) Abstraction
- (ii) Forward engineering
- (iii) Reengineering
- (iv) Restructuring
- (v) Reverse engineering

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TCS-885

B. TECH. (CSE-SE) (EIGHTH SEMESTER)
MID SEMESTER EXAMINATION, April, 2023

SOFTWARE METRICS

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) Write a note on the three domains of software metrics. (CO1)

OR .

- (b) What are the reasons for measuring software process, products and resources ? (CO1)

2. (a) How can measurement errors impact the accuracy and reliability of software metrics and what are some common sources of measurement errors that can occur during the software development life cycle ? (CO2, CO3)

OR

- (b) What are the five types of relationships that can exist between two variables in statistical correlation analysis ? (CO2, CO3)

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3. (a) How can you determine the effectiveness of a quality assurance process in a software project/process/resource ? (CO2, CO3)

OR

- (b) How does the retest method contribute to measuring the reliability of software systems ? (CO2, CO3)

4. (a) What is the rationale behind measuring the amount of defects in software systems, and how can the method of measuring these defects impact the effectiveness and validity of software quality metrics ?

(CO4)

OR

- (b) What is the Rayleigh Model in the context of Reliability Growth Models, and how is it used to predict and improve software reliability ?

(CO4)

5. (a) How can Defect Removal Effectiveness (DRE) be used to improve the software development process and increase the overall quality and reliability of software systems ? (CO5)

OR

- (b) What are some of the key metrics related to measuring customer reported defects in software systems, and how can these metrics be used to improve overall software quality and customer satisfaction ? (CO5)

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TCS-891

B. TECH. (CSE) (EIGHTH SEMESTER)
MID SEMESTER EXAMINATION, April, 2023
CRYPTOGRAPHY AND NETWORK SECURITY

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each sub-question carries 10 marks.

1. (a) Compare the contrast the classical encryption techniques-substitution ciphers and transposition ciphers. (CO1)

OR

- (b) Explain the Model for network security with the help of a suitable diagram. (CO1)

2. (a) What do you mean by the term Security Attacks ? Differentiate the active and passive attacks. (CO1)

OR

- (b) Encrypt the plaintext “graphicera” using Playfair cipher. The key for encryption is “crypto”. (CO2)

3. (a) Explain the stream and block ciphers. Explain any *one* using a suitable example. (CO2)

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OR

- (b) Explain the plain text “MAGICIAN” using Hill Cipher. The key for the same is $\begin{bmatrix} 20 & 3 \\ 15 & 7 \end{bmatrix}$. (CO2)
4. (a) Write a note on Shannon’s theory of confusion and diffusion. (CO2)
- OR
- (b) Explain any *two* of the following : (CO2)
- (i) ECB
 - (ii) CBC
 - (iii) OFB
5. (a) Explain Advanced Encryption Standard (AES) with the help of a diagram. (CO3)
- OR
- (b) Write a note on Blum Blum Shub Algorithm. (CO3)