Year - April 2024

MSC- IT

SEM- III

No. of pages- 5

MSC-IT-Sem III

(Time: $2\frac{1}{2}$ hours)

[Total Marks: 60]

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculator is **allowed**.

1. Attempt *any two* of the following: **12**

a. What is Hacking? Explain the five phases of hacking.
b. Write a short on i) Misconfiguration Attacks ii) Application-Level Attacks iii) Shrink Wrap Code Attacks
c. Explain Footprinting using Advanced Google Hacking Techniques.
d. Explain XMS Scan, Null Scan and IDLE/IPID Header Scan.

2. Attempt *any two* of the following: **12**

a. Explain the Vulnerability Management Life Cycle.
b. What is privilege escalation? What are its types? Explain. How can system be protected against privilege escalation?
c. What are rootkits? Explain the different types of rootkits?
d. Write a short on i) ARP Poisoning ii) ARP Spoofing Attack

3. Attempt *any two* of the following: **12**

a. Explain Human-based Social Engineering in detail.
b. Explain the different techniques of denial of service attacks. What are the symptoms of denial of service attacks?
c. What is Network-level Session Hijacking? Explain the different types of network level hijacking.
d. What is intrusion detection system? How does it work? What are the different ways to detect intrusion?

4. Attempt *any two* of the following: **12**

a. What are the different techniques of Web Server Attack? Explain in detail.
b. What is LDAP injection? How does it work? Explain
c. What is SQL Injection? Explain the different types of SQL Injection.
d. What is WEP encryption? How does it work? What are flaws in WEP encryption?

5. Attempt *any two* of the following: **12**

a. Explain jailbreaking with respect to iOS. What are its types? What are jailbreaking techniques?
b. What is Mobile Device Management (MDM)? Explain the two types of MDM deployment.
c. i) DDoS Attack ii) Rolling Code Attack iii) BlueBorne Attack iv) Jamming Attack v) Backdoor
d. What is digital signatures? Explain the two categories of Digital Signatures

---

CEC6AEEB608081FAE076D32EFA5C9942

(2)

msc & msc (Research) sem III

(Time: $2\frac{1}{2}$ hours)

[Total Marks: 60]

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculator is **allowed**.

1. Attempt *any two* of the following: **12**

a. Explain the following terms in brief
   i)Mainframe Virtualization
   ii) Virtual Memory
   iii) Hot Standby Router Protocol
b. Illustrate in detail Data Center Virtualization Technologies Areas and Subareas
c. What are Network Virtualization Benefits? Explain in detail.
d. With the help of suitable example compare and contrast behavior of Hubs and Switches.

2. Attempt *any two* of the following: **12**

a. Explain in detail Load-Balancing Concepts.
b. With respect to Load-Balancing how Layer 4 switching differs from Layer 7 Switching? Discuss in detail.
c. How Address Translation and Load Balancing works?
d. What is Virtual device contexts? Why use Virtual device contexts?

3. Attempt *any two* of the following: **12**

a. What are different types of Fabric Extender?
b. With the help of suitable diagrams explain Fabric Extender Topologies.
c. Explain the concept of a label-switched path (LSP) in MPLS.
d. Explain the concept of RAID (Redundant Array of Independent Disks) and explain the nested RAID levels.

4. Attempt *any two* of the following: **12**

a. Explain in brief different Server Architectures.
b. Write a note on Introducing x86 Server Virtualization.
c. What are different Server Provisioning Challenges?
d. How Unified Computing and Service Profiles works?

5. Attempt *any two* of the following: **12**

a. Explain the concept and significance of virtual network services.
b. What are Virtual Machine Attributes and Virtual Zones?
c. Explain the Journey to the Cloud.
d. How Software-Defined Networks works?

X51Y4A6437X51Y4A6437X51Y4A6437X51Y4A6437

MSC - IT - Sem III

(3)

(Time: $2\frac{1}{2}$ hours)

[Total Marks: 60]

N. B. (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculator is **allowed**.

1. Attempt *any two* of the following: **12**

a. Define the term "Technical Communication" and also explain various characteristics of technical communication.
b. List and explain the various characteristics of Measures of Excellence in distinguish excellent technical documents.
c. What do you mean by Planning for writing project? Explain in detail.
d. What are the ethical and legal issues related to social media in technical communication? Explain in brief.

2. Attempt *any two* of the following: **12**

a. Explain in brief about Blog post, White paper, and podcasts.
b. Explain six principles for structuring effective sentences in technical documents.
c. Explains how to create effective paragraph lists and sentence lists?
d. What is information? Why we need top organized information? Explain in brief.

3. Attempt *any two* of the following: **12**

a. What do you mean by "Literature Review"? Explain in brief.
b. Explain various benefits of graphics with respect to technical communication in brief.
c. Write short notes on conducting secondary research.
d. What are the guidelines to conduct the interview? Explain in detail.

4. Attempt *any two* of the following: **12**

a. What is Executive summary? Explain Executive summary checklist.
b. Explain in detail about writing directives with example.
c. How you can improve the usability of documents and websites? Explain with proper diagram.
d. Define term innovation and also give explain different types of innovation.

5. Attempt *any two* of the following: **12**

a. What are the criteria to be followed for a patent to benefit from legal protection?
b. What is Research and Development? Explain in detail.
c. Explain different forms of external Research and Development in detail.
d. How we can acquire external technology in R&D? Explain in detail.

9F96E3C1CD55D8359CF8CE7B71B9C430

MSC - IT Sem III

Time: 2½ hrs [Total Marks: 75]

N. B. (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labelled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

1	**Attempt three of the following.**		15
a	What is the API Gateway pattern? Write down the Drawbacks of the API Gateway pattern.		
b.	What is a microservice? What are the features of Microservices?		
c.	How can Azure service fabric clusters be monitored? Explain.		
d.	Explain the different programming models supported by service fabric.		
e.	What is service fabric cluster? What are the different system services offered by service fabric cluster?		
Q. 2	**Attempt three of the following.**		15
a.	What are the services available on Azure stack in context of microservices application?		
b.	What is Azure Kubernetes Service? What are its capabilities? What are different tools available for development of AKS?		
c.	How is Azure Kubernetes Service monitored? Explain.		
d.	What is Azure Stack? What are the Benefits of Azure Stack?		
e.	What are the major challenges in microservices application? How does Azure help to overcome these challenges?		
Q. 3	**Attempt three of the following.**		15
a.	What is GIT? Explain the advantages of GIT.		
b.	Explain Software Development Lifecycle in Microsoft Azureplatform development.		
c.	What are the different components of DevOps. Explain each in brief.		
d.	What is DevOps? Explain Life Cycle of DevOps.		
e.	State and explain the DevOps services provided by Azure.		
Q. 4	**Attempt three of the following.**		15
a.	Explain the structure of the builds.		
b.	Explain The Strategy for defect detection.		
c.	Explain Azure Artifacts Workflow for Release Candidates.		
d.	How to define the bounds of a package?		
e.	What is observability? Write its principles.		
Q. 5	**Attempt three of the following.**		15
a.	Write a short note on Authentication and authorization?		
b.	Write a short note on API Keys?		
c.	State and explain the most common ways to strengthen API security.		
d.	State and explain the attributes of API architecture?		
e.	What is API value chain? Explain.		

****

X51Y980934X51Y980934X51Y980934X51Y980934

MSc - IT - Sem III

(5)

(2½ Hours)

[Total Marks: 60

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt *any two* of the following: **12**

a. Write a short note on transducer used in biomedical.
b. What are the major categories of Digital Signals? Explain.
c. Many biological signals demonstrate interesting or diagnostically useful properties when viewed in the so-called frequency domain. Explain.
d. Explain the process of Noise Reduction through Ensemble Averaging.

2. Attempt *any two* of the following: **12**

a. What is Adaptive Noise Cancellation? Explain.
b. Explain Yule–Walker Equations for the AR Model.
c. Write a short note on Autoregressive Model.
d. Write a short note on The Short-Term Fourier Transform: The Spectrogram

3. Attempt *any two* of the following: **12**

a. How to determine the Principal Components Using Singular-Value Decomposition.
b. Explain the different Linear Transformations used in component analysis.
c. Write a short note on Chaotic Systems.
d. Explain Spectral Entropy.

4. Attempt *any two* of the following: **12**

a. Write a short note on Spatial Transformations.
b. Explain the Fast Fourier transform.
c. Continuity-based approaches look for similarity or consistency in the search for feature elements. Explain using suitable example.
d. Explain computed tomography (CT), positron emission tomography (PET), single photon emission computed tomography (SPECT), magnetic resonance imaging (MRI), and ultrasound.

5. Attempt *any two* of the following: **12**

a. Determining a disease or condition from a range of data is an application of classification. Explain the role of Image Classifier.
b. What are Linear Discriminators? Explain.
c. What are Support Vector Machines? Explain.
d. Discuss the Gradient Decent Method or Delta Rule.

954C92BCF612CDE4BEB7E3A7F8061288