TY-BSc. CS Sem-5
23.11.2022

(2½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All(Each of 1 Marks) **(15M)**

(a) Multiple Choice Question

i) Which of the following is not an example of a substitution cipher?
a) Caesar cipher b) Playfair cipher
c) Rail Fence cipher d) Hill cipher

ii) A deliberate attempt to evade security services is called _____.
a) threat b) attack
c) masquerade d) repudiation.

iii) Which security protocol is used at the transport Layer?
a) IPSec b) PGP
c) SMIME d) SSL

iv) A digital signature needs a(n)_____ system.
a) symmetric-key b) asymmetric-key
c) private key d) session key

v) Which of the following is a means to access a computer program or entire computer system bypassing all security mechanisms?
a) Backdoor b) Masquerading
c) Phishing d) Trojan Horse.

vi) Passive attacks do not include _____.
a) modification of data stream b) obtaining the information that is being transmitted c) eavesdropping on transmission d) the possibility of replay attack in future.

vii) Public - key encryption is also known as _____.
a) asymmetric encryption b) symmetric Encryption
c) single encryption c) super encryption

viii) PKI stands for _____ .
a) Parent Key Interface b) Public Key Infrastructure
c) Protocol Key Infrastructure c) Private Key Infrastructure

ix) AES has _____different configurations.
a) one b) three
c) four c) five

x) One commonly used public-key cryptography method is the _____ algorithm.
a) RSS b) RAS
c) RSA d) RAA

(b) Fill in the blanks

(hashing,64, 128, shared secret,steganography,cryptanalysis,transposition)

i) _____ ciphers hide the message by rearranging the letter order without altering the actual letters used.

ii) SHA is a _____algorithm.

iii) _____is an alternative to encryption which hides the very existence of a message by some means.

iv) DES is a non-Feistel cipher that encrypts and decrypts a data block of _____ bits.

v) Private key cryptography uses a _____.

Q. 2 Attempt the following (Any THREE)(Each of 5Marks) **(15M)**

(a) What is the CIA triad? Explain in detail.

(b) Explain symmetric cipher model. Discuss different techniques used in traditional ciphers.

(c) Explain DES cipher in detail.

(d) Explain ECB block cipher mode of operation with its advantages and limitations.

(e) Explain the differences between symmetric and asymmetric cryptography.

(f) Discuss different categories of security services as per X-800 recommendations

Q. 3 Attempt the following (Any THREE) (Each of 5Marks) **(15M)**

(a) Explain key generation process in Diffie-Hellman key exchange algorithm.

(b) Discuss different approaches of distribution of public key in public key cryptography.

(c) What is Message authentication? Discuss different approaches that can be used to achieve message authentication.

(d) Explain various characteristics of Hash function.

(e) Explain SHA algorithm.

(f) Explain basic digital signature model. What security requirements do you feel can be achieved in digital communication by using digital signature?

Q. 4 Attempt the following (Any THREE) (Each of 5Marks) **(15M)**

(a) Discuss any one protocol which is used to add security in email applications.

(b) What is SSL? Discuss its protocol stack.

(c) What is a honeypot? How does it facilitate intrusion detection?

(d) What do you understand about malware? Explain any two types of malicious program.

(e) Discuss the significance and limitations of firewalls.

(f) What is the SET protocol? What business requirement does it fulfil?

Q. 5 Attempt the following (Any THREE) (Each of 5Marks) **(15M)**

(a) What is asymmetric key cryptography? Discuss its various applications.

(b) Explain rail fence cipher with proper example

(c) Briefly explain Man in middle attack.

(d) What is kerberos? Explain its different components.

(e) Explain the key elements of public key infrastructure.

(f) Discuss IPSec protocol with its different modes of operation.

(g) What do you understand about security attacks? Discuss different types of attacks.

(h) Explain the process of encryption and decryption using caesar cipher for plaintext "attack at dawn" .

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TY-CS-Sem-5 - 24/11/2022

(2 ½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
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4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All

(a) **(10M)**

i) Which domain defines the architecture view of IoT?			
a) Solution domain	b) Problem domain	c) system domain	d) M2M domain
ii) Which protocol among the following belongs to the transport layer?			
a) IPv4	b) DHCP	c)TCP	d)CoAP
iii) Z-Wave Network is very efficient, this is because of the_____ protocol it uses.			
a) session	b) Routing	c) transport	d) network
iv) _____ are a way of limiting the amount of electricity going through a circuit.			
a) resistor	b) switch	c) hub	d) repeater
v) CoAP has four messaging modes: confirmable, non- confirmable, _____and separate.			
a) protecting	b) viewing	c)messaging	d)piggyback
vi) IoT security management includes _____			
a) Protocol abstraction	b) Simple and fast installation	c) Security with hardware	d) Data storage
vii) The ____ is the next domain in the WAN-MAN-LAN hierarchy.			
a) PAN	b) SAN	c) DAN	d) AAN
viii) PPP protocol is also known as _____ Protocol			
a) People to people protocol	b) Point to Point	c) physical to physical	d) person to person
ix) System design and deployment view is a part of_____.			

a) Solution domain	b) analysis domain	c) functional view	d) operational view
x) In AMQP- the broker is divided into two main components: exchange and _____.			
a) queues	b) Devices	c) work	d) delete

(b) Fill in the blanks **(5M)**

{ underwater, 64, simplex, Protocol abstraction, Full-duplex, 128, MAC, security }

i) In _____ communication mode, communication occurs from sender to receiver and receiver to sender at same time.

ii) IoT gateway must provide _____.

iii) CARP is a distributed routing protocol designed for _____communication.

iv) IEEE 802.15.4 is the most commonly used IoT standard for _____.

v) IPv6 is _____bit protocol.

Q. 2 Attempt the following (Any THREE) **(15M)**

(a) Define the term M2M and discuss its Evolution.

(b) What is an IoT Architectural view? Discuss reference architecture for a system solution.

(c) State and explain problem and solution domain portioning with an example

(d) Elaborate on Network application registration process

(e) Describe with a neat labelled diagram, IoT Device Architecture.

(f) How do smart cities work? List and explain its different applications

Q. 3 Attempt the following (Any THREE) **(15M)**

(a) Discuss 802.11 protocol architecture in brief.

(b) Justify the need of WLAN? Describe its advantages.

(c) Define and state the following terms

a. BSS

b. ESS

(d) What is BLE? How does it differ from the standard Bluetooth?

(e) Compare between passive and active RFID with the help of Dash7 network.

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(f) How do Dash7 components communicate with each other? Explain in detail.

Q. 4 Attempt the following (Any THREE) **(15M)**

(a) Distinguish between TCP and UDP.

(b) List and explain characteristics of Stream Control Transmission Protocol (SCTP).

(c) Define the term Congestion control. Explain in brief Datagram Congestion Control Protocol.

(d) Illustrate the working of Extensible Messaging Presence Protocol.

(e) Discuss in brief about the Broadband Forum.

(f) Identify different transport layer protocols. Explain UDP with its key points.

Q. 5 Attempt the following (Any FIVE) **(15M)**

(a) Elaborate on CRUD? Discuss its advantages and disadvantages.

(b) Differentiate between unicast and multicast addresses.

(c) Discuss Multipath TCP with its key points

(d) Explain an example of CEP- Complex Event Processing

(e) Compare between TCP and UDP.

(f) Define following terms
1. Computer network
2. Internet of Things

(g) What is NAT? List its uses.

(h) Determine functions of HTTP?

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Sem-5 25/11/2022

(2 ½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
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4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All

(a) Multiple Choice Questions. (10M)

1)_____ layer is responsible for actually transporting XMLmessages between two computers.

a) Service Protocol b) Service Messaging
c) Service Transport d) Service Description

2) _____ is an XML-based standard for describing, publishing, and finding web services.

a) SOAP b) HTTP
c) WSDL d) UDDI

3) The basic Web Services platform is combination of _____ and _____.

a) CSS + HTTP b) XML + HTML
c) XML + HTTP d) CSS + JAVA

4) SOAP is _____

a) Simple Object Active Protocol b) Sample Object Access Protocol
c) Sample Object Active Protocol d) Simple Object Access Protocol

5) Which of the following is not a valid HTTP method used in RESTful web services?

a) OPTIONS b) DATE
c) GET d) POST

6) Which of the following annotation of JAX RS API is used to annotate a method to get the relative path of the resource class/method?

a) @Path b) @GET
c) @PUT d) @POST

7) URI Stands for _____.

a) Unit Resource Identifier b) Uniform Representation Identifier
c) Uniform Resource Identifier d) Unified Resource Identifier.

8) Which contract supports Transaction Flow?
   a) Service
   b) Operation
   c) Message
   d) Data

9) WCF services can communicate with _____.
   a) All programming languages.
   b) XML.
   c) only the languages included with Visual Studio .NET.
   d) multiple platforms and multiple languages.

10) Which one is not a class in WCF?
   a) BasicHttpBinding
   b) BasicHttpContextBinding
   c) BasicHttpsBinding
   d) ClientBinding

(b) **Fill in the blanks (HTTP, Two , 200, Elements & Attribute, Envelop & Header, TCP/IP, One,Stub,300)** (5M)

i. XML Schema Consist of_____.
ii. RPC provides a _____ on the client side, a separate one for each remote procedure.
iii. _____protocol is used by RESTful web services as a medium of communication between client and server.
iv. _____HTTP Status code means OK, shows success.
v. The default WCF Request Send/Receive timeout is _____ min(s).

Q. 2 Attempt the following (Any THREE) (15M)

(a) Explain the characteristics of Web Services.
(b) Explain SOAP web Service in detail.
(c) Describe the structure of WSDL document.
(d) What is the Enterprise Service Bus and how does it relate to SOA?
(e) What is JAX-WS? How it is useful for describing SOAP web services?
(f) Explain XML Document structure with example

Q. 3 Attempt the following (Any THREE) (15M)

(a) List and explain the various Http methods required for creating RESTful Web Services.
(b) Explain annotations used in RESTful web service.
(c) List and explain any five JAVA frameworks for building RESTful web services.
(d) Describe the core constraint of RESTful system.
(e) Explain the characteristics required for Good Resource Representation.
(f) Write a short note of JSON object and JSON array.

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Q. 4 Attempt the following (Any THREE) **(15M)**

(a) What is Windows Communication Foundation (WCF)? Explain the Features of WCF in detail.

(b) Write a note on Quality of Service (QoS) for Webservices.

(c) Giving example, explain how to define a Windows Communication Foundation Service Contract.

(d) Describe Windows Communication Foundation Architecture in Detail.

(e) What do you mean by Operation Contract? Explain in detail.

(f) Explain different tasks that are required to build a WCF application

Q. 5 Attempt the following (Any FIVE) **(15M)**

(a) Write a short note on the Client-Server model.

(b) What is the use of XML schema?

(c) Write about the characteristics of Inter-process communication in brief.

(d) Write a note on HTTP basic authentication.

(e) What is Swagger?

(f) List the advantages and disadvantages of Statelessness.

(g) What are WCF's ABC?

(h) Write about Endpoint in WCF.

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TY-CS Sem-5 28/11/2022

(2 ½ Hours) [Total Marks: 75]

N.B. **1) All questions are compulsory.**
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 **Attempt all. (Each of 5 marks)** **(15)**

(A) **Choose the correct alternative.** **(10)**

(i) Which of the following transformation techniques is responsible for altering (either enlarging it or diminishing it) the size of the object?
(a) Translation
(b) Scaling
(c) Rotation
(d) Reflection

(ii) _____is the angle of rotation about the y -axis
(a) roll
(b) pitch
(c) yaw
(d) None

(iii) Which of the following stage implements blending and transparency?
(a) Pixel Shader stage
(b) Output Merger Stage
(c) Geometry Shader Stage
(d) Tessellation stage

(iv) The properties of any Game Object Component is shown by _____ window.
(a) Scene
(b) Inspector
(c) Grid
(d) Asset

(v) _____ method is called once per frame after update is finished.
(a) FixedUpdate
(b) Update
(c) LateUpdate
(d) LastUpdate

(vi) Converting a vector into a unit form is called as _____?
(a) Positioning
(b) Adding
(c) Normalizing
(d) Changing

(vii) _____Law deals with visibility of Object.
(a) Lambert
(b) Euler's
(c) McCall
(d) Pythagoras

(viii) Feature DirectX 9.1is indicated by
- (a) D3D_FEATURE_LEVEL_9_1=0x9100
- (b) D3D_FEATURE_LEVEL_9_2=0x9200
- (c) D3D_FEATURE_LEVEL_9_3=0x9300
- (d) D3D_FEATURE_LEVEL_9_ 0=0x9000

(ix) Which one of the following is not a Light source?
- (a) Directional Light
- (b) Sport Light
- (c) Spot Light
- (d) Point Light

(x) The method used to make our camera point at an object is _____?
- (a) LookAt()
- (b) ViewAt()
- (c) ShowAt()
- (d) pointAt()

(B) Fill in the blanks. **(5)**

{Physics,Euler's Law, Prefab,counterclockwise,'.', Lambert's law 'X', clockwise}

(i) The ____ symbol is used to represent scalar multiplication.

(ii) Positive values for the rotation angle Θ defines _____ rotation about the rotation point.

(iii) To calculate intensity of the light _____ law is used.

(iv) OnCollisionEnter function is a type of _____ Event.

(v) Configured game objects that can be used in the project are called _____

Q.2 Attempt the following:(ANY THREE) **(15)**

(A) Write a short note on Theorem of Pythagoras in 2D and 3D

(B) Explain in brief the situation which leads to gimbal lock.

(C) What is transformation? State and explain the concept of translation in 2D and 3D.

(D) Explain the concept of perspective projection.

(E) Explain how Dot product helps in Back Face Detection?

Q.3 Attempt the following:(ANY THREE) **(15)**

(A) Explain the following terms with respect to geometry:
- a. Angles
- b. Isosceles triangle
- c. Golden Section
- d. Equilateral triangle
- e. Circle

(B) What are the steps followed by Vertex Shader Stage to project object on frustum?

(C) How is the Texture Resource view implemented in DirectX?

(D) Differentiate between Bezier Curve and B-Spline Curve.

(E) Discuss implementation of Diffuse Light.

(F) What is Direct3d? Explain its Components

Q. 4 Attempt the following:(ANY THREE) **(15)**

(A) Describe the Anatomy of a script file

(B) Define AR and explain its applications in the Entertainment sector.

(C) Write C# script to declare a integer variable time and another variable greetings as GUIText.If time is > 12 set greetings as "good Morning" otherwise "Good Evening" in the Update method.

(D) Explain the use of Vuforia platform
(E) Explain the steps to create and run a simple animation clip.
(F) Differentiate between Holographic device and Immersive Device

Q. 5 **Attempt the following:(ANY FIVE)** **(15)**
(A) Explain in detail Direction Cosine.
(B) Explain 2D Rotation about an Arbitrary Point.
(C) Write a note on SINE and COSINE rule.
(D) Explain Blender Programs.
(E) Explain initialisation Events in Unity.
(F) Explain the concept of Depth Buffering.
(G) Illustrate the concept of a homogeneous coordinate system.
(H) Write a short note on event scripting.

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TY-BSc.CS sem-5 29.11.2022

Time: 2 ½ Hours **Total Marks: 75**

N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All

(a) Multiple Choice Questions **(10M)**

I. An AI system is composed of?
A. Agent
B. Environment
C. Both A and B
D. None

II. Which of the following is not a type of agents in artificial intelligence?
A. Utility
B. Model
C. Simple
D. Target

III. Rationality of an agent does not depend on?
A. Performance measures
B. Percept sequence
C. Reaction
D. Action

IV. In which ANN, loops are allowed?
A. Feedforward ANN
B. Feedback ANN
C. Both A and B
D. None

V. What is purpose of Axon?
A. Receptors
B. Transmission
C. Transmitter
D. None of the above

VI. The _____for an agent specifies the action taken by the agent in response to any percept sequence.
A. agent function
B. Agent program
C. Agent structure
D. None of the above

VII. To pass the total Turing test the computer will need_____
- A. Robotics
- B. Computer Vision
- C. Both A and B
- D. None of the above

VIII. _____ expands shallowest unexpanded node first.
- A. Breadth First Search
- B. Depth First Search
- C. IDA
- D. A*

IX. The _____, which determines whether a given state is a goal state.
- A. Goal test
- B. Path test
- C. Agent test
- D. None of the above

X. How the decision tree reaches its decision?
- A. Single test
- B. Two test
- C. Sequence of tests
- D. No test

(b) Fill in the blanks (lm , Multiple Linear Model, Problem, Solution, Activation, Evidence) **(5M)**

I. A search algorithm takes _____ as an input and returns _____ as an output.

II. Function used for linear regression in python is _____

III. When there are more than one independent variables in the model, then the linear model is termed as _____

IV. The process of adjusting the weight in Neural Network is known as _____

V. In Bayes Theorem, unconditional probability is called as_____

Q. 2 Attempt the following (Any THREE) **(15M)**

(a) What are Uninformed strategies? Explain any one in detail.

(b) Explain Agent structure in detail.

(c) What is well defined problem and solutions explain for Romanian map?

(d) What is PEAS? Explain with two suitable examples.

(e) List and explain the categories of definition of AI.

(f) Write short note on Greedy Best First Search.

Q. 3 **Attempt the following (Any THREE)** **(15M)**

(a) Write short note on overfitting in decision tree.
(b) What is entropy? How we calculate it?
(c) Explain Artificial Neural Network.
(d) What is Logistic regression explain with the help of an example.
(e) Explain Support vector machine and its properties.
(f) What is ensemble learning? How bagging algorithm works?

Q. 4 **Attempt the following (Any THREE)** **(15M)**

(a) Explain maximum likelihood parameter learning for continuous model.
(b) What is reinforcement learning? Explain in detail.
(c) What are beta distributions explain with the example.
(d) What is EM algorithm? Explain its steps.
(e) Explain Naïve Bayes algorithm.
(f) Write short note on Hidden Markov Model.

Q. 5 **Attempt the following (Any FIVE)** **(15M)**

(a) Explain the concept of goal-based agent.
(b) How to measure problem solving performance?
(c) What is linear regression? State its types.
(d) How supervised learning algorithm works explain with example?
(e) What is statistical learning?
(f) Explain any one application of Reinforcement learning?
(g) Explain Heuristic function.
(h) Write short note on Non parametric model.

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Paper / Subject Code: 82902 / Linux Server Adminstration

30/11/22

(2½ Hours) [Total Marks: 75]

TY-BSc. CS Sem-5

N.B 1) All questions are compulsory.
2) Figure to the right indicates marks.
3) Illustration, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q1. Attempt All (10M)

(a) Multiple Choice Questions:

i) Which Command is used to change the priority of a process?
a) crontab
b) tar
c) ln
d) nice

ii) Which command is used to save work in the vi editor mode?
a) q
b) :!q
c) :q
d) :wq!

iii) What is the maximum logical Partition per disk can be created?
a) 7
b) 9
c) 14
d) 11

iv) VNC stands for?
a) Virtual Network Clone
b) Virtual Nested config
c) Virtual Network Computing
d) Virtual Network Control

v) What is the name of samba server identified by the Windows Computer?
a) Samba name
b) net-name-bios
c) net.bio.sambaname
d) netbios name

vi) Which of the following is commercial Distro?
a) Fedora
b) OpenSuSE
c) Ubuntu
d) RHEL

viii) Is an automatic updater and package installer/remover for RPM systems?
a) apt-get
b) yum
c) dpkg
d) dpms

viiii) Which of the following is a type of Firewall?
a) Stateless Firewall
b) Interface Firewall
c) Default Gateway
d) Packet Filtering Gateway

xi) Which DataBase is responsible for configuration of the database in Apache?
a) DBMS
b) MYSQL
c) RDBMS
d) DBA

x) Which of this is a part of DNS hierarchy?
a) System
b) IP Address
c) Host
d) Root

(b) Fill in the blanks: **(5M)**

(netstatus, Greate Unified Booter, scp, groupadd, ssh, FTP server, groupmod, Grand Unified Bootloader, netstat,rsa)

1) The ---------- is a collection of tools using a secure protocol for communication with remote Linux computer
2) The groups can be created with the_____command.
3) GRUB stands for_____
4) The vsftpd package is used for the _ _____software.
5) The_____ program is used to display the status of all of the network connection on a host.

Q2. Attempt the following (Any THREE) (Each of 5 Marks) **(15M)**

a) What is the importance of /etc/fstab in linux file system?
b) Explain booting process in Linux.
c) Explain ARP protocol.
d) Explain what is cron program
e) Explain the user management commands in linux
f) Diagrammatically explain the steps involved in creating a logical volume

Q3. Attempt the following (Any THREE) (Each of 5 Marks) **(15M)**

a) What is DNS Server? Explain how it works.
b) Describe the Apache. Write its benefits.
c) Explain OpenSSH.
d) Write a short note on ftp.
e) Write a short note on Kerberos.
f) Describe SMTP Protocol.

Q4. Attempt the following (Any THREE) (Each of 5 Marks) **(15M)**

a) Explain how to install and configure NFS server and client.

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b) What is DHCP server? How is it configured?
c) What is LDAP? Explain.
d) Write different Distributed File System (DFS) implementations.
e) Explain the showmount command with options and example.
f) What is LAMP? Write the steps to install LAMP applications

Q5. Attempt the following (Any five) (Each of 3 Marks) **(15M)**

a) Discuss any one boot loader used in Linux in detail
b) Write five predefined chains of iptables.
c) Explain ext2 file System in detail.
d) Explain the format of following files.
   i) /etc/passwd
   ii) /etc/group
e) Explain uses of various Samba daemons?
f) Describe RPM.
g) Explain mount command?
h) What is use of runlevel?

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TY- BSc. CS Sem-5 01/12/2022

(2 ½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
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3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All

(a) Choose the correct alternative from the options given (10M)

(i) A deviation from the specified or expected behaviour that is visible to end-users is called _____
a. error b. fault
c. failure d. defect

(ii) How many levels are present in CMM?
a. 3 b. 4
c. 5 d. 6

(iii) SMI stands for _____
a. Software Mature Indicator b. Software Maturity Index
c. Software Mature Index d. Software Maturity Indicator

(iv) Which of the following is not an appraisal cost in SQA?
a. inter-process inspection b. maintenance
c. quality planning d. testing

(v) Exit criteria in test plan mentions _____
a. When to stop accepting new requirements b. When to stop the code from moving to production
c. When to stop testing activities d. When to stop from accepting new pieces of code

(vi) ___ takes into account inputs about singular defects as well as defect priorities, product issues, defect resolution history, developers involved, and the like.
a. Defect Prevention b. Defect Discovery
c. Defect Resolution d. Defect Analysis

(vii) Cost and schedule are a part of _____
a. Product Metrics b. Process Metrics
c. Project Metrics d. People Metrics

(viii) What is not included in prevention costs?
a. quality planning b. formal technical reviews
c. test equipment d. equipment calibration and maintenance

(ix) In which of the following type of testing, testing is done without planning and documentation?
a. Unit testing b. Retesting
c. Ad hoc testing d. Regression testing

(x) Which document that prescribes the requirements with which the product or service has to confirm?

a. Reliability b. Specification
c. Inspection d. Audit

(b) **Fill in the blanks by selecting the correct option from the pool of options:** (5M)
(reusability, stub, customer, appraisal, fish bone, skeleton, portability, pareto, prevention, employee)

(i) _____ chart uses the rule of 20:80?

(ii) Quality improvement, Quality education, and Quality performance reporting fall under the category of _____ costs.

(iii) ___ is effort required to transfer the program from one hardware and/or software system environment to another.

(iv) In Unit Testing, ___ serves to replace modules that are subordinate to the component to be tested.

(v) The objective of ISO-9000 family of Quality Management is _____ satisfaction.

Q. 2 **Attempt the following (Any THREE)** (15M)
(a) Define Quality and explain software quality attributes.
(b) Differentiate between Verification and Validation.
(c) What is Software review? Explain the types of reviews?
(d) Write a short note on V-V Model of software testing.
(e) Explain the term cyclomatic complexity with example.
(f) What is Coverage Criteria? List and explain any two coverage criteria in short.

Q. 3 **Attempt the following (Any THREE)** (15M)
(a) Define regression testing? What is the Role of capture and playback?
(b) Write a short note on Smoke Testing
(c) What is Vallidation testing? Write 7 validation test criteria.
(d) What is Software metric? Explain its importance.
(e) Explain defect life cycle.
(f) List the types of System Testing and explain any 2 types in short.

Q. 4 **Attempt the following (Any THREE)** (15)
(a) List and explain the goals and objectives of SQA.
(b) Write a note on statistical Software Quality Assurance
(c) Discuss how reliability changes over the lifetime of a software product and a hardware product.
(d) Write short note on Cause-effect Diagrams.
(e) What is quality cost? Explain the objectives of finding quality cost.
(f) Explain the outline structure for a quality plan.

Q. 5 **Attempt the following (Any FIVE)** (15)

(a) Define the terms: error, fault and failure.

(b) Distinguish between White box and Black box testing.

(c) State the objectives of Testing.

(d) What is the difference between function-point metrics and feature-point metrics?

(e) Discuss the differences between Alpha and Beta testing

(f) What are the guidelines for review.

(g) What is Run chart? How to create & interpret it?

(h) Discuss the concept of Software Safety.

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