



8th Semester End Term Examination: 2021-22.

Subject : Computer Graphics

Roll No:

Course : B.TECH [CSE]

Full Marks : 70

Time : 3 Hours.

Instructions to the Candidates:

- Read the question paper very carefully.
- Start writing from 2nd page onwards; Don't Write On The 1st Page Backside.
- Question Paper is divided into Three Parts -A, B & C.
- Part-A is containing 12 multiple choice questions.
- Part- B containing SIX questions out of which FOUR questions are to be answered.
- Part C containing FOUR questions out of which TWO questions are to be answered.
- Do not write anything except your Roll No. on the question paper.
- Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.

PART - A

Multiple Choice Questions

[12x1=12]

1. What are the dimensions of a 3D transformation matrix?
 - a. 2×2
 - b. 3×3
 - c. 4×4
 - d. 3×4
2. What is VA or VAO
 - a. Vertex Array Object
 - b. Vertical Array Object
 - c. Video Array Object
 - d. Varied Array Object
3. Which of the following is the purpose for using clipping in computer graphics?
 - a. Copying
 - b. Removing Objects and lines
 - c. Transforming
 - d. Compressing
4. In a graphical system, an array of pixels in which the picture is stored in the following locations?
 - a. Frame Buffer
 - b. VCA
 - c. Processor

5. Bitmap is a collection of _____ that describes an image
- Pixels
 - RGB values
 - bit values
 - colors
6. What should be sequence of transformations that are required to perform rotation of an object around an arbitrary point?
- Inverse Translation, Rotation, Translation
 - Scaling, Translation, Rotation
 - Translation, Rotation, Inverse Translation
 - Rotation, Translation, Scaling

7. In Bresenham's line algorithm, if the distances $d1 < d2$ then decision parameter Pk is _____
- Positive
 - Equal
 - Negative
 - Not mentioned

8. In circle drawing algorithm we use
- Symmetry
 - 2 Symmetry
 - 4 Symmetry
 - no symmetry
9. Bresenham's line drawing is superior then DDA because
- It does not require floating point arithmetic
 - No round-up is required
 - Both (a) and (b)
 - none of them

10. Z-buffer algorithm is used for:

- Frame buffer removal
- Rendering
- Hidden line removal
- Animation

11. If we want to recolor an area that is not defined within a single color boundary is known as

- Boundary-fill algorithm
- Flood-fill algorithm
- Parallel curve algorithm
- All of them

12. Which among the following is a part of the Cathode Ray Tube?

- Control Electrode
- Focusing System
- Electron Gun
- All of them

PART - B

Answer any FOUR out of SIX

[4x7=28]

- What is a curve? Differentiate between sp line, B-Sp line, Beizer curve.
- Explain the working of CRT display with neat diagram. What are the demerits of Plasma display?
- What is a Polygon? Explain the working of Boundary fill algorithm.
- What is Transformation? Explain Direct View Storage Tube (DVST) technique.
- Discuss about Augmented Reality and Virtual Reality.
- Differentiate between Raster Scan and Random Scan display. Draw a circle having radius 10 cm using mid-point algorithm.

PART-C

Answer any TWO out of FOUR

[2x15=30]

- What is Z buffer technique? How is it different from A buffer? Discuss the use of Z buffer algorithm for hidden surface removal.
- Out of the DDA algorithm and Bresenham's LDA which one is better and how? Express a line from A(10,12) to B(20,16) using Bresenham's LDA. Also show the result on a Graph paper.
- What are fractals? Explain self-similar, self-affine, and invariant types of fractals. Write Circular Arc Generation using DDA algorithm.
- Write short notes on:
 - Rotating Memory Frame Buffer
 - Text mode and Graphics mode
 - GKS(Graphical Kernel System).



8th Semester End Term Examination: 2021-22.

Subject : Digital Signal Processing **Roll No:**
Course : B.TECH CSE
Full Marks : 70 **Time : 3 Hours.**

Instructions to the Candidates:

- Read the question paper very carefully.
- Start writing from 2nd page onwards; Don't Write On The 1st Page Backside.
- Question Paper is divided into Three Parts -A, B & C.
- Part-A is containing 12 multiple choice questions.
- Part- B containing SIX questions out of which FOUR questions are to be answered.
- Part C containing FOUR questions out of which TWO questions are to be answered.
- Do not write anything except your Roll No. on the question paper.
- Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers.

PART - A

Multiple Choice Questions

[12x1=12]

1. The signal given by the equation $\sum_{n=-\infty}^{\infty} |x(n)|^2$ is known as _____
a) Energy signal
b) Work done signal
c) Power signal
d) None of the mentioned
2. What is the set of all values of z for which X(z) attains a finite value?
a) Radius of convergence
b) Feasible solution
c) Radius of divergence
d) None of the mentioned
3. What is the ROC of a causal infinite length sequence?
a) $|z| < r_1$
b) $r_2 < |z| < r_1$
c) $|z| > r_1$
d) None of the mentioned
4. Which of the following is the odd component of the signal $x(t)=e^{j\omega t}$?
a) $\cos t$
b) $j^* \cos t$
c) $j^* \sin t$
d) $\sin t$
5. A real valued signal x(n) is called as symmetric if _____
a) $x(n)=x(-n)$
b) $x(n)=-x(n)$
c) $x(n)=x(-n)$
d) none of the mentioned

6. If $X_1(k)$ and $X_2(k)$ are the N -point DFTs of $x_1(n)$ and $x_2(n)$ respectively, then what is the N -point DFT of $x(n) = ax_1(n) + bx_2(n)$?

- a) $X_1(ak) + X_2(bk)$
- b) $e^{ak}X_1(k) + e^{bk}X_2(k)$
- c) $aX_1(k) + bX_2(k)$
- d) None of the mentioned

7. With an increase in the value of M , the height of each side lobe _____

- a) Do not vary
- b) Decreases
- c) Does not depend on value of M
- d) Increases

8. Time scaling operation is also known as _____

- a) Down-sampling
- b) Sampling
- c) Up-sampling
- d) None of the mentioned

9. The function given by the equation $x(n) = 1$, for $n = 0$; $x(n) = 0$, for $n \neq 0$ is a _____

- a) Step function
- b) Triangular function
- c) Ramp function
- d) Impulse function

10. What is the number of filter coefficients that specify the frequency response for $h(n)$ anti-symmetric?

- a) $(M-1)/2$ when M is even and $M/2$ when M is odd
- b) $(M-1)/2$ when M is odd and $M/2$ when M is even
- c) $(M+1)/2$ when M is even and $M/2$ when M is odd
- d) $(M+1)/2$ when M is odd and $M/2$ when M is even

11. Which of the following methods are used to convert analog filter into digital filter?

- a) Approximation of Derivatives
- b) Impulse invariance
- c) Bilinear transformation
- d) All of the mentioned

12. For an analog LTI system to be stable, where should the poles of system function $H(s)$ lie?

- a) Right half of s -plane
- b) On the imaginary axis
- c) Left half of s -plane
- d) At origin

PART - B

Answer any FOUR out of SIX

[4x7=28]

1. Find the convolution of the signal $x(n) = (1, 2, 2, 4)$ where impulse response of the signal is $h(n) = (3, 4, 2, 1)$ using any method.

2. Define mathematically the following signals and plot the same:

- i. Signum Function
- ii. Unit Ramp Signal
- iii. Unit Step Signal

3. Define deterministic and non-deterministic signals with suitable examples.

4. A discrete-time signal is given by, $X(n) = \{2, 3, 2, 1, 3\}$

↑

Sketch the following signals:

- i. $X(n-2) \cdot \delta(n-3)$
- ii. $X(n) \cdot u(n-2)$

5. Determine $H(z)$ using impulse invariance method at 5 Hz sampling frequency from $H_a(s)$ as given below:

$$H_a(s) = \frac{2}{(s+1)(s+2)}$$

6. Determine the Z-transform of the following finite duration signals.

i. $x(n) = \{3, 1, 2, 5, 7, 0, 1\}$

↑

ii. $x(n) = \{0, 0, 1, 2, 5, 4, 0, 1\}$

iii. $x(n) = \cos \omega n$

PART - C

Answer any TWO out of FOUR

[2x15=30]

1. Using long division method, determine the inverse Z-transform of

$$X(z) = \frac{1}{1 - (3/2)z^{-1} + (1/2)z^{-2}}$$

When ROC: $|Z| < 1/2$

2. Find the DFT of the sample data sequence $x(n) = \{1, 1, 2, 2, 3, 3\}$ and compute the corresponding amplitude and phase spectrum.

3. Given $x(n) = \{0, 1, 2, 3, 4, 5, 6, 7\}$, find $X(k)$ using DIT FFT algorithm.

4. Discuss the properties of Z Transform.



8th Semester End Term Examination: 2021-22.

Subject : Cyber Security

Roll No:

Course : B.TECH [CSE]

Time : 3 Hours.

Full Marks : 70

Instructions to the Candidates:

- Read the question paper very carefully.
- Start writing from 2nd page onwards; Don't Write On The 1st Page Backside.
- Question Paper is divided into Three Parts -A, B & C.
- Part-A is containing 12 multiple choice questions.
- Part- B containing SIX questions out of which FOUR questions are to be answered.
- Part C containing FOUR questions out of which TWO questions are to be answered.
- Do not write anything except your Roll No. on the question paper.
- Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers.

PART - A

Multiple Choice Questions

[12x1=12]

1. A _____ is a system designed to prevent unauthorized access to or from a private network.
a) Firewall
b) Bonfire
c) Firefox
d) Firebase
2. Packet filtering firewalls are deployed on _____.
a) Router
b) Hubs
c) Switches
d) Repeaters
3. Using VPN, we can access _____.
a) Access sites that are blocked geographically
b) Compromise other's system remotely
c) Hide our personal data in the cloud
d) Encrypts our local drive files while transferring

4. _____ needs some control for data flow on each and every logical port.
 - a) Antivirus
 - b) Network firewall
 - c) Intrusion Detection Systems (IDS)
 - d) Anti-malware
5. _____ is the port number for Telnet.
 - a) 25
 - b) 23
 - c) 72
 - d) 21
6. Packet filter firewall filters at the
 - a) Application or transport
 - b) Physical Layer
 - c) Data link layer
 - d) Network or transport layer
7. Which of the following protocols is used for WWW?
 - a) FTP
 - b) W3
 - c) HTTP
 - d) All of the above
8. FTP server listens for connection on port number
 - a) 20
 - b) 22
 - c) 21
 - d) 23
9. _____ firewalls are a combination of other three types of firewall
 - a) Packet Filtering
 - b) Application-level Gateway
 - c) Circuit Level Gateway
 - d) Stateful Multilayer Inspection
10. HTTPS is abbreviated as _____.
 - a) Hypertexts Transfer Protocol Secured
 - b) Secured Hyper Text Transfer Protocol
 - c) Hyperlinked Text Transfer Protocol Secured
 - d) Hyper Text Transfer Protocol Secure
11. _____ is a password recovery and auditing tool.
 - a) Stunnel
 - b) Nikto
 - c) LC4
 - d) Curl
12. A _____ can hide a user's browsing activity.
 - a) Firewall
 - b) Incognito mode
 - c) Antivirus
 - d) VPN

PART - B

Answer any FOUR out of SIX

[4x7=28]

1. Explain how a firewall protects a network.
2. Outline the basics of virtual private networks.
3. Write down the examples of vulnerability examples.
4. Differentiate stateful and stateless firewalls.
5. Explain the functioning of NAT and port forwarding.
6. Explain about Snort intrusion detection system

PART-C

Answer any TWO out of FOUR

[2x15=30]

1. Define Digital forensics.
 - a. Writes down the classification of vulnerability scanner.
 - b. Distinguish packet filter and firewall
2. Give an overview of Indian IT ACT 2000.
 - a. What do you mean by buffer overflow.
 - b. Write a short note on OpenVAS.
3. Discuss about brief history of the Internet.
 - a. Discuss about virtual private network.
 - b. A computer has been infected with ransomware attack. What suggestion you will give to avoid more damage.
4. Explain about the following HTTP Utility tools.
 - a. OpenSSL
 - b. Stunnel
 - c. Curl