2025

COMPUTER SCIENCE — GENERAL

Paper : SEC-B-1 and SEC-B-2

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

SEC-B-1

(Multimedia and its Applications)

Full Marks : 80

Answer ***question nos.*** **1** and **2** and ***any four*** questions from the rest.

1. Answer ***any ten*** questions : 2×10

(a) What is vector graphics?

(b) What is lossless compression?

(c) Name any two popular video codecs.

(d) Define the term bandwidth in multimedia networking.

(e) What is Virtual Reality Modeling Language (VRML)?

(f) What is frame rate in video?

(g) Name two open-source image editing software.

(h) What is morphing in animation?

(i) What is anti-aliasing?

(j) What is GIF used for?

(k) Define aspect ratio with example.

(l) What is chroma key?

(m) What is subtitle encoding?

(n) What are NTSC and PAL?

(o) What is multimedia authoring software?

2. Write short notes on (***any four***) : 5×4

(a) CODEC

(b) Use of multimedia in education

(c) Audio sampling techniques

(d) QoS parameters

(e) MIDI

(f) Hypertext and its applications.

3. (a) Define Digital Audio. How is it created and stored in computers?
   (b) What is OCR? Explain its advantages. 5+5

4. (a) Explain various video file formats commonly used in multimedia.
   (b) What is video transcoding? Why is it important? 6+4

5. (a) Differentiate between Raster and Vector images with example.
   (b) What is Dithering? Explain its significance. 6+4

6. (a) What is VOIP? Explain its importance in multimedia conferencing.
   (b) How is point-to-point video conferencing different from multipoint video conferencing? 5+5

7. (a) Describe the key components of a Multimedia Application.
   (b) What is color depth? Explain with suitable example. 6+4

8. (a) Discuss different types of image compression techniques.
   (b) Write a brief note on additive and subtractive color models. 5+5

SEC-B-2

(Information Security)

Full Marks : 80

Group - A

1. Answer ***any ten*** questions : 2×10

(a) How information security different from cybersecurity?

(b) How is Encryption different from Hashing?

(c) What is a firewall and how does it help in securing a network?

(d) Find 2^{16} mod 5 using Fermat's theorem.

(e) What is Steganography?

(f) What is the difference between a virus and a worm in the context of computer security?

(g) What is digital certificate?

(h) Highlight the main differences between active and passive attack.

(i) What is symmetric key encryption? Name two commonly used symmetric algorithms.

(j) What is a fabrication attack?

(k) What do you understand by Brute-force attack?

(l) What is Trojan horse?

(m) How does 'denial of service' prevent the management of communication facilities?

(n) What is the purpose of log management in computer security?

(o) What is Encapsulating Security Payload?

Group - B

2. Answer ***any four*** questions : 5×4

(a) Discuss briefly about SSL attacks.

(b) Explain the features and working of S/MIME in securing e-mail communication.

(c) What is Message digest? Why is it used?

(d) Explain Euler's theorem with suitable example.

(e) Write a short note on Pretty Good Privacy (PGP). How does it ensure e-mail security?

(f) What is IPsec? Explain its components and how it secures IP communications.

Group - C

Answer ***any four*** questions.

3. (a) Write short notes on Web and Wireless security.

(b) What do you mean by Secure Electronic Transaction (SET)? Explain with appropriate illustration. 5+5

4. (a) Explain Chinese Remainder theorem.

(b) Write RSA algorithm with a suitable example. 5+5

5. (a) Explain the Diffie-Hellman key exchange algorithm with an example.

(b) What is the CIA triad in information security? Briefly explain each component. 5+5

6. (a) What do you mean by Galois field?

(b) What are the principal elements of Private-key and Public-key Cryptosystem? 5+5

7. Define groups, rings and fields in the context of number theory. How are they useful in cryptography? (2+2+2)+4

8. (a) Explain the basic principle of the AES algorithm.

(b) Write a short note on Transport Layer Security (TLS). 5+5
