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**BTECH-HON**  
**(SEM IV) THEORY EXAMINATION 2024-25**  
**INFORMATION THEORY FOR CYBER SECURITY**

**TIME: 3 HRS****M.MARKS: 100****Note:** Attempt all Sections. In case of any missing data; choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

Q No.	Question	CO	Level
a.	What are Random variables?	1	K1
b.	What is symmetric cipher?	1	K1
c.	Explain Quantum Cryptography?	2	K2
d.	What are cyclic codes?	2	K1
e.	What is side channeling?	3	K1
f.	Define encryption and decryption.	3	K2
g.	Define the term 'security'.	4	K2
h.	What is Distributed channel synthesis?	4	K1
i.	What is digital forensics?	5	K1
j.	What is network forensics?	5	K1

**SECTION B****2. Attempt any three of the following:****10 x 3 = 30**

Q No.	Question	CO	Level
a.	What are Hamming Codes? Explain in detail.	2	K1
b.	Explain the role of digital certificates in Asymmetric Encryption Process.	3	K2
c.	Explain the principles of digital forensics.	5	K2
d.	Describe the concept of information theory in cyber security?	1	K1
e.	Explain in detail, how rate-distortion theory is used to optimize secure source coding.	4	K2

**SECTION C****3. Attempt any one part of the following:****10 x 1 = 10**

Q No.	Question	CO	Level
a.	Explain Shannon-Fano Coding Algorithm with a suitable example.	1	K2
b.	What is leakage of confidential data?	1	K1

**4. Attempt any one part of the following:****10 x 1 = 10**

Q No.	Question	CO	Level
a.	Define randomized ciphers with example	2	K2
b.	How are Hamming Codes used to measure the distance between code words in block codes? Explain with a suitable example.	2	K2

**5. Attempt any one part of the following:****10 x 1 = 10**

Q No.	Question	CO	Level
a.	Explain Diffie-Hellman key exchange protocol with a suitable example.	3	K3
b.	What are pros and cons of public key cryptography?	3	K2



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**6. Attempt any one part of the following: 10 x 1 = 10**

Q No.	Question	CO	Level
a.	Discuss the principles of distributed channel synthesis.	4	K2
b.	Explain how distributed channel synthesis is used to achieve secure communication in distributed systems.	4	K2

**7. Attempt any one part of the following: 10 x 1 = 10**

Q No.	Question	CO	Level
a.	What is the difference between Symmetric and Asymmetric encryption?	5	K1
b.	Explain Elliptic Curve Cryptography and applications.	5	K2

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