Graphic Era
HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Even) Semester Examination May-June 2025

Roll no.....

Name of the Program and semester: Bachelor of Computer Applications (6th Semester)
Name of the Course: *Network Security and Cyber Law*
Course Code: TBC602
Time: 3 hour Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)
a. What are the primary goals of network security? Explain how ISO Security Architecture maps attacks to services and mechanisms. (CO1)
b. Differentiate between active and passive attacks with examples. How do these attacks challenge the security goals? (CO1)
c. Describe the working of X.509 Directory Authentication Service. How does it ensure secure identity validation? (CO1)

Q2. (2X10=20 Marks)
a. Analyze the SET protocol in securing online credit card transactions. How does it differ from SSL/TLS? (CO2)
b. Explain how Pretty Good Privacy (PGP) and S/MIME provide email security. Compare their encryption techniques and key management. (CO2)
c. Evaluate the role of Wireless Transport Layer Security (WTLS) in mobile applications. What are its key limitations? (CO3)

Q3. (2X10=20 Marks)
a. Explain the structure and role of Authentication Header (AH) and Encapsulating Security Payload (ESP) in IP Security. (CO3)
b. Analyze the different types of intruders and their methods of gaining unauthorized access. How do intrusion detection systems (IDS) mitigate their impact? (CO4)
c. Evaluate firewall design principles. What makes a firewall effective against both internal and external threats? (CO4)

Q4. (2X10=20 Marks)
a. What is the genesis and scope of the IT Act 2000? How has it facilitated e-governance in India? (CO4)
b. Analyze how digital signatures and electronic records are legally recognized under the IT Act. How does this influence e-commerce? (CO5)
c. Explain how IP addresses, port numbers, and sockets work together in network communication. How can IPs be traced or hidden? (CO5)

Q5. (2X10=20 Marks)
a. Describe the working of ping sweeping, ICMP scanning, and port scanning. How are they used in ethical hacking? (CO5)
b. Evaluate internal attack vectors like dumpster diving, FTP uploads, shoulder surfing, and instant messengers. Which is the most dangerous and why? (CO6)
c. Design a security policy that addresses the prevention of DoS and DDoS attacks such as SYN flood, Ping of Death, and Smurf attacks. Include both proactive and reactive measures. (CO6)