

GYANMANJARI INNOVATIVE UNIVERSITY

Gyanmanjari Institute of Technology

B.Tech.- End Semester Examination (ESE)- Summer - 2026

Enrollment No.: _____

Date: 01/06/2026

Subject Code: BETCE15406

Semester: 6

Subject Name: Quantum Cryptography

Total Marks: 100

Time: 10:30AM To 01:30PM

Instructions:

- 1. Question No. 1 is Compulsory.**
- 2. Make Suitable Assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

	Marks
Q.1 (a) Differentiate classical cryptography and quantum cryptography.	05
(b) Can two classical bits simulate one qubit? Discuss.	05
(c) Explain the BB84 protocol in detail with diagram.	10
Q.2 (a) Explain the concept of superposition with an example.	05
(b) Define qubit. How does it differ from a classical bit?	05
OR	
(b) Steps of key distillation in QKD.	05
(c) Security model of quantum secret sharing.	10
OR	
(c) Explain working of shor's algorithm with example.	10
Q.3 (a) Explain practical challenges such as photon loss, noise, and distance limitations.	05
(b) PQC vs QKD comparison.	05
(c) Explain quantum network architecture.	10
OR	
(a) What is polarization?	05
(b) Explain error correction in QKD.	05
(c) Describe quantum gates and their operations with diagrams.	10
Q.4 (a) Could future math break PQC too?	05
(b) Write a short note on quantum attacks on cryptography.	05
(c) What is zero knowledge proofs? Explain it.	10
OR	
(a) Ethical risks of quantum surveillance.	05
(b) Differentiate BB84 and E91.	05

- (c) Compare classical cryptographic protocols with quantum protocols. 10
- Q.5 (a) If Eve uses quantum memory, how does attack change? 05
- (b) Centralized quantum cloud risks. 05
- (c) What are the future research directions in QC? Explain in detail. 10

OR

- (a) Advantages of entanglement-based protocols. 05
- (b) What is virtualization? 05
- (c) Lattice problem basics (LWE). 10