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| S. No | TS ID | TEST SCENARIO | PRE-CONDITION | POST CONDITION | PRIORITY |
| 1 | TAES-001 | AES: Encrypt/decrypt with random IV | Valid text/key | Decrypts to original | High |
| 2 | TAES-002 | AES: Encrypt/decrypt with custom IV | Valid text/key/16-char IV | Decrypts to original | High |
| 3 | TAES-003 | AES: Error on IV not 16 chars | Short IV | Throws error | High |
| 4 | TAES-004 | AES: Error on wrong key | Valid text/key | Throws error on decrypt | High |
| 5 | TAES-005 | AES: Error on malformed ciphertext | Invalid ciphertext | Throws error | Medium |
| 6 | TAES-006 | AES: Steps property descriptive | Valid input | Steps array is descriptive | Medium |
| 7 | TAFF-001 | Affine: Encrypt/decrypt with valid coprime a, b | Valid text/key (a coprime 26) | Decrypts to original | High |
| 8 | TAFF-002 | Affine: Error on non-coprime a | a not coprime 26 | Throws error | High |
| 9 | TAFF-003 | Affine: Error on invalid key format | Malformed key | Throws error | Medium |
| 10 | TAUT-001 | Autokey: Encrypt/decrypt with simple key | Valid text/alphabetic key | Decrypts to original | High |
| 11 | TAUT-002 | Autokey: Handles mixed case and special chars | Mixed case/special chars | Normalizes and encrypts/decrypts properly | Medium |
| 12 | TAUT-003 | Autokey: Handles empty input | Empty string | Returns empty output | Low |
| 13 | TRF-001 | Rail Fence: Encrypt/decrypt with valid rails | Valid text/rails ≥2 | Decrypts to original | High |
| 14 | TRF-002 | Rail Fence: Error on rails < 2 | Rails < 2 | Throws error | High |
| 15 | TRF-003 | Rail Fence: Handles spaces and special chars | Text with spaces/special chars | Encrypts/decrypts, ignores spaces | Medium |
| 16 | TSH-001 | Shift: Encrypt/decrypt with valid numeric key | Valid text/numeric key | Decrypts to original | High |
| 17 | TSH-002 | Shift: Error on non-numeric key | Non-numeric key | Throws error | High |
| 18 | TVIG-001 | Vigenère: Encrypt/decrypt with valid key | Valid text/alphabetic key | Decrypts to original | High |
| 19 | TVIG-002 | Vigenère: Handles repeating key for long text | Long text/short key | Key repeats and decrypts to original | Medium |
| 20 | TVIG-003 | Vigenère: Handles non-alphabetic characters | Text with numbers/symbols | Non-alphabetic chars unchanged | Medium |
| 21 | TVIG-004 | Vigenère: Handles empty input/key | Empty string or key | Returns empty output or throws error | Low |