**Abstract**

Ciphers are vulnerable to different types of attacks which exploit them for their weaknesses. Since security is a vital and fundamental requirement in the current era of information system and communication process, even a little compromise can be detrimental. Whenever a security system is made, cryptanalysts over the world check it for robustness by opting different methods. Focusing on security of block ciphers, this paper mainly aims to discuss various types of attacks. This paper dwells on the complexity of Bitsum Algorithm but also classifies and compares different attacks based on their complexities. Five popular and strong algorithms were analyzed under Bitsum algorithm. FEAL, Blowfish, and AES were able to withstand Bitsum Attack whereas TEA and XTEA could not. This comparison has shown that the complexity of the Bitsum attack is least on Reduced TEA, TEA and XTEA.