

# Foolproof Examination System through Color Visual Cryptography and Signature Authentication

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**Abstract:** *There have been widespread allegations about the question papers leakage for a number of subjects in the recently held Secondary School Leaving Certificate examinations. The leakage is due to the practice of using printed question papers. Such incidents and subsequent cancellation of examinations are happening frequently. This creates political and social embarrassment and causes loss of money and time. This paper proposes a new system of fool proof examination by tamperproof e-question paper preparation and secure transmission using secret sharing scheme. The application is perfectly secure because the proposed method automatically embeds the corresponding institute seal in the form of the key. As a result, it is easy to trace out the source culprit for the leakage of question papers. This scheme has reduced reconstruction time because the reconstruction process involves only Exclusive-OR (XOR) operation apart from authentication. Visual Cryptography is a special encryption technique to hide information in images in such a way that it can be decrypted by the human visual system. The benefit of the visual secret sharing scheme is in its decryption process where without any complex cryptographic computation encrypted data is decrypted using Human Visual System but the encryption technique needs cryptographic computation to divide the image into a number of parts let  $n$ .  $k$ -  $n$  secret sharing scheme is a special type of Visual Cryptographic technique where at least a group of  $k$  shares out of  $n$  shares reveals the secret information, less of it will reveal no information. In our paper we have proposed a new  $k$ - $n$  secret sharing scheme for color image where encryption (Division) of the image is done using Random Number generator.*

**Keywords:** Visual cryptography, secret sharing scheme, examination system, information security, authentication. Secret Sharing, Random Number

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