



## CERTIFICATE

This is to certify that the project report entitled “ **Linear codes over the ring  $Z_4 + \alpha Z_4 + \beta Z_4 + \gamma Z_4 + \alpha\beta Z_4 + \beta\gamma Z_4 + \alpha\gamma Z_4 + \alpha\beta\gamma Z_4$** ”, being submitted by Rakesh Kumar Sahoo (Roll no- MATH/08/20) in partial fulfilment is a bonafide work carried out by her under my supervision and guidance.

To the best of my knowledge, the result embodies in this project report has not been submitted to any other University or Institution.

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