**Practical 1E**

**Aim: Create a mining function and test it.**

import hashlib

def sha256(message):

      return hashlib.sha256(message.encode('ascii')).hexdigest()

def mine(message, difficulty=1):

   assert difficulty >= 1

   #if(difficulty <1):

   #        return

   #'1'\*2=> '11'

   prefix = '1' \* difficulty

   print("prefix",prefix)

   for i in range(1000):

      digest = sha256(str(hash(message)) + str(i))

      print("testing=>"+digest)

      if digest.startswith(prefix):

         print ("after " + str(i) + " iterations found nonce: "+ digest)

         return i #i= nonce value

mine ("test message",2)

#####################################################################

Output:

prefix 11

testing=>ab7d1f2b4ba63486a274d7a8c5e4dde793c2d47069ae19ab832dc1177622a182

testing=>cf0a36c4f0c3107cba7a8ebe690db004a01f659bc0aed3b327f01fab0065bf41

testing=>fb0eac040f5f40cd4a39373ca0e6165c07a36db3df510b4c0ad4d45654caeabb

testing=>a298e97de6df74e3856aabbd5aeed9807652d98a9911a6431bdb3bad0ad2a7bd

testing=>7ff8aa3e5b40e1b5bed59ab464c9b98ceff64b2445cc446cc89ecd93330cba1e

…….

testing=>1cddb5b7e9af6eda960e734606c33f0ce676a7e557a22ba4d7b9af557b0c0360

testing=>29d2f56130e7b276b3cfb94687ff3b1d5c79b6dc8238fe259aae1f5af19fd8b2

testing=>3a5f4dcfed5301f36be80fd7d42573b1585ea4ef9037e96853affe66d68f8a04

testing=>ddb4d9dc8c7f20443eedc9ac798aebb2c080cc46926dc0151760e37097bf2dcf

testing=>4fb1010880723ce012526941ae6236260852c8e995583d0d2f65b6f9ff655c61

testing=>11038c5fc4f90108f4198097c76c9af5d38c92b48fe27968eacbd89324fe9d2a

after 21 iterations found nonce: 11038c5fc4f90108f4198097c76c9af5d38c92b48fe27968eacbd89324fe9d2a

21