# GUJARAT NATIONAL LAW UNIVERSITY
## GANDHINAGAR
Course: **Information Technology**
Semester- II (Batch: 2021-26)

### End Semester Online Examination: May 2022

**Date: 14th May, 2022**
**Duration: 8 hours**

Max. Marks: 40

**Instructions:**
- The respective marks for each question are indicated in-line.
- Indicate correct question numbers in front of the answer.
- No questions or clarification can be sought during the exam period, answer as it is, giving reason, if any.
- Diagram/s shall be made with a pencil only.
- Word Limit: 10 Marks:750-800 words, 5 Marks:400-450 words, 3 Marks: 350-450 words, 2 Marks: 250-300 words.

| | | Marks |
|---|---|---|

Q.1 Convert the following to the mentioned number system:       (1x3= 3)
  a) $(110010.101)_2$ into decimal number system (up to two decimal places)
  b) $(63578.125)_{10}$ into hexadecimal number system
  c) $(478.42)_8$ into decimal number system (up to two decimal places)

Q.2 Country "X", in order to increase the efficacy of its various Departments has planned to implement the usage of Information Technology. In this regard, answer the following questions:       (2+2+3 = 7)

  a) In order to store the large quantum of documents in electronic form it's planned to store the same on cloud. Write in short about any two Cloud Service Providers so that appropriate Provider can be selected for availing the services.
  b) The country intends to use the Intelligent System Architecture and amongst the various available models implement the multi-layered architecture by Rodney Brooks. Explain the architecture with the help of a neat diagram.
  c) The country has collected all forms of data related to its citizens, however is not able to utilize the same to frame appropriate policies for its development. Explain any three data mining techniques so that appropriate technique can be used by the concerned departments.

Q.3 Company "Z" is into manufacturing different types of designer artefacts and in order to enhance its business activities requires answers to the following questions so as to take appropriate measures:       (2+2+3+3= 10)

  a) The company wants to store all the information about its activities in computer, so that it can be accessed with ease. In order to ensure that the data is stored appropriately, plans to install a licensed operating system. However before investing the amount wants to know about any two file utility programmes that shall be met by the operating system which assists in storing the information in computer. Explain the same with the help of neat diagram(s).

b) The company in order to purchase appropriate microprocessor wants to understand any two classes of microprocessor that is based on architecture or instruction set. Explain any four characteristics of the microprocessor under these classes so that it gives a better insight about its working.

c) The company plans to adopt digital payment mechanism so that it not only facilitates the customer in making the payments but also helps it ensure appropriate accounting/deposition of the amount. Explain any six types of digital payment, so that it enables the company to implement the best suitable mechanism.

d) The company intends to dispatch documents electronically so as to undertake faster communication, however to ensure the security of the documents, also wants to place digital signature over the same. Explain the working of the digital signature with the help of neat diagram and also state it is based on which cryptographic technique.

## Read the case and answer the questions

Q.4    ItBuy is a well-known website where individuals can buy or sell goods and services.    (10)
However, the site seems with a murder case that was eventually resolved using digital forensics. On April 12, 2020, a French woman, Juli Barak was found murdered in an upscale hotel in Boston. There was additionally a report of an assault on another woman who was robbed at gunpoint. During investigation, it came to light that both women had posted an ad on ItBuy, which was used by the perpetrator, 23-year-old, Paul Moda, to find his intended victims. On the night of the crimes, they had individually made an appointment to meet a man named "Andrew." Investigators were able to trace emails sent between the victims and the perpetrator. Suggest the role of email and network investigation in the given case.

Q.5    The case between Cyrus and Mark is hinged on the validity of a contract between them    (5)
and is related to the development of Freezoop. A forensic analysis was conducted resulting in conclusions that electronic documents and files were manipulated and backdated. Explain any two forensic tools for investigation.

Q.6    Doctor Adam Gokx, a biodefense researcher, was suspected of mailing    (5)
anthrax-contaminated letters causing 5 deaths and injury to dozens of more people. While investigating it was found that Adam used disposable e-mail accounts & letters both with false names during the time of the anthrax attacks. Although Adam committed suicide before being charged, he was the primary suspect in these anthrax attacks. Suggest and two cyber security tools for the predictive forensics in this type of the matter.

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