'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 1st Semester Examination, 2022

GE1-P1-COMPUTER SCIENCE (14)

Time Allotted: 2 Hours | Full Marks: 60

The question paper contains GE 1A and GE 1B.
The candidates are required to answer any *one* from *two* courses.
Candidates should mention it clearly on the Answer Book.

GE 1A

DIGITAL ELECTRONICS

GROUP-A

Answer any *four* questions 3×4 = 12

1. Write a short note on 'Firmware'.
2. What are the applications of flip-flop?
3. What are shift registers?
4. Write a short note on ASCII code.
5. Explain XOR gate.
6. Convert $(177.25)_{10}$ into equivalent octal number.

GROUP-B

Answer any *four* questions 6×4 = 24

7. Explain Full subtractor with example.
8. Minimize the following function using K-MAP:

$$Y = \sum_{m}(0,1,2,5,13,15)$$

9. Design and implement 4-bit binary to gray convertor.
10. Explain a Multiplexer with suitable diagram and truth table.
11. Simplify $\overline{A\overline{B} + ABC + A(B + A\overline{B})}$
12. Write short note on
    (a) EPROM
    (b) Dynamic RAM.

GROUP-C

Answer any *two* questions 12×2 = 24

13. Explain D flip-flop. What do you mean by race around condition? How it can be solved using a master-slave flip flop (J-K)? 6+2+4
14. What do you mean by sequential circuit? Discuss shift registers. 2+10
15. Discuss on fixed and floating point representation of numbers.
16. Discuss input devices and output devices of a personal computer.

GE 1B

COMPUTER NETWORKS

GROUP-A

Answer any *four* questions 3×4 = 12

1. Differentiate between internet and intranet.
2. Discuss flow control with the help of an example.
3. What is the significance of relays in crossbar switch?
4. What is critical angle?
5. Discuss Piggy backing.
6. Discuss stuffing.

GROUP-B

Answer any *four* questions 6×4 = 24

7. Write down different steps of generating checksum.
8. Discuss different functions of data link layer.
9. Discuss the steps performed by 1-persistent CSMA.
10. Explain control field in HDLC.
11. Differentiate between transparent and source routing bridge.
12. Explain different classes of IP address.

GROUP-C

Answer any *two* questions 12×2 = 24

13. What are choke packets? Explain hop by hop choke packets with the help of an example.
14. Explain FDDI.
15. Demonstrate CRC by taking an example.
16. Generate Hamming code for the data unit 1001011100.

——×——