'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 3rd Semester Examination, 2021

SEC1-P1-COMPUTER SCIENCE

The figures in the margin indicate full marks.

The question paper contains SEC35-E1, SEC35-E2 and SEC35-E3.
The candidates are required to answer any *one* from the *three* courses.
Candidates should mention it clearly on the Answer Book.

SEC35-E1

DIGITAL ELECTRONICS AND SYSTEM MAINTENANCE

Time Allotted: 2 Hours **Full Marks: 60**

GROUP-A

Answer any *four* questions from the following 3×4 = 12

1. State and prove De Morgan's theorem. 3

2. Simplify the following expression:
$$Y = AB + (AC)' + AB'C(AB + C)$$

3. What is a Karnaugh Map? State the limitations of Karnaugh map. What are called don't care conditions? 3

4. What is propagation delay? Define fan-in. 3

5. Find the canonical POS form of $Y = A + \overline{B}C$. 3

6. Do as directed: 3
   (a) $(250.5)_{10} \rightarrow (?)_2, \quad (?)_{16}$
   (b) $(11010)_2 - (1101)_2$ using 2's complement.

GROUP-B

Answer any *four* questions from the following 6×4 = 24

7. Reduce the following function using K-map technique: 6
$$f(A, B, C, D) = M(0, 3, 4, 7, 8, 10, 12, 14) + d(2, 6)$$

8. (a) Explain Full-Subtractor. Implement a full subtractor using half-subtractors. 6
   (b) What is PLA?

9. Design a combinational circuit that converts a four-bit reflected-code number to a four-bit binary number. Implement the circuit using Ex-OR gates. 6

10. Describe triggering of Flip-Flops and explain operation of an edge-triggered D Flip-Flop. 6

11. What is operating system? Discuss about system backup, system recovery and disk defragmentation. 6

12. Discuss briefly how to install an operating system in a computer. 6

GROUP-C

Answer any *two* questions from the following 12×2 = 24

13. Explain race-around condition in relation to the J-K flip-flops using timing relationships. Draw the clocked Master-Slave J-K flip-flop configuration and explain how it removes race-around conditions in J-K flip-flop. 12

14. Differentiate between asynchronous counter and ripple counter. Explain BCD ripple counter with logic diagram and timing diagram. 12

15. Write short notes on: 12
    (a) Minterms and Maxterms
    (b) Registers
    (c) Encoders and decoders.

16. Write short notes on: 12
    (a) Utility Software
    (b) Antivirus Software
    (c) Device Manager.

SEC35-E2

WEBSITE DESIGN WITH HTML AND PHP

Time Allotted: 2 Hours **Full Marks: 40**

GROUP-A

1. Answer any ***five*** questions from the following: 1×5 = 5
   (a) What is PHP?
   (b) How would you create a banner in HTML?
   (c) What are radio buttons?
   (d) What is PEAR in PHP?
   (e) What do you understand by a Frameset?

(f) Explain the difference between static and dynamic website.

(g) How to make the text color in HTML?

(h) What is the difference between "echo" and "print" in PHP?

GROUP-B

2. Answer any ***three*** questions from the following: 5×3 = 15

(a) Describe how would you create tables in HTML.

(b) What is a Form? How is a Form created?

(c) Describe the process of inserting graphics in HTML document.

(d) How to read and write a file in PHP?

(e) What is the array in PHP? Name the different types of array in PHP.

GROUP-C

3. Answer any ***two*** questions from the following: 10×2 = 20

(a) Write a HTML form to take as input username and password and use the submit button to transfer the control to another HTML file using HTTP "POST" method.

(b) Write a PHP script that finds out the sum of first *n* odd numbers.

(c) Create an HTML document which consists of ordered list, unordered list and image.

(d) Create a PHP page which accepts string from user. After submission that page displays the reverse of provided string.

SEC35-E3

PYTHON PROGRAMMING

Time Allotted: 2 Hours **Full Marks: 60**

GROUP-A

Answer any *four* questions from the following 3×4 = 12

1. What are operators in Python? Give examples.

2. Explain identifiers in Python.

3. Discuss tuples with the help of examples.

4. Discuss bitwise operators in Python with the help of an example.

5. Discuss expressions in Python.

6. Discuss debugging in Python.

GROUP-B

Answer any *four* questions from the following 6×4 = 24

7. Explain different data types available in Python with the help of examples.

8. Write a Python program to find the GCD of two numbers.

9. Write a Python program to check if a string is palindrome or not.

10. Write a Python program to add two matrix and find the transpose.

11. Write a Python program to check if the given number is Prime or Not.

12. Write a Python program to check whether a given number is Armstrong or not.

GROUP-C

Answer any *two* questions from the following 12×2 = 24

13. Explain arrays in Python. Write a program in Python to demonstrate the implementation of arrays.

14. Write a program in Python to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria.

    (a) Grade A: Percentage > = 80

    (b) Grade B: Percentage > = 70 and < 80

    (c) Grade C: Percentage > = 60 and < 70

    (d) Grade D: Percentage > 40 and < 60

    (e) Grade E: Percentage < 40

15. Explain loops in Python with the help of examples.

16. Write a program in Python to generate Fibonacci series up to *n*-terms.

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