**INTERNAL ASSIGNMENT**

|  |  |
| --- | --- |
| **SESSION** | **APRIL2025** |
| **PROGRAM** | **Bachelor of COMPUTER APPLICATIONS (BCA)** |
| **SEMESTER** | **1** |
| **course CODE & NAME** | **DCA1108 – FUNDAMENTALS OF COMPUTERS & DIGITAL SYSTEMS** |
| **CREDITS**  | **4** |
| **nUMBER OF ASSIGNMENTS & Marks** | **02****30 Marks each** |

**Note:**

* **There are two sets of assignments for the course and all questions are compulsory in both sets.**
* **Average of both assignments’ marks scored will be considered as Internal Assessment Marks.**
* **Answers for 10 marks questions should be approximately of 400-500 words.**

|  |
| --- |
|  **Set – I** |
| **Q.No** | **Questions** | **Marks** | **Total Marks** |
|  | 1. Differentiate between analog, digital, and hybrid computers with examples.
 | 4 | 10 |
| 1. Explain the working principle of an optical scanner and list its applications.
 | 3 |
| 1. Convert the decimal number 154 to:
2. Binary
3. Octal
4. Hexadecimal
 | 3 |
|  | 1. Explain the difference between primary memory and secondary memory with examples.
 | 6 | 10 |
| 1. Simplify the Boolean expression using laws:

    F = A(B + C) + A(B + C)' | 4 |
|  | 1. Describe the function of Control Unit and Arithmetic Logic Unit (ALU) in CPU.
 | 5 | 10 |
| 1. Draw the logic circuit for:    F = A' + BC.
 | 5 |
|  Set – II |
| **Q.No** | **Questions** | **Marks** | **Total Marks** |
|  | 1. Explain the working of a Half Subtractor and Full Subtractor with suitable circuit diagrams.
 | 5 | 10 |
| 1. What are multiplexers and demultiplexers? Discuss any two applications of each.
 | 5 |
|  | 1. Define sequential circuits. How do flip-flops help in implementing them?
 | 5 | 10 |
| 1. Draw circuit diagrams for D and T flip-flops. Mention their characteristic equations and applications.
 | 5 |
|  | 1. Differentiate between synchronous and asynchronous counters. Which one is preferred for high-speed applications and why?
 | 5 | 10 |
| 1. What are shift registers? Explain any two applications.
 | 5 |