**INTERNAL ASSIGNMENT**

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| **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.**

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| **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 |