**Sant Gadge Baba Amravati University, Amravati Summer 2020 Exam**

**H.V.P.Mandal's College of Engineering & Technology Amravati**

**Course: Computer Science & Engineering**

**BE Four Year Fifth Semester (Computer Science & Engineering) Summer 2020 Exam**
**5KS04 Switching Theory and Logic Design**

**ONLY FOR BACKLOG STUDENTS**

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**Note:**

1. **Solve any Two Questions.**
2. **Each Question carries 10 marks.**

**Question No.1 (10 marks)**

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|---|---|
| a. Explain the scalar type in VHDL. | **2M** |
| b. Write a VHDL code for AND gate using behavioral style of modeling. | **2M** |
| c. What is Quine-McClusky method? | **1M** |
| d. Which logic device is called as a distributor? 1) Multiplexer 2) demultiplexer 3) encoder 4) decoder | **1M** |
| e. What are the applications of flip-flops? | **2M** |
| f. Compare the Moore and Mealy machines. | **2M** |

**Question No.2 (10 marks)**

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|---|---|
| a. What is Identifiers in VHDL? Explain. | **2M** |
| b. How to declare entity in VHDL? | **2M** |
| c. What is a standard SOP form? | **1M** |
| d. What is a parallel adder? | **2M** |
| e. Explain the operation of JK flip-flop. | **2M** |
| f. What is the Moore machine? | **1M** |

**Question No.3 (10 marks)**

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|---|---|
| a. Explain how data will be manipulated using sequential statements with one example. | **2M** |
| b. Write short note on architectural bodies. | **2M** |
| c. What is k-map? What are its advantages and disadvantages? | **2M** |
| d. Distinguish between parallel adder and serial adder. | **2M** |
| e. List the different types of latches and flip-flops. | **1M** |

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|---|---|
| f. What do you mean by terminal state? | **1M** |

**Question No.4 (10 marks)**

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|---|---|
| a. Explain the standard logic (std_logic) in VHDL. | **1M** |
| b. Explain entity installation and port mapping in VHDL. | **1M** |
| c. Reduce the following expression using k-map.<br>$\sum m(5,6,7,9,10,11,13,14,15)$ | **2M** |
| d. With the help of a logic diagram explain a parallel adder/subtractor using 2's complement system. | **2M** |
| e. Distinguish between combinational and sequential sequence switching circuits. | **2M** |
| f. What are the capabilities and limitations of finite state machines? | **2M** |