

M.Sc. (Physics) (NEP Pattern) Semester-III  
**03MSCPH4.4 - Major Elective Paper-IV : Digital Electronics and  
Microprocessors Paper-IV**

P. Pages : 1

Time : Three Hours



**GUG/S/25/16029**

Max. Marks : 40

**Either:**

- |    |    |   |   |
|----|----|---|---|
| 1. | a) | State and prove the De-Morgan's Theorems.                 | 4 |
|    | b) | What is Boolean Algebra? Discuss laws of Boolean Algebra. | 4 |

**OR**

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|--|----|--|---|
|  | e) | Draw the logic diagram of full adder and explain its working with truth table. | 4 |
|  | f) | Explain the 4:1 multiplexer with logic diagram and truth table.                | 4 |

**Either:**

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|----|----|--|---|
| 2. | a) | Explain the organization of the microcomputer and its operation with suitable diagram. | 4 |
|    | b) | Differentiate between 8085 microprocessor and 8086 microprocessor.                     | 4 |

**OR**

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|--|----|---|---|
|  | e) | Write a note on architecture and its operation.   | 4 |
|  | f) | Explain the flag register of 8085 microprocessor. | 4 |

**Either:**

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|----|----|--|---|
| 3. | a) | Explain the memory mapping with an address.              | 4 |
|    | b) | Discuss the instruction fetch cycle and execution cycle. | 4 |

**OR**

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|--|----|--|---|
|  | e) | Write a note on 'numerical data transfer group instruction'. | 4 |
|  | f) | What is a Stack? Explain its role in programming.            | 4 |

**Either:**

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|----|----|--|---|
| 4. | a) | Explain the various types of the data communication. | 4 |
|    | b) | Discuss the necessity communication networking.      | 4 |

**OR**

- |  |    |   |   |
|--|----|---|---|
|  | e) | Explain any four addressing modes of 8086 microprocessor. | 4 |
|  | f) | Explain the transmission control protocol in brief.       | 4 |

5. Answer all the followings:

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|--|----|--|---|
|  | a) | Simplify $Y = A\bar{B} + \bar{A}B + AB + \bar{A}\bar{B}$ using Boolean Laws. | 2 |
|  | b) | State the features of 8085 microprocessor.                                   | 2 |
|  | c) | Explain any two symbols of the flow charts.                                  | 2 |
|  | d) | Discuss the assembly language format.  | 2 |

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