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1701E1177

Candidate's Seat No :_____

PGDCSA Sem.-1 Examination

Fundamentals of Computer & OAT

Time : 3-00 Hours] **January-2025** **[Max. Marks : 50**

Instructions:

- **Write both the Sections in the separate answer book.**
- **Both Sections having equal weightage.**
- **Draw Diagrams wherever necessary.**
- **Make Assumptions wherever necessary.**

Section I

Max.Marks: 25

Q.1 Attempt the following (Any two) **10**

1. Explain the Characteristics of a Computer in detail.
2. Convert the following number $(111010.1100)_2$ in Decimal, Octal and Hexadecimal.
3. Differentiate between MS-DOS and Windows operating systems.

Q.2 Attempt the following (Any two) **10**

1. Convert $(25.375)_{10}$ to Binary, Octal, and Hexadecimal.
2. Explain the functions of input/output units with examples.
3. Solve the Following :
   - $(110101)_2 + (101110)_2$.
   - $(1101)_2 - (10101)_2$ using 2's complement.

Q.3 Attempt the following (Any five) **5**

1. What is Base called?
2. Explain the difference between ROM and RAM.
3. What are the Universal Logic Gates?
4. Binary Subtraction Using 2's Complement: **0101000001 – 10000100001**
5. Find Out r's and (r-1)'s Complement of given Number: $(13424)_6$
6. Prepare a truth table for the following Boolean expression: $A + \bar{B}C$

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Section II

Max.Marks: 25

Q.4 Attempt the following (Any two) **10**

1. Explain the full adder and half adder.
2. What is the advantage of inject printer. compared to a dot matrix printer? And what is its disadvantages?
3. Express 36.5625_{10} as a 32-bit floating point number (in hexadecimal)

Q.5 Attempt the following (Any two) **10**

1. Simplify the Boolean function using a 4-variable K-map:
   $F(A,B,C,D)=\Sigma\ (0,1,2,5,8,9,10,14)$
2. Prove the De-morgan's theorem with proper circuits and the truth-table.
3. A system with a memory capacity of **128 GB** has four **32 MB** memory modules installed. The rest of the memory is unused. How much memory space is available for future expansion? (Give your answer in decimal in megabytes.)

Q.6 Attempt the following (Any five) **5**

1. What is the equation of $\mathbf{f(A,B) = \Sigma\ (0,2,3)}$?
2. What are flip-flops? Explain their types.
3. **A + 0 =?** and **A . 1 =?**
4. Define the terms: (a)Turnaround time (b) throughput
5. What is a Pivot Table in spreadsheet software, and what is its use?
6. How many bits of memory are contained in a memory unit with **512KB** of memory?