

Code No: RT31044

**R13****SET - 1****III B. Tech I Semester Supplementary Examinations, May - 2018****DIGITAL SYSTEM DESIGN & DIGITAL IC APPLICATIONS**

(Common to Electronics and Communication Engineering and Electronics and Instrumentation Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answering the question in **Part-A** is compulsory  
3. Answer any **THREE** Questions from **Part-B**

**PART -A**

- |   |    |  |      |
|---|----|--|------|
| 1 | a) | What are the requirements of VHDL?                                 | [3M] |
|   | b) | What are levels of Abstraction in VHDL?                            | [4M] |
|   | c) | What are the commercial ROM types?                                 | [4M] |
|   | d) | Define Fan in and fan out.   | [4M] |
|   | e) | What is a floating point encoder? Explain.                         | [3M] |
|   | f) | Discuss the steps involved in the analysis of sequential circuits? | [4M] |

**PART -B**

- |   |    |   |      |
|---|----|---|------|
| 2 | a) | Explain brief history of VHDL?  | [5M] |
|   | b) | Explain the packages and libraries of VHDL?                                     | [8M] |
|   | c) | Explain about concurrent and sequential statements?                             | [3M] |
| 3 | a) | Explain about major Net list formats for design representation                  | [8M] |
|   | b) | Discuss about VHDL synthesis  | [8M] |
| 4 | a) | Explain in detail about PROM with an example?                                   | [8M] |
|   | b) | With the help of logic diagram explain the function of PAL with one example?    | [8M] |
| 5 | a) | Explain the terms: (i) DC noise margin (ii) Fan-out with reference to TTL gate? | [8M] |
|   | b) | Briefly list out the differences between ECL, TTL and CMOS logic family?        | [8M] |
| 6 | a) | Design a two bit comparator circuit and explain its operation?                  | [3M] |
|   | b) | Design a 32x1 multiplexer by using 74x151 IC and explain its operation?         | [8M] |
| 7 | a) | With a neat sketch explain the Universal shift register                         | [8M] |
|   | b) | Design MOD-16 synchronous counter using T- Flip-Flop?                           | [8M] |

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