R22 Regulation *Subject code:4P6DA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Regular Examinations, May 2025

DIGITAL DESIGN THROUGH VERILOG HDL

(ECE)

Maximum Marks: 60 Date: 23.06.2025 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	List the advantages of VLSI technology.	1M	1	1
b)	What are the keywords used in VHDL.	1M	1	1
c)	List the Array of Instances of Gate Primitives.	1M	2	1
d)	Define gate delay.	1M	2	1
e)	Write Operator Types in Verilog.	1M	3	1
f)	Compare CMOS switches and bidirectional switches.	1M	3	2
g)	What are the control statements in Behavioral Modeling.	1M	4	1
h)	Define Test Benche.	1M	4	1
i)	Compare between Combinational UDPs and Sequential UDPS.	1M	5	1
j)	Define Compiler directives.	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Explain the VLSI design flow with the help of neat diagram.	10M	1	2
	OR			
3	Define Vectors, Scalars and Identifiers with suitable examples.	10M	1	2
4	a) Explain about Tri-state gates in Verilog.	5M	2	3
	b) Discuss the Net Delays and Gate Delays.	5M	2	2
	OR			
5	Write Verilog code for 1 to 4 demultiplexer module by using 2 to 4 decoder?	10M	2	3
6	Design half-adder using CMOS switches.	10M	3	3
	OR			
7.	a) Discuss why switch level is useful?	5M	3	3
	b) Write and verify a switch level al a three-input static CMOS NOR gate?	5M	3	3

8	Develop a module and a test bench for a 4-to-1 multiplexer in behavioral model .	10M	4	3
	OR			
9	Explain the Sequential and Parallel Blocks with suitable examples in behavioral model ..	10M	4	2
10	a) Compare between Tasks and Functions.	5M	5	3
	b) Explain Compiler Directives and Functions.	5M	5	2
	OR			
11	What do you mean by user defined primitives (UDP) and explain the types with examples?	10M	5	3