

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***M.E DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025***Second Semester**Applied Electronics***AP4001/PAPE2401 - Applications Specific Integrated Circuits***Regulations – 2021/2024***Duration : 3 Hrs****Maximum : 100 Marks****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BLT	CO	Marks
1.	Define ASIC and list its types.	L1	1	2
2.	What is logical effort in ASIC?	L2	1	2
3.	What is an anti-fuse? Give any two applications of it.	L1	2	2
4.	Distinguish between EPROM and EEPROM.	L2	2	2
5.	What are the key differences between Altera's Cyclone and Stratix FPGA families?	L1	3	2
6.	How does the Integrated Logic Analyzer (ILA) help in debugging FPGA designs?	L2	3	2
7.	What is technology mapping in logic synthesis?	L1	4	2
8.	Why congestion analysis is important in placement and routing?	L2	4	2
9.	State the significance of a delta-sigma modulator in high-performance filters.	L1	5	2
10.	Why is FFT preferred over DFT in real-time applications?	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a Illustrate the ASIC design flow process with a neat diagram. Explain each step-in detail.	L2	1	16
	Or			
	b Explain the features of data path logic cell with suitable examples.	L2	1	16
12.	a Compare and contrast on Actel, Altera and Xilinx devices with reference to logic modules and delay.	L3	2	16
	Or			
	b Design an efficient cache memory subsystem using SRAM. Explain how cache size, associativity, and replacement policies affect system performance.	L3	2	16
13.	a Compare the architecture and configuration methods of Spartan and Cyclone FPGA families. Explain how their design impacts power consumption and performance.	L2	3	16

Or

	b	Discuss the role of JTAG debugging, virtual I/O probing, and internal logic analyzers in FPGA verification.	L2	3	16
14.	a	Apply the eigen value placement algorithm for placement of blocks in ASIC design.	L3	4	16
		Or			
	b	Build the optimal floorplan for a Viterbi decoder with necessary schematics.	L3	4	16
15.	a	Analyze the role of Digital Adaptive Algorithm (DAA) in wireless communication systems.	L4	5	16
		Or			
	b	Analyze the effectiveness of Delta-Sigma Modulation in designing high-performance digital filters for audio and biomedical applications.	L4	5	16