CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech I Semester Regular Examinations March-2023
Course Name: DIGITAL SYSTEM DESIGN WITH FPGAS
(Embedded Systems)

Date: 20.03.2023 FN   Time: 3 hours   Max.Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1.	How is the size of PLA specified?	1 M
2.	What are the resources of FPGA structure?	1 M
3.	Define state graph and state table.	1 M
4.	What is CLB in Xilinx XC4000?	1 M
5.	Explain about Moore-Type FSM for Serial Adder.	1 M
6.	Give the example of sequential circuit used in FPGA Implementation?	1 M
7.	Write about Fault in a circuit.	1 M
8.	Define single stuck at fault.	1 M
9.	Elaborate fault diagnosis in the circuit.	1 M
10.	What is Vending machine Controller?	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). i) Write short notes on Sequential Programmable Logic Deceives.   5M
ii) With a neat block diagram, explain the operation of the serial adder with the help of a   5M
control state graph and state table.

OR

11. B). i) Explain about PAL and implement f1 = Σ (1,2,3,4,6,8), f2 = Σ (0,2,3,4,5).   5M
ii) List the programming methods of FPGA. Explain any two in detail with suitable   5M
diagrams.

12. A). i) What are the properties of Alphanumeric State Graph Notations?   5M
ii) Design a sequential circuit which converts NRZ to Manchester coding.   5M

OR

12. B). Explain the capabilities and limitations of Finite State Model (FSM).   10M

13. A). Explain with neat diagram FPGA implementation of Shift Register?   10M

OR

13. B). Explain ADC Controller with the help of block diagram and with design procedure.   10M

(P.T.O..)

14. A). Explain Kohavi algorithm with example $F = ab + b'c' + ac$ 10M

OR

14. B). Explain the Boolean difference method with an example.   10M

15. A). Explain circuit test approach and transition check approach in fault diagnosis.   10M

OR

15. B). With the help of one example explain the homing tree experiment.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech I Semester Regular Examinations March-2023
Course Name: SYSTEM DESIGN WITH EMBEDDED LINUX
(Embedded Systems)

Date: 23.03.2023 FN   Time: 3 hours   Max.Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1.	Differentiate kernel and scheduler in RTOS.	1 M
2.	What is the main difference between embedded Linux and Desktop Linux?	1 M
3.	What is HAL?	1 M
4.	Mention the initial processes which will be created during the startup sequence of Linux.	1 M
5.	Define device driver.	1 M
6.	Mention the importance of IOCTL module used in device drivers.	1 M
7.	Differentiate soft Realtime system Vs Hard Realtime system	1 M
8.	Which command is used to install the Linux OS into the embedded hardware?	1 M
9.	Is Linux bootloader hardware/software – justify?	1 M
10.	What is build noise? How to minimize it in Linux?	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). What is priority inversion problem? Explain with an example. Mention the solution to overcome this problem.   10M

OR

11. B). Differentiate Desktop Operating System Vs RTOS.   10M

12. A). With the help of a diagram, explain the architecture of the Linux kernel.   10M

OR

12. B). Explain the file system in Linux.   10M

13. A). What are the functions used in operating with the Linux device drivers? Explain with the help of an example.   10M

OR

13. B). What are top and bottom halves? Explain how these are used in Linux?   10M

14. A). Explain the steps and mechanism involved in porting Linux to an embedded system.   10M

OR

14. B). What are the different shell commands used for cross compilation of Linux?   10M

15. A). What is a device tree? Draw the architecture of Linux file system, indicating the important directories, indicating their significance.   10M

OR

15. B). Mention the tools used in debugging Linux application in an embedded target.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech I Semester Regular Examinations March-2023
Course Name: WIRELESS SENSOR NETWORKS
(Embedded Systems)

Date: 25.03.2023 FN	Time: 3 hours	Max.Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1.	Define wireless sensor network.	1 M
2.	What is the use of wireless sensors network?	1 M
3.	List out the challenges in designing WSN.	1 M
4.	What is MANET?	1 M
5.	Write the applications of IEEE 802.15.4 standard.	1 M
6.	What is S-MAC protocol?	1 M
7.	What is data gathering?	1 M
8.	What is meant by quality of sensor network?	1 M
9.	Which is the core of wireless sensor node?	1 M
10.	What is nesC?	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).	Explain the various types of wireless sensor network.	10M
	OR	
11. B).	Describe about unique constraints and challenges of sensors network architecture.	10M
12. A).	What are issues and challenges in wireless sensor network? explain it.	10M
	OR	
12. B).	Name the various types of Mobile Adhoc Networks (MANET'S). Describe its operations.	10M
13. A).	Explain the classification of MAC protocols in detail.	10M
	OR	
13. B).	Write a detail notes on IEEE 802.15.2 standard.	10M
14. A).	Explain about data gathering in wireless sensor network.	10M
	OR	
14. B).	What is data dissemination and data fusion in WSN? Explain its functions.	10M
15. A).	Explain about WSN communication architecture.	10M
	OR	
15. B).	Write about operating system for wireless sensor network.	10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech I Semester Regular Examinations March-2023
Course Name: ADVANCE COMPUTER ARCHITECTURE
(Embedded Systems)

Date: 27.03.2023 FN	Time: 3 hours	Max.Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1.	Write the example for register indirect address modes.	1 M
2.	Define Locality of Reference.	1 M
3.	Write the formula to calculate the CPU execution time.	1 M
4.	Where can a block be placed in a cache?	1 M
5.	Define ILP.	1 M
6.	What is Branch-Prediction Buffer?	1 M
7.	Define snooping.	1 M
8.	What are the two factors are primarily responsible for the rise of the MIMD multiprocessors?	1 M
9.	Define cluster.	1 M
10.	What is the formula to measure the total latency of a message?	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).	What is the impact of time, volume, commodification and packaging in determining cost of a computer? Explain.	10M

OR

11. B).	Write and explain bout the principles of Instruction set.	10M

12. A).	Discuss about major Hurdles of Pipelining.	10M

OR

12. B).	Describe about virtual memory.	10M

13. A).	Explain the complete procedure how hardware supports for exposing more parallelism at compile time?	10M

OR

13. B).	How to overcome Data Hazards with Dynamic Scheduling? Explain.	10M

14. A).	Discuss the basic hardware primitives required to implement synchronization in a multiprocessor.	10M

OR

14. B).	Write about Systematic Shared- Memory Architecture.	10M

15. A).	Discuss the practical issues in interconnecting networks with suitable illustrations.	10M

OR

15. B).	Explain how the prediction and speculation support will be provided in IA64.	10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech I Semester Regular Examinations March-2023
Course Name: RESEARCH METHODOLOGY & IPR
(Common for all Branches)

Date: 29.03.2023 FN	Time: 3 hours	Max.Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1.	Define the meaning of research.	1 M
2.	List the sources of data collection.	1 M
3.	What are the various literature studies approaches?	1 M
4.	What do you mean by Research Ethics?	1 M
5.	Who are involved in research committe?	1 M
6.	Differentiate between a report and paper for research proposal.	1 M
7.	What is Patenting under PCT?	1 M
8.	Define trademark.	1 M
9.	How is the patent information stored?	1 M
10.	List the various patent databases.	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).	Explain the meaning and sources of Research problem.	10M
	OR	
11. B).	Discuss in detail about the types of errors in selecting a research problem.	10M
12. A).	Explain the effective literature studies approaches in research.	10M
	OR	
12. B).	What is Plagiarism? Explain how it is affecting the research process.	10M
13. A).	Explain the mechanics of writing a research report.	10M
	OR	
13. B).	Discuss in detail about effective technical writing and paper in developing research proposal.	10M
14. A).	Explain the processing of patenting and development.	10M
	OR	
14. B).	What are the salient features of designs and copyrights?	10M
15. A).	Explain the scope of patent rights and geographical indications.	10M
	OR	
15. B).	Describe the salient features of Administration of patent system.	10M

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