H.T No: [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]   **R18**   Course Code: A30447

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VII Semester Regular/Supplementary Examinations November-2024
Course Name: Embedded System Design
(Electronics & Communication Engineering)

Date: 26.11.2024 AN   Time: 3 hours   Max.Marks: 70

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions
Each question carries TWO marks.   10x2=20M

1.	What is an embedded system?	2 M
2.	Give the classification of embedded systems.	2 M
3.	What are sensors and Actuators?	2 M
4.	What are the uses of ASIC in designing an embedded system?	2 M
5.	What is purpose of reset circuit?	2 M
6.	What is Assembly Language programming?	2 M
7.	What is an Operating system?	2 M
8.	Why is thread creation faster than process creation?	2 M
9.	Define Remote Procedure Call.	2 M
10.	Explain about message passing.	2 M

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

11.A).	Explain the classification of embedded systems based on different criteria in detail and give an example for each.	10M

OR

11. B).	Explain quality attribute in the embedded system development context? What are the different quality attributes to be considered in an embedded system design.	10M

12. A).	Explain different external communication interfaces in detail.	10M

OR

12. B).	Discuss the selection of memory in embedded system design.	10M

13. A).	Explain the functionality and role of Real Time Clock.	10M

OR

13. B).	Explain the significance of brown out protection circuit.	10M

14. A).	Explain the different multitasking models in the operating system context.	10M

OR

14. B).	Explain the concept of multithreading. What are the advantages of multithreading?	10M

15. A).	Explain the architecture of device drivers.	10M

OR

15. B).	Explain Synchronization issues in Task communication	10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VII Semester Regular/Supplementary Examinations November-2024
Course Name: Microwave Antennas
(Electronics & Communication Engineering)

Date: 26.11.2024 AN   Time: 3 hours   Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries TWO marks.   10x2=20M

1.	Define Antenna Efficiency.	2 M
2.	State the Huygens Principle.	2 M
3.	What is circular aperture and list its types?	2 M
4.	How does a log-periodic antenna work?	2 M
5.	Define Uniform and non-uniform distribution array antenna.	2 M
6.	What are the schelkun off Polynomials?	2 M
7.	Draw the Structure of Rectangular microstrip antenna.	2 M
8.	What are the advantages and limitations of Microstrip antennas?	2 M
9.	What is an EBG structure?	2 M
10.	Why EM Simulation?	2 M

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

11.A).	With the help of neat diagrams explain the principle of radiation mechanism in antennas.	10M
	OR	
11. B).	Summarize the concept of image theory in antennas with example.	10M
12. A).	Describe the spiral antennas.	10M
	OR	
12. B).	Demonstrate the Design considerations of Rectangular and Circular Aperture antenna.	10M
13. A).	Explain in detail about Binomial arrays.	10M
	OR	
13. B).	Briefly explain about Woodward Lawson Method.	10M
14. A).	Explain about the Transmission line method and Analytical method.	10M
	OR	
14. B).	Explain the feed methods of rectangular patch antenna.	10M
15. A).	Demonstrate the frequency selective surfaces (FSS) with characteristics.	10M
	OR	
15. B).	Why EM simulation software becoming increasingly important? Explain briefly.	10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VII Semester Regular/Supplementary Examinations November-2024
Course Name: Radar Systems

(Electronics & Communication Engineering)

Date: 28.11.2024 AN   Time: 3 hours   Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries TWO marks.   10x2=20M

1.	List out system losses.	2 M
2.	Define false alarm time and probability of false alarm.	2 M
3.	Write the applications of CW Radar.	2 M
4.	Why isolation between Transmitter and Receiver is required in CW Radar?	2 M
5.	Define blind speed.	2 M
6.	Define Doppler frequency in MTI radar.	2 M
7.	What is Monopulse Tracking Radar?	2 M
8.	What is AGC in conical Scanning?	2 M
9.	Define noise figure and noise temperature.	2 M
10.	Explain about A-scope display.	2 M

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

11.A). With the help of a neat block diagram, explain the principle of operation of Radar.   10M

OR

11. B). A Pulse Radar transmits a peak power of 1 MW. It has a PRT equal to 1000 micro sec. and the transmitted pulse width is 1 micro sec. Calculate (i) Maximum unambiguous range (ii) Average Power (iii) Duty Cycle (iv) Energy transmitted.   10M

12. A). Draw a block diagram of the FM-CW radar and explain its operation.   10M

OR

12. B). Explain with neat diagram working principle of multiple frequency CW radar.   10M

13. A). Explain the operation of MTI Radar with power amplifier transmitter with the help of a neat diagram.   10M

OR

13. B). Explain the frequency response characteristics of a MTI Radar using Range gated Doppler filters.   10M

14. A). Draw and explain the following with respect to Tracking in range: 10M
i) Echo pulse   ii) Early-late range gates

OR

14. B). Draw the block diagram and explain the operation of a Conical scan tracking Radar.   10M

15. A). Write a short notes on (i) series and parallel feeds (ii) Branch type Duplexer.   10M

OR

15. B). Explain the expression for frequency response of the matched filter with Non White noise.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VII Semester Regular/Supplementary Examinations November-2024

Course Name: Real Time Operating Systems

(Electronics & Communication Engineering)

Date: 28.11.2024 AN　　　　　　　Time: 3 hours　　　　　　　Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries TWO marks.　　　　　　　　　10x2=20M

1.	What is Process Control?	2 M
2.	Write the applications of Unix/Linux.	2 M
3.	Define RTOS.	2 M
4.	Identify the need for scheduling.	2 M
5.	Give the importance of Event Registers.	2 M
6.	List out the basic I/O concepts.	2 M
7.	Summarize the features of Spurious Interrupts	2 M
8.	Discuss about ISR.	2 M
9.	Compile the important features of RT Linux.	2 M
10.	Elaborate the suitable languages used in Embedded Linux.	2 M

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

11.A). What are the key differences between a process and a thread in Unix/Linux? Illustrate with examples.　　　10M

OR

11. B). Discuss about file I/O (open, create, close, lseek, read and write).　　　10M

12. A). Explain the concept of a real-time operating system. What are the key differences between a hard real-time system and a soft real-time system?　　　10M

OR

12. B). Describe the role of task scheduling in RTOS. Explain different scheduling algorithms used in RTOS, such as Priority Scheduling, Round-Robin Scheduling, and SJF Scheduling.　　　10M

13. A). Explain the role of the I/O subsystem in an RTOS. How does the RTOS manage I/O devices and ensure that I/O operations do not interfere with real-time tasks?　　　10M

OR

13. B). Discuss about Component Configuration with suitable diagrams.　　　10M

14. A). Discuss the role of Interrupt Service Routines (ISRs) in an RTOS. How does an RTOS handle interrupts and ensure deterministic response times?　　　10M

OR

14. B). Explain the role of a Real-Time Clock (RTC) in an embedded system. How does the RTC assist an RTOS in task scheduling and time management?　　　10M

(P.T.O..)

15. A). Describe the role of Services in Android with relevant diagrams. 10M

OR

15. B). Describe the role of tasks and events in TinyOS. How does TinyOS handle concurrency, 10M
and how do tasks differ from events in the execution model?

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VII Semester Regular/Supplementary Examinations November-2024
Course Name: Low Power VLSI Design
(Electronics & Communication Engineering)

Date: 03.12.2024 AN　　　Time: 3 hours　　　Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries TWO marks.　　　10x2=20M

1. Name two sources of power dissipation in circuits?　　2 M
2. Define "switching power dissipation" in circuits.　　2 M
3. Define VTCMOS circuits?　　2 M
4. Name two methods of minimizing switched capacitance at the system level?　　2 M
5. Describe the operation of Ripple Carry Adders in low-voltage circuits.　　2 M
6. List the architectures of CMOS adders commonly used in low-voltage designs.　　2 M
7. Why Booth's multiplication is faster than normal binary multiplication?　　2 M
8. What is the difference between Braun multiplier and Wallace multiplier technique?　　2 M
9. What does DRAM mean?　　2 M
10. Draw the schematic diagram for SRAM.　　2 M

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

11.A). What is the need for low power circuit design? Explain the issues involved in low power VLSI Design?　　10M

OR

11. B). Describe the occurrence of Dynamic power dissipation in digital circuits and derive its equation.　　10M

12. A). Discuss about MTCMOS circuit design approach.　　10M

OR

12. B). Explain about Supply Voltage scaling technique for switching power reduction.　　10M

13. A). Draw and explain different configurations of full adder schematic.　　10M

OR

13. B). Draw the basic architecture for Carry Save Adder and explain its working.　　10M

14. A). Write about the concept of performance enhancement in Braun multiplier.　　10M

OR

14. B). With the help of neat schematics explain about Baugh-Wooley multiplier.　　10M

15. A). Design the NAND Based ROM and explain its operation.　　10M

OR

15. B). Draw the basic architecture and operation of 6T Typical SRAM and explain its read and write operation.　　10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VII Semester Regular/Supplementary Examinations November-2024
Course Name: Satellite Communication
(Electronics & Communication Engineering)

Date: 03.12.2024 AN	Time: 3 hours	Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries TWO marks.   10x2=20M

1.	Define the terms Azimuth and Elevation angles.	2 M
2.	Mention advantages and disadvantages of satellite communications?	2 M
3.	Calculate free space path loss at 12.2GHz with path length of 38500km.	2 M
4.	The downlink frequency of transponder 11 is 3920 MHz. Calculate the corresponding uplink frequency for this transponder?	2 M
5.	Differentiate the Multiplexing and Multiple access Techniques	2 M
6.	Suggest a multiple access technique that can be preferred in satellite communication link when traffic from earth station is intermittent? Discuss.	2 M
7.	Compare different satellite earth orbits.	2 M
8.	Determine the advantages and disadvantages of Molniya orbit system?	2 M
9.	Give GPS navigation message sub frame details.	2 M
10.	What is Slotted Aloha scheme?	2 M

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

11.A).	i) Discuss the history of satellite communication in detail.	5M
	ii) Analyze the orbital effects in satellite communication system performance in detail.	5M

OR

11. B).	i) Build the calculation procedure steps to locate the satellite in orbit	5M
	ii) Analyze the Kepler's laws and prove that the satellite orbit is an ellipse.	5M

12. A).	Draw a neat diagram of telemetry, tracking, command and monitoring (TTC & M) system and explain the operation.	10M

OR

12. B).	Explain in detail about AOCS sub system.	10M

13. A).	Explain the principle behind spectrum spreading and dispreading and how this issues to minimize interference in a CDMA system. Also determine the bit rate of each signal in a DS-SS CDMA.	10M

OR

13. B).	Explain the effect of Rain, Cloud attenuation in satellite communication.	10M

(P.T.O..)

14. A).	i) Explain the different test methods of the earth station.	5M
	ii) Explain the structure of cassegrain antenna used for large earth stations with neat diagram. What are the methods adopted to obtain optimum gain with cassegrain antennas.	5M

OR

14. B).	i) Explain the functional elements of an antenna tracking system.	5M
	ii) Explain in detail about global positioning system (GPS).	5M

15. A).	i) Define Packet and explain in detail about Packet Reservation.	5M
	ii) Discuss message transmission by FDMA.	5M

OR

15. B).	Describe Pure Aloha Satellite packet switching.	10M

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