H.T No: | | | | | | | | | | | R18 | Course Code: A30447

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VII Semester Supplementary Examinations April-2025

Course Name: Embedded System Design

(Electronics & Communication Engineering)

Date: 24.04.2025 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 Embedded System. 2 M
2. What is fourth generation embedded system? Give an example. 2 M
3. Give the differences between RAM and ROM. 2 M
4. What is PLD? 2 M
5. Describe the use of oscillator unit. 2 M
6. What is Embedded Firmware? 2 M
7. What is multi-threading? 2 M
8. What is the use of Operating system in Embedded system? 2 M
9. What is the need for task synchronization? 2 M
10. Define message passing. 2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). Explain the different applications of embedded system. 10M

OR

11. B). Explain the different Characteristics of embedded systems in Detail. 10M

12. A). What are the different types of memories used in embedded system design? Explain the role of each. 10M

OR

12. B). What is Actuator? Explain its role in embedded system design? Illustrate with an example. 10M

13. A). Explain the role of Real time Clock circuit in embedded system. 10M

OR

13. B). Explain the role of RESET circuit in embedded system. 10M

14. A). What is kernel? What is kernel space and user space? What is monolithic and microkernel? Explain. 10M

OR

14. B). What is task scheduling? Explain Round Rabin scheduling algorithm. 10M

15. A). What is a remote procedure call? Describe the sequence of events during remote procedure call. 10M

OR

15. B). On what basis RTOS is going to be chosen? Discuss. 10M

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H.T No: | | | | | | | | | | | **R18** Course Code: A30445

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VII Semester Supplementary Examinations April-2025

Course Name: Microwave Antennas

(Electronics & Communication Engineering)

Date: 24.04.2025 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. Illustrate and describe the field zones of an antenna. 2 M
2. Explain Babinet's Principle. 2 M
3. Differentiate Narrowband and Wideband Antennas. 2 M
4. Illustrate Design considerations for Circular apertures. 2 M
5. What are the smart antenna methods? 2 M
6. Explain the concept of Linear Array. 2 M
7. What are the drawbacks of Microstrip patch antennas? 2 M
8. Explain different Feeding techniques for Microstrip patch antennas. 2 M
9. List the advantages of frequency selective surfaces. 2 M
10. Define simulation. 2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). Illustrate in detail Effective aperture & Polarization of the antenna. Derive the expression for the Effective aperture of antenna. 10M

OR

11. B). Write short notes on (i) Antenna Impedance (ii) Image Theory. 10M

12. A). Explain in detail Log Periodic Antenna. 10M

OR

12. B). Illustrate Fourier Transform method in aperture antenna theory. 10M

13. A). Derive expression for the total field radiated by two isotropic point sources fed with current of same amplitude and phase. Also find the directions of maxima and minima. 10M

OR

13. B). Illustrate synthesis of antenna arrays using schelkunoff's Polynomial method. 10M

14. A). Explain the working and design considerations for microstrip antenna. 10M

OR

14. B). Illustrate Printed antenna arrays. 10M

15. A). Explain in detail about EBG Structures. 10M

OR

15. B). Explain about commercially available EM Simulation software's in detail. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30449**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VII Semester Supplementary Examinations April-2025

Course Name: Radar Systems

(Electronics & Communication Engineering)

Date: 26.04.2025 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 Unambiguous range in a radar system. 2 M
2. What are the basic functions of radar? 2 M
3. Define Doppler Effect. 2 M
4. What is the principle of CW Radar? 2 M
5. Distinguish between MTI and Pulse Doppler Radar. 2 M
6. What is cancellation ratio in a pulse doppler/MTI radar? 2 M
7. What is Conical Scanning? 2 M
8. What is Tracking? 2 M
9. Write the equation for Noise figure. 2 M
10. What is a scope display? 2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). Explain the operation of radar with neat block diagram. 10M

OR

11. B). Describe the Envelope detector and False Alarm Time and Probability. 10M

12. A). Explain the principle of operation of CW Doppler radar with non zero IF receiver. 10M

OR

12. B). With the help of a suitable block diagram explain the operation of FMCW radar. 10M

13. A). Explain the principle of operation of MTI radar with power oscillator transmitter with a neat block diagram. 10M

OR

13. B). Explain Double Delay line cancellers and explain their filter characteristics. 10M

14. A). Explain the operation of Amplitude comparison mono pulse Tacking Radar. 10M

OR

14. B). With a neat diagram explain the operation of a conical scan Radar. Explain the various factors that need to be considered for optimum squint angle. 10M

15. A). What is a matched filter receiver? Derive its frequency response function. 10M

OR

15. B). Explain the operation of branch type duplexer with neat sketch. 10M

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H.T No: | | | | | | | | | | | **R18** Course Code: A30450

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VII Semester Supplementary Examinations April-2025

Course Name: Real Time Operating Systems

(Electronics & Communication Engineering)

Date: 26.04.2025 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 the advantages of LINUX.	2 M
2.	What are the file types available in Linux?	2 M
3.	Define Soft real time systems in RTOS.	2 M
4.	Define RTOS.	2 M
5.	Write a short note on Clock driven scheduling algorithm, weighted round robin and priority driven.	2 M
6.	Mention about weighted round robin scheduling algorithm.	2 M
7.	What is the difference between exception and interrupt in operating systems?	2 M
8.	How does an RTOS handle software timers?	2 M
9.	Distinguish between the features of Embedded Linux and vx works RTOS.	2 M
10.	Write a note on exception handling.	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	i) Describe how data is read from an open file with the read function and mention different cases in which the number of bytes actually read is less than the amount requested.	5M
	ii) Mention the *"rm Command"* syntax and various options used in it.	5M
	OR	
11. B).	i) Summarize different ways for a process to terminate.	5M
	ii) Mention how the open file's offset can be set explicitly by calling *"lseek"*.	5M
12. A).	i) Analyze the common scheduling algorithms supported by kernal.	5M
	ii) What are the task states? Draw the state diagram of task?	5M
	OR	
12. B).	i) Describe in detail about shared data problem and its possible solutions.	5M
	ii) Summarize the characteristics of an RTOS.	5M
13. A).	i) Analyze the transmission of data using the kernel object- Pipe.	5M
	ii) Paraphrase operations are associated with an event register.	5M
	OR	
13. B).	i) Illustrate the Execution and usage of the wait and the signal operations with an example.	5M
	ii) Explain the component configuration in RTOS.	5M

(P.T.O..)

14. A). i) Explain the processing of exceptions and Spurious interrupts in detail. 5M
ii) Define an Interrupt and mention the applications of interrupts. 5M

OR

14. B). i) Summarize the set of operations is allowed for a condition variable. 5M
ii) Describe the Hardware and Software interrupt priorities. 5M

15. A). i) List out the categories of Operating Systems need to chose for an application. 5M
ii) Describe about the RT Linux. 5M

OR

15. B). i) Analyze how the operating systems differ in various aspects. 5M
ii) Describe the features of MicroC/OS-II. 5M

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H.T No: | | | | | | | | | | | **R18** Course Code: A30451

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VII Semester Supplementary Examinations April/May-2025

Course Name: Low Power VLSI Design

(Electronics & Communication Engineering)

Date: 01.05.2025 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.	Briefly explain the need for low power circuit design in modern days.	2 M
2.	What is Power Dissipation in Low Power VLSI?	2 M
3.	What is the difference between VTCMOS and MTCMOS circuits?	2 M
4.	What is the pipelining approach in VLSI design?	2 M
5.	What is Standard adder cell?	2 M
6.	List out Low- Power Design Techniques.	2 M
7.	How many levels are there in the Wallace tree multiplier?	2 M
8.	What is booth multiplier in VLSI?	2 M
9.	Compare SRAM, DRAM and ROM.	2 M
10.	Give the importance of precharge and equalization circuit.	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	How is switching Power Calculated with generic representation of CMOS logic gate?	10M
	OR	
11. B).	What is the reason for Glitching power dissipation? Is it useful power or not? Explain it.	10M
12. A).	Explain how System level measure reduces the switched capacitance in digital circuits?	10M
	OR	
12. B).	Draw the schematic of an MTCMOS circuit and explain its working.	10M
13. A).	Draw the Architecture of carry select adder and explain its working.	10M
	OR	
13. B).	Explain the different low voltage/low power logic styles related to Adders.	10M
14. A).	Explain about Braun multiplier with help of neat Schematics.	10M
	OR	
14. B).	With the help of neat schematics explain the operation of Wallace tree multiplier.	10M
15. A).	Draw the structure of SRAM memory cell and explain the operation in detail.	10M
	OR	
15. B).	Discuss about future trends and development of DRA	10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A30452**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VII Semester Supplementary Examinations April/May-2025

Course Name: Satellite Communication

(Electronics & Communication Engineering)

Date: 01.05.2025 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. Explain the significance of geostationary orbits in communication systems. 2 M
2. Compare the coverage areas and communication characteristics of satellites in low Earth orbit versus those in Geostationary orbit. 2 M
3. Assess the effectiveness of solar power in satellites versus alternative energy sources. 2 M
4. Propose an approach to design a satellite link that optimizes the Carrier-to-Noise (C/N) ratio for high-quality video transmission. 2 M
5. List the main propagation effects that impact satellite communication. 2 M
6. Illustrate the advantages of TDMA over FDMA in satellite communication systems. 2 M
7. Identify the components of earth stations. 2 M
8. Design a strategy to improve GPS service delivery through satellite communication advancements. 2 M
9. Summarize the differences between pure aloha and slotted aloha. 2 M
10. Differentiate between packet reservation techniques and other access methods in satellite communications. 2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). i) Explain in detail about Kepler's laws used in satellite communication. 5M

ii) Calculate the semi-major axis of a satellite with a perigee-to-perigee period of 12 hours and an eccentricity of 0.002. 5M

OR

11. B). i) Describe the launching procedure of a satellite, detailing the key phases of the process. 5M

ii) Explain the orbital perturbations. 5M

12. A). Illustrate how the spin stabilization system contributes to attitude and orbit control, providing necessary diagrams. 10M

OR

12. B). i) Demonstrate how system noise temperature calculations show the C/N ratio is directly proportional to the G/T ratio. 5M

ii) Examine the sources of noise in satellite communication and discuss the importance of noise temperature in link design. 5M

13. A). Analyze the effects of low-angle versus high-angle fading on satellite signal reliability, especially in urban settings, comparing factors that contribute to each type of fading. 10M

(P.T.O..)

OR

13. B). i) Compare CDMA, FDMA, and TDMA as methods of satellite communication, explaining why CDMA is also called spread spectrum communication. 5M

ii) Explain the principle behind CDMA with a diagram and mention any two advantages of CDMA for satellite networking. 5M

14. A). i) Develop a configuration for an earth station, illustrating and explaining each block's function in the station's operation. 5M

ii) Explain the small earth station antennas. 5M

OR

14. B). i) Explain the operation of GPS receiver. 5M

ii) Write short note on GPS C/A code accuracy. 5M

15. A). Design a satellite packet communication system using the Tree Algorithm to manage data traffic, including a structure for packet transmission and a method for minimizing collisions. 10M

OR

15. B). In detail, explain about Pure ALOHA and Slotted ALOHA packet Switching. 10M

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