CODE No.: 20BT60541 **SVEC-20**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Regular Examinations - November / December 2024

ADHOC AND WIRELESS SENSOR NETWORKS

IT (IoT)

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I						
1.	a)	Discuss about the following i) Routing ii) Energy Management iii) Security iv) Quality of Service	10 Marks	BL2	CO1	PO2
	b)	What is meant by fading and types of Fading?	4 Marks	BL2	CO1	PO2
(OR)						
2.	a)	Discuss briefly about the Electromagnetic Spectrum with neat sketch?	10 Marks	BL2	CO1	PO1
	b)	List the five applications of Wireless Sensor Networks?	4 Marks	BL1	CO1	PO1
UNIT-II						
3.	a)	What are the Classifications of MAC protocols and Discuss about MACAW Protocols?	10 Marks	BL2	CO2	PO2
	b)	Explain synchronization between the nodes in network?	4 Marks	BL2	CO2	PO1
(OR)						
4.	a)	Discuss about the following i) Busy Tone Access Protocols ii) Double Busy Tone Multiple Access	10 Marks	BL2	CO2	PO1
	b)	Write about hidden and exposed terminal problems?	4 Marks	BL2	CO2	PO1
UNIT-III						
5.	a)	Discuss any two types of Proactive Routing Protocols?	10 Marks	BL3	CO3	PO2
	b)	Discuss the advantages and Disadvantages of Hybrid Routing Protocols?	4 Marks	BL2	CO3	PO1
(OR)						
6.	a)	Explain briefly about i) Core Extraction Distributed Adhoc Routing Protocol ii) Zone Routing Protocol	10 Marks	BL3	CO3	PO2
	b)	Briefly discuss the types of Ad hoc routing protocols?	4 Marks	BL2	CO3	PO2
UNIT-IV						
7.	a)	Discuss about the challenges in WSN i) Characteristic requirement ii) Required Mechanism	10 Marks	BL1	CO4	PO1
	b)	Discuss about the types of applications of Wireless Sensor Networks?	4 Marks	BL1	CO4	PO1
(OR)						
8.	a)	Explain about i) Application Specific ii) Self Configurability	10 Marks	BL1	CO4	PO1
	b)	Illustrate how WSN helps in Precision Agriculture?	4 Marks	BL1	CO4	PO1

UNIT-V						
9.	a)	Discuss about Low Duty Cycle Protocols and Wakeup Concepts?	10 Marks	BL2	CO5	PO1
	b)	Discuss the advantages and disadvantages of SMACS	4 Marks	BL2	CO5	PO1
(OR)						
10.	a)	Explain about the i) Zigbee Protocol Features ii) Zigbee Protocol Architecture	10 Marks	BL2	CO5	PO1
	b)	Discuss briefly about Traffic-Adaptive Medium Access (TRAMA)?	4 Marks	BL1	CO5	PO1

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UNIT-I						
1.	a)	Discuss the differences between Cellular Networks and Adhoc Wireless Networks?	10 Marks	BL1	CO1	PO2
	b)	What is the frequency range of Optical and Microwave Transmission?	4 Marks	BL1	CO1	PO2
(OR)						
2.	a)	Explain about the following i) Path Losses ii) Interference iii) Fading iv) Doppler Effect	10 Marks	BL1	CO1	PO1
	b)	Describe how Adhoc Wireless Networks are used in Military Applications?	4 Marks	BL1	CO1	PO1
UNIT-II						
3.	a)	Discuss about i) Bandwidth Efficiency ii) Synchronization between nodes	10 Marks	BL1	CO2	PO2
	b)	Discuss briefly about Frame Structure of D-PRMA?	4 Marks	BL1	CO2	PO1
(OR)						
4.	a)	Discuss about the following i)Media Access Protocol for Wireless LANs (MACAW) ii)Floor Aquistation Multiple Access Protocols	10 Marks	BL1	CO2	PO1
	b)	Explain about Handshaking Mechanism?	4 Marks	BL1	CO2	PO1
UNIT-III						
5.	a)	Briefly explain about i) Wireless Routing Protocol ii) Destination Sequenced Distance Vector Routing	10 Marks	BL2	CO3	PO2
	b)	List the advantages and disadvantages of proactive ruting protocols?	4 Marks	BL2	CO3	PO1
(OR)						
6.	a)	Discuss any two types of Table Driven Routing Protocol?	10 Marks	BL1	CO3	PO2
	b)	Discuss briefly about routing table?	4 Marks	BL1	CO3	PO2
UNIT-IV						
7.	a)	Discuss briefly about i) Ambient Intelligence ii) Challenges in WSN	10 Marks	BL1	CO4	PO1
	b)	Discuss briefly about Fault Tolerance?	4 Marks	BL2	CO4	PO1
(OR)						
8.	a)	Discuss briefly about the Sensor Node Hardware Components with neat sketch?	10 Marks	BL1	CO4	PO1

	b)	Briefly discuss about the Precision Agriculture?	4 Marks	BL1	CO4	PO1
UNIT-V						
9.	a)	Explain about Zigbee Operating Modes and Topologies?	10 Marks	BL1	CO5	PO1
	b)	Write the features of Schedule-based MAC Protocol?	4 Marks	BL2	CO5	PO1
(OR)						
10.	a)	Explain in detail about the IEEE 802.15.4?	10 Marks	BL1	CO5	PO1
	b)	Explain operation of EAR Protocol?	4 Marks	BL1	CO5	PO1

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Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I						
1.	a)	Explain about the following i) Path Losses ii)Interference iii) Fading	10 Marks	BL1	CO1	PO2
	b)	Discuss the advantages of Microwave Transmissions compared with Optical Fibres?	4 Marks	BL1	CO1	PO2
(OR)						
2.	a)	Discuss briefly about the Electromagnetic Spectrum with neat sketch?	10 Marks	BL1	CO1	PO1
	b)	Illustrate the functions performed by the node in WSN?	4 Marks	BL1	CO1	PO1
UNIT-II						
3.	a)	Explain various design issues of MAC protocol for Wireless Sensor Networks?	10 Marks	BL2	CO2	PO2
	b)	Discuss briefly about Mobility of Nodes/ Lack of Central Coordination?	4 Marks	BL2	CO2	PO1
(OR)						
4.	a)	Discuss in detail about Contention Based Protocols?	10 Marks	BL2	CO2	PO1
	b)	Discuss the Frame Structure of CATA?	4 Marks	BL2	CO2	PO1
UNIT-III						
5.	a)	Illustrate briefly about i) Dynamic Source Routing (DSR) Protocol ii) Adhoc Ondemand Distance Vector (AODV) Protocol	10 Marks	BL3	CO3	PO2
	b)	List the advantages and disadvantages of reactive routing protocols?	4 Marks	BL2	CO3	PO1
(OR)						
6.	a)	Explain briefly about i) Temporarily Ordered Routing Algorithm ii) Location Aided Routing	10 Marks	BL3	CO3	PO2
	b)	What do you mean by proactive routing protocols?	4 Marks	BL2	CO3	PO2
UNIT-IV						
7.	a)	Discuss briefly about (ii) Event Detection (ii) Periodic Measurements (iii) Tracking	10 Marks	BL1	CO4	PO1
	b)	Discuss how WSN helps in Precision Agriculture?	4 Marks	BL2	CO4	PO1
(OR)						
8.	a)	Briefly explain about the applications of Wireless Sensor Networks	10 Marks	BL2	CO4	PO1
	b)	Discuss briefly about two field buses in WSN?	4 Marks	BL2	CO4	PO1

UNIT-V						
9.	a)	Discuss any two types of various Schedule based MAC Protocols for WSNs?	10 Marks	BL2	CO5	PO1
	b)	Illustrate briefly about i) Schedule based MAC Protocol- Challenges ii) Schedule based MAC Protocol- Features	4 Marks	BL2	CO5	PO1
(OR)						
10.	a)	Discuss the Zigbee Advantages and Disadvantages?	10 Marks	BL2	CO5	PO1
	b)	Discuss briefly about Traffic-Adaptive Medium Access (TRAMA)?	4 Marks	BL1	CO5	PO1

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Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I						
1.	a)	Illustrate briefly about i) Radio Waves ii) Microwaves	10 Marks	BL2	CO1	PO2
	b)	Discuss briefly about Spectrum allocation?	4 Marks	BL2	CO1	PO2
(OR)						
2.	a)	Explain about the Issues in Adhoc Wireless Networks?	10 Marks	BL2	CO1	PO1
	b)	Briefly explain about the Free Space Propagation Model?	4 Marks	BL1	CO1	PO1
UNIT-II						
3.	a)	Explain briefly about Packet transmission in MACAW?	10 Marks	BL1	CO2	PO2
	b)	List Some of the Contention based Protocols with Reservation Mechanism?	4 Marks	BL1	CO2	PO1
(OR)						
4.	a)	Discuss any two Contention Based Protocols in detail?	10 Marks	BL1	CO2	PO1
	b)	Illustrate briefly about hidden and exposed terminal problems?	4 Marks	BL1	CO2	PO1
UNIT-III						
5.	a)	Discuss about the Major Issues in Designing Routing Protocols for Adhoc Networks?	10 Marks	BL1	CO3	PO2
	b)	Explain briefly about reactive routing protocols?	4 Marks	BL2	CO3	PO2
(OR)						
6.	a)	Explain with neat sketch about the Cluster Head Gateway Switch Routing Protocol?	10 Marks	BL1	CO3	PO2
	b)	Discuss briefly about Hybrid Routing Protocol?	4 Marks	BL2	CO3	PO2
UNIT-IV						
7.	a)	Briefly explain How Wireless Sensor Network is different from Other Networks?	10 Marks	BL1	CO4	PO1
	b)	Discuss briefly about of the applications of WSN?	4 Marks	BL1	CO4	PO1
(OR)						
8.	a)	Briefly explain about Energy Consumption of Sensor Nodes?	10 Marks	BL1	CO4	PO1
	b)	Discuss briefly about Mobility in Wireless Sensor Networks	4 Marks	BL1	CO4	PO1
UNIT-V						

9.	a)	Discuss briefly about i) Light Medium Access Control Protocol (LMAC) ii) Eyes MAC (EMAC)	10 Marks	BL1	CO5	PO1
	b)	Explain briefly the three phases of EAR Protocol?	4 Marks	BL1	CO5	PO1
(OR)						
10.	a)	Explain briefly about the 802.11 Standard?	10 Marks	BL2	CO5	PO1
	b)	Discuss briefly about Periodic Wakeup Cycle?	4 Marks	BL1	CO5	PO1

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Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I						
1.	a)	Discuss the differences between Cellular Networks and Adhoc Wireless Networks?	10 Marks	BL1	CO1	PO2
	b)	Discuss the Challenges of MANET?	4 Marks	BL1	CO1	PO2
(OR)						
2.	a)	Discuss in detail about the Adhoc Wireless Internet with neat sketch?	10 Marks	BL1	CO1	PO1
	b)	Discuss about fading and types of Fading?	4 Marks	BL1	CO1	PO1
UNIT-II						
3.	a)	Discuss in detail about Contention Based Protocols?	10 Marks	BL1	CO2	PO2
	b)	Briefly discuss about i) Bandwidth Efficiency ii) Quality of Service	4 Marks	BL1	CO2	PO1
(OR)						
4.	a)	Explain various design issues of MAC protocol for Wireless Sensor Networks?	10 Marks	BL1	CO2	PO1
	b)	Explain MAC protocols for wireless sensors Networks?	4 Marks	BL1	CO2	PO1
UNIT-III						
5.	a)	Discuss any two types of Hybrid Routing Protocols in detail?	10 Marks	BL1	CO3	PO2
	b)	List the advantages and disadvantages of proactive routing protocols?	4 Marks	BL2	CO3	PO1
(OR)						
6.	a)	Explain briefly about any two types Reactive Routing Protocols?	10 Marks	BL1	CO3	PO2
	b)	Explain the role of Cluster-head in Cluster Head Gateway Switch Routing Protocol?	4 Marks	BL1	CO3	PO2
UNIT-IV						
7.	a)	Discuss briefly about the Sensor Node Hardware Components with neat sketch?	10 Marks	BL1	CO4	PO1
	b)	Discuss briefly about i) Event Detection ii) Tracking	4 Marks	BL1	CO4	PO1
(OR)						
8.	a)	Briefly explain about Energy Consumption of Sensor Nodes?	10 Marks	BL1	CO4	PO1
	b)	Discuss briefly about of the applications of WSN?	4 Marks	BL1	CO4	PO1
UNIT-V						

9.	a)	Explain about the Contention Based Protocols- CSMA based MAC Protocols?	10 Marks	BL1	CO5	PO1
	b)	Illustrate briefly about static nodes?	4 Marks	BL1	CO5	PO1
(OR)						
10.	a)	Illustrate briefly about i) X-MAC ii) Wise MAC	10 Marks	BL1	CO5	PO1
	b)	Discuss briefly about Traffic-Adaptive Medium Access Protocol (TRAMA)	4 Marks	BL1	CO5	PO1

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Answer One Question from each Unit
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UNIT-I						
1.	a)	Explain about the Radio Propagation Mechanisms?	10 Marks	BL1	CO1	PO2
	b)	Discuss briefly about i) Routing ii) Multicasting	4 Marks	BL1	CO1	PO2
(OR)						
2.	a)	Discuss briefly about i) Radio Waves ii) Microwave Transmissions iii) Infrared iv) X-Rays and Gamma Rays	10 Marks	BL1	CO1	PO1
	b)	Write the applications of Microwave Transmissions?	4 Marks	BL1	CO1	PO1
UNIT-II						
3.	a)	Discuss in detail about the BTMA Protocol?	10 Marks	BL1	CO2	PO2
	b)	List some of the contention based protocols?	4 Marks	BL1	CO2	PO1
(OR)						
4.	a)	Explain synchronization between the nodes in network?	10 Marks	BL1	CO2	PO1
	b)	List some of the contention based protocols with scheduling mechanisms?	4 Marks	BL1	CO2	PO1
UNIT-III						
5.	a)	Discuss any two types of Table Driven Routing Protocol?	10 Marks	BL1	CO3	PO2
	b)	Discuss briefly about wireless routing protocol.	4 Marks	BL2	CO3	PO1
(OR)						
6.	a)	Discuss briefly about the Zone based Hierarchical Link State Routing Protocol	10 Marks	BL1	CO3	PO2
	b)	Write the differences between proactive and reactive routing?	4 Marks	BL2	CO3	PO2
UNIT-IV						
7.	a)	Explain about i) Application Specific ii) Self Configurability iii) Mobility	10 Marks	BL1	CO4	PO1
	b)	Discuss briefly about the challenges of Wireless Sensor Networks?	4 Marks	BL1	CO4	PO1
(OR)						
8.	a)	Briefly explain How Wireless Sensor Network is different from Other Networks?	10 Marks	BL1	CO4	PO1
	b)	Discuss briefly about i) Event Detection ii) Tracking	4 Marks	BL1	CO4	PO1

UNIT-V						
9.	a)	Discuss in detail about the Bluetooth Architecture and Its applications?	10 Marks	BL1	CO5	PO1
	b)	Discuss the responsibilities of MAC Protocols?	4 Marks	BL1	CO5	PO1
(OR)						
10.	a)	Illustrate briefly about Zigbee Alliance and Zigbee Specifications?	10 Marks	BL1	CO5	PO1
	b)	Write the advantages and disadvantages of LEACH Protocol?	4 Marks	BL1	CO5	PO1