

Code No: **R42047**

**R10**

**Set No. 1**

**IV B.Tech II Semester Regular/Supplementary Examinations, April - 2015**

**WIRELESS SENSOR NETWORKS**

**(Common to Electronics & Communication Engineering and Electronics & Computer Engineering)**

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions  
All Questions carry equal marks**

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- 1 a) Explain the applications of wireless sensor networks. [8]  
b) What are the main challenges faced in wireless sensor networks? [7]
- 2 a) Why do sensor network cannot exploit high gain? Explain. [8]  
b) Explain in detail the memory requirements of sensor nodes. [7]
- 3 a) Explain the different PAN topologies. [8]  
b) What are the transceiver design considerations? Explain. [7]
- 4 a) What are the key features of S-MAC? Explain in detail. [8]  
b) Describe the process of overhearing. [7]
- 5 a) What are basic routing protocols? Explain. [8]  
b) Explain routing protocols with efficient flooding mechanism. [7]
- 6 a) List the design goals of a transport layer protocol. [8]  
b) Give the classification of transport layer solutions. [7]
- 7 a) What are the network security requirements? Explain. [8]  
b) Distinguish between active and passive attacks. [7]
- 8 Write notes on the following:  
a) Sensor Node Hardware [8]  
b) Home automation [7]



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**Set No. 2**

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**Time: 3 hours**

**Max. Marks: 75**

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- 1 a) Explain the concept of wireless sensor networks. [8]  
b) What are the design features of wireless sensor networks? [7]
- 2 a) Describe the concept of gateway. [8]  
b) Write notes on *energy consumption of sensor nodes*. [7]
- 3 a) What are the different MANET topologies? Explain. [7]  
b) Write notes on  
i) Hidden node                      ii) Exposed node [8]
- 4 a) Give the classification of MAC protocols. [8]  
b) What are the causes behind energy wastage in wireless sensor networks? Explain. [7]
- 5 a) What are the different hybrid routing protocols? Explain. [8]  
b) Give the classification of routing protocols. [7]
- 6 a) Why does TCP not perform well in ad-hoc wireless networks? [8]  
b) Explain feedback-based TCP? [7]
- 7 a) What are the different routing attacks? Explain. [8]  
b) Write notes on  
i) Clustering                      ii) Time Synchronization [7]
- 8 Write notes on the following:  
a) Node-level Simulators [8]  
b) State-centric programming. [7]



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**Set No. 3**

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**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions  
All Questions carry equal marks**

**\*\*\*\*\***

- 1 a) What are the different subsystems of sensor node? Explain. [8]  
b) Write notes on the following terms:  
i) Scalability ii) Stability [7]
- 2 a) What are the component types? Explain. [8]  
b) Explain the sensor network application classes. [7]
- 3 a) Give the topologies of WANETs. [8]  
b) What are the key features on which selection of different transceivers made? [7]
- 4 a) What are the TDMA protocols? Explain. [8]  
b) What are the contention free protocols? Explain. [7]
- 5 a) Write notes on the following:  
i) Table-Driven Routing Protocols ii) On-Demand Routing Protocols [8]  
b) What do you understand by proactive routing? Explain. [7]
- 6 a) What are the pros and cons of assigning the responsibility of end-to-end reliability to the application layer? [8]  
b) Describe the effect of partitioning and merging of network. [7]
- 7 a) What are the issues and challenges in security provision? [8]  
b) What are the network security requirements? Explain. [7]
- 8 Write notes on the following:  
a) Ultra wide band radio communication [8]  
b) Applications of WSN [7]



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**Set No. 4**

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**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions  
All Questions carry equal marks**

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- 1 a) What are the advantages of sensor networks? Explain. [8]  
b) What is sensing subsystem? Explain in detail. [7]
- 2 a) Explain different sensor network scenarios. [8]  
b) What are the different execution environments of operating systems? Explain. [7]
- 3 a) Write notes on the following:  
i) MANETs ii) WANETs [8]  
b) What are different networking topologies for wireless sensors? Explain. [7]
- 4 a) What are slots based protocols? Explain. [8]  
b) Explain MAC protocols with scheduling mechanism. [7]
- 5 a) What are the issues in designing a routing protocol for ad-hoc wireless networks? Explain. [8]  
b) Give the classification of routing protocols. [7]
- 6 a) Briefly describe the routing protocols. [8]  
b) What are the requirements of a secure routing protocol for ad-hoc wireless networks? [7]
- 7 a) What are multilayer attacks? Explain. [8]  
b) Give the classification of security attacks. [7]
- 8 Write notes on the following:  
a) Wireless fidelity systems [8]  
b) Node-level software platforms [7]

