



School of Computer Science and Engineering

Fall Semester 2024-25

CAT I

Programme Name & Branch: BCE & SCOPE

SLOT: C1+TC1

Course Name & Code: Internet of Things & BCSE401L

Class Number (s): All

Faculty Name (s): -

Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s): Answer all the questions:

Q. No.	Question	Max Marks
1.	a) In an organization, the administrator calculates several metrics for the connection (edge) between two routers such as distance, delay, data rate, and inversely proportional to link capacity discourage traffic from a particular route. So, they plan to use interior gateway routing protocol and prefer Open Shortest Path First (OSPF) for within an (intra) autonomous system. Here, what kind of mechanism to determine a minimum-cost path routing and illustrate the same. (6 marks). b) Classify the type of Class, Network IP Address, Direct broadcast address and Limited broadcast address of each IP Address and the number of actual hosts for the following IP Addresses : 1) 1.2.3.4, 2) 150.0.150.150, 3) 220.15.1.10 and 4) 75.1.2.3 (4 marks).	10
2.	For the following sensors: Temperature Sensor Humidity sensor, Level sensor, Flow sensor and Accelerometer, scrutinize the electrical, electronics, and mechanical properties and categorize them for different IoT Applications	10
3.	a) Calculate throughput in IEEE 802.11 protocol for both the cases: i) with packet error rate and ii) without packet error rate. Payload size is 256 bytes in both the scenario and use the following input: SIFS interval = 160 μ s, T_{slot} = 52 μ s, CW_{min} =15, T_{ph} =560 μ s, T_{symbol} = 40 μ s, L_{header} = 36 bytes, L_{data} =256 bytes, PER= 0.1 and T_{BO} = 441.97 μ s for Through put with PER. (5 Marks) b) Explain in detail about Direct Sequence Spread Spectrum (DSSS) modulator and Demodulator in IEEE 802.15.4 protocol with block diagram. (5 Marks)	10
4.	a) Write the Algorithm for pure ALOHA scheme. (4 Marks) b) Discuss each layer of 6LoWPAN stack in bottom-up approach with layered diagram. (6 Marks)	10
5.	a) Analyze the Quality-of-Service levels in Message Queue Telemetry Transport (MQTT) TCP based application layer protocol in detail (6 marks). b) Analyze the performance metrics of Border Gateway Protocol (BGP) in Exterior gateway routing protocols (4 marks)	10

***** ALL THE BEST *****