Nov. 2022

Paper / Subject Code: 82905 / Architecting of IoT

(2 ½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All

(a) **(10M)**

i) Which domain defines the architecture view of IoT?			
a) Solution domain	b) Problem domain	c) system domain	d) M2M domain
ii) Which protocol among the following belongs to the transport layer?			
a) IPv4	b) DHCP	c)TCP	d)CoAP
iii) Z-Wave Network is very efficient, this is because of the_____ protocol it uses.			
a) session	b) Routing	c) transport	d) network
iv) _____ are a way of limiting the amount of electricity going through a circuit.			
a) resistor	b) switch	c) hub	d) repeater
v) CoAP has four messaging modes: confirmable, non- confirmable, _____and separate.			
a) protecting	b) viewing	c)messaging	d)piggyback
vi) IoT security management includes _____			
a) Protocol abstraction	b) Simple and fast installation	c) Security with hardware	d) Data storage
vii) The ____ is the next domain in the WAN-MAN-LAN hierarchy.			
a) PAN	b) SAN	c) DAN	d) AAN
viii) PPP protocol is also known as _____ Protocol			
a) People to people protocol	b) Point to Point	c) physical to physical	d) person to person
ix) System design and deployment view is a part of_____.			

a) Solution domain	b) analysis domain	c) functional view	d) operational view
x) In AMQP- the broker is divided into two main components: exchange and _____.			
a) queues	b) Devices	c) work	d) delete

(b) Fill in the blanks (5M)

{ underwater, 64, simplex, Protocol abstraction, Full-duplex, 128, MAC, security }

i) In _____ communication mode, communication occurs from sender to receiver and receiver to sender at same time.

ii) IoT gateway must provide _____.

iii) CARP is a distributed routing protocol designed for _____communication.

iv) IEEE 802.15.4 is the most commonly used IoT standard for _____.

v) IPv6 is _____bit protocol.

Q. 2 Attempt the following (Any THREE) (15M)

(a) Define the term M2M and discuss its Evolution.

(b) What is an IoT Architectural view? Discuss reference architecture for a system solution.

(c) State and explain problem and solution domain portioning with an example

(d) Elaborate on Network application registration process

(e) Describe with a neat labelled diagram, IoT Device Architecture.

(f) How do smart cities work? List and explain its different applications

Q. 3 Attempt the following (Any THREE) (15M)

(a) Discuss 802.11 protocol architecture in brief.

(b) Justify the need of WLAN? Describe its advantages.

(c) Define and state the following terms

a. BSS

b. ESS

(d) What is BLE? How does it differ from the standard Bluetooth?

(e) Compare between passive and active RFID with the help of Dash7 network.

(f) How do Dash7 components communicate with each other? Explain in detail.

Q. 4 Attempt the following (Any THREE) **(15M)**

(a) Distinguish between TCP and UDP.

(b) List and explain characteristics of Stream Control Transmission Protocol (SCTP).

(c) Define the term Congestion control. Explain in brief Datagram Congestion Control Protocol.

(d) Illustrate the working of Extensible Messaging Presence Protocol.

(e) Discuss in brief about the Broadband Forum.

(f) Identify different transport layer protocols. Explain UDP with its key points.

Q. 5 Attempt the following (Any FIVE) **(15M)**

(a) Elaborate on CRUD? Discuss its advantages and disadvantages.

(b) Differentiate between unicast and multicast addresses.

(c) Discuss Multipath TCP with its key points

(d) Explain an example of CEP- Complex Event Processing

(e) Compare between TCP and UDP.

(f) Define following terms
1. Computer network
2. Internet of Things

(g) What is NAT? List its uses.

(h) Determine functions of HTTP?

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