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UNIT II IoT NETWORK ARCHITECTURE AND DESIGN 8 Hrs

**The one M2M IoT Standardized Architecture, The IoT World Forum (IoTWF) Standardized Architecture, A Simplified IoT Architecture, IoT protocol stack, The Core IoT Functional Stack, IoT Data Management and Compute Stack: Fog Computing, Edge Computing, The Hierarchy of Edge, Fog, and Cloud IoT and M2M: Introduction to M2M, Difference between IoT and M2M, SDN and NFV for IoT**

1. One of the main characteristics of Linked Stream Data is “Live Streaming”.  
a) True  
b) False

View Answer

Answer: a  
Explanation: Most of the data on the web is from sensing devices. To facilitate the integration of data from sensed devices and other sources, both sensor stream source and data are being enriched with schematic descriptions, creating Linked Stream Data. It shows the live data depending on our application.

2. The huge number of devices connected to the Internet of Things has to communicate automatically, not via humans. What is this called?  
a) Skynet  
b) Bot 2 Bot  
c) Machine 2 Machine  
d) Intercloud  
View Answer

Answer: c  
Explanation: Devices are connected to other devices like mobiles, laptops, etc, to communicate among themselves which is called machine to machine and that involves wireless communication techniques, serial connection and powerline connection.

3. Internet of Things needs a lot of network connection. What is the proposed “white Space” radio standard called?  
a) Bluetooth  
b) WiMax  
c) Weightless  
d) Zigbee  
View Answer

Answer: c  
Explanation: White space is nothing but gaps that sit in the frequency band used to broadcast digital TV. The development of so called “Weightless standard” is for the use of TV white space and for IOT/M2M purpose. The main intention is to reduce the cost and power utilization.

6. What is the sensor/protocol used in GSN?  
a) HTTP protocol  
b) CoAP protocol  
c) MQTT protocol  
d) XMPP protocol  
View Answer

**Answer: b**  
Explanation: Constrained Application Protocol is a specialized web transfer protocol which enables constrained devices to communicate over internet and it is required for GSN in transferring data stream.

7. Which is the core wrapper of GSN?  
a) Serial  
b) UDP  
c) GPSTest  
d) ZeroMQWrapper  
View Answer

Answer: d  
Explanation: Wrappers are classified as remote and local wrappers in GSN. Unlike them, the ZeroMQWrapper is a core wrapper which allows for publishing stream elements that are produced by a Virtual Sensor.

8. Open IoT ontology is extending the W3C SSN ontology which supports the description of the physical and processing structure of sensors.  
a) True  
b) False  
View Answer

Answer: a  
Explanation: Sensors are not constrained to physical sensing devices, rather a sensor is anything that can calculate the value of the phenomenon. Thus, either a device or Computational process or a combination of them could play the role of a sensor.

9. Open IoT manages the registration, data acquisition, deployment of sensors and interconnected of objects, through which network?  
a) GSN  
b) X-GSN  
c) LSM  
d) HTTP  
View Answer

Answer: b  
Explanation: The core fundamental concept in X-GSN is the virtual sensor, which can represent not only physical devices but in general any abstract or concrete entity that observes features of any kind.

10. Which environment does Global Sensor Network work on?  
a) C++  
b) JAVA  
c) HTML  
d) C  
View Answer

Answer: b  
Explanation: GSN is expected to work in all standard computing environments. As Java is portable in nature which means that Java bytecode can execute on all platforms, GSN works on Java. C++, HTML and C are not portable in nature.

11. Global Sensor Network is built for \_\_\_\_\_\_\_\_\_  
a) Reducing cost and time for development  
b) Reducing cost and increasing time for development  
c) Increasing cost and increasing time for development  
d) Increasing cost and decreasing time for development  
View Answer

Answer: a  
Explanation: GSN is developed on the observation that most of the requirements for the application development sensor network are same. Having each sensor network development using its own custom software not only increases the cost but also takes time for development and deployment.

12. \_\_\_\_\_\_\_\_ are a modern interpretation of service oriented architectures used to build distributed software systems.  
a) SOA  
b) API  
c) Microservices  
d) Web 2.0  
View Answer

Answer: c  
Explanation: Microservices is a modern interpretation of service oriented architectures used to build distributed software systems. Services in the microservice architecture are processes.

13. Which protocol is used to link all the devices in the IoT?  
a) TCP/IP  
b) Network  
c) UDP  
d) HTTP  
View Answer

Answer: a  
Explanation: The internet of Thing is the global system of interconnected computer networks that use the Internet Protocol suite (TCP/IP) to link billions of devices worldwide.

14. \_\_\_\_\_\_\_\_ enables seamless integration of LoWPAN devices with internet leveraging.  
a) IETF 6LoWPAN  
b) IEFT CoAP  
c) RFID/NFC  
d) IEEE 802.15.4.LoWPAN  
View Answer

Answer: a  
Explanation: IETF 6LoWPAN enables seamless integration of LoWPAN devices with internet leveraging IPv6 large address space and appln. Layer protocol reuse.

15. \_\_\_\_\_\_\_\_ enables open application layer for constrained nodes.  
a) IETF 6LoWPAN  
b) IEFT CoAP  
c) RFID/NFC  
d) IEEE 802.15.4.LoWPAN  
View Answer

Answer: b  
Explanation: IETF CoAP – open application layer specification for constrained nodes supporting HTTP and Web integration.

16. \_\_\_\_\_\_\_\_ tags, devices, smart phones useful in identification.  
a) IETF 6LoWPAN  
b) IEFT CoAP  
c) RFID/NFC  
d) IEEE 802.15.4.LoWPAN  
View Answer

Answer: c  
Explanation: RFID/NFC – tags, devices, smart phones useful in product / object identification and gathering associated information.

17. \_\_\_\_\_\_\_\_ supports low energy radio operation.  
a) IETF 6LoWPAN  
b) IEFT CoAP  
c) RFID/NFC  
d) Bluetooth  
View Answer

Answer: d  
Explanation: Bluetooth SMART devices support low energy radio operations like, heart rate monitors, blood glucose monitors suitable for health care and fitness etc.

18. \_\_\_\_\_\_\_\_ specification defining the PHY and MAC layer of low power devices.  
a) IETF 6LoWPAN  
b) IEFT CoAP  
c) RFID/NFC  
d) IEEE 802.15.4.LoWPAN  
View Answer

Answer: d  
Explanation: IEEE 802.15.4.LoWPAN – specification defining the PHY and MAC layer of low power devices supporting 250 Kb/s data rate, small packet size 127 bytes.

19. 6LoWPAN Adaption layer contains?  
a) Header compression  
b) Fragmentation  
c) Layer 2 forwarding  
d) Header compression, Fragmentation, and Layer 2 forwarding  
View Answer

Answer: d  
Explanation: 6LoWPAN Adaption Layer:  
Header compression  
Fragmentation  
Layer 2 forwarding.

20. \_\_\_\_\_\_\_\_ is an application layer protocol for resource constrained devices.  
a) CoAP  
b) HMTP  
c) MQTT  
d) TCP/IP  
View Answer

Answer: a  
Explanation: CoAP is an application layer protocol (IETF draft) for resource constrained devices. Adheres to the Restful approach for managing the resources and support mapping to HTTP.

21. Adheres to \_\_\_\_\_\_\_\_ approach for managing resources and support mapping to HTTP.  
a) RETful  
b) IoT  
c) Restful  
d) RESTful  
View Answer

Answer: d  
Explanation: CoAP is an application layer protocol (IETF draft) for resource constrained devices. Adheres to RESTful approach for managing resources and support mapping to HTTP.

22. \_\_\_\_\_\_\_\_ resources are identified by Uniform Resource Identifiers.  
a) CoAP  
b) HMTP  
c) MQTT  
d) TCP/IP  
View Answer

Answer: a  
Explanation: CoAP is an application layer protocol (IETF draft) for resource constrained devices. Adheres to Restful approach for managing resources and support mapping to HTTP. CoAP resources are identified by Uniform Resource Identifiers.

23. Which protocol interacts asynchronously over UDP?  
a) HMTP  
b) CoAP  
c) MQTT  
d) TCP/IP  
View Answer

Answer: b  
Explanation: CoAP is an application layer protocol (IETF draft) for resource constrained devices. It is Asynchronous message interactions over UDP, Request/Response semantics CoAP resources are identified by Uniform Resource Identifiers.

24. CoAP messages are short.  
a) True  
b) False  
View Answer

Answer: a  
Explanation: CoAP messages are short – 4 bytes header followed by options (Typically, 10-20 bytes header).

25. How many messages types are there in CoAP?  
a) 2  
b) 5  
c) 3  
d) 4  
View Answer

Answer: d  
Explanation: Four message types are:  
Confirmable  
Non confirmable  
Acknowledgments  
Reset.

26. Number of methods in CoAP?  
a) 2  
b) 5  
c) 4  
d) 3  
View Answer

Answer: c  
Explanation: Four CoAP methods:  
GET  
POST  
PUT  
DELETE.

27. WSN stands for \_\_\_\_\_\_\_\_\_\_  
a) Wired Sensor Network  
b) Wireless Sensor Network  
c) Wired Service Network  
d) Wireless Service Network  
View Answer

Answer: b  
Explanation: WSN – Wireless Sensor Network comprises of motes running a WSN application and a light weight CoAP server.