Time: 3 Hours   **Max. Marks: 80**

Instructions:
1) **Attempt any Four question out of six questions.**
2) **All question carries equal marks.**
3) **Illustrate your answers with neat sketches wherever necessary.**
4) **Figures to the right indicate full marks.**
5) **Assume suitable additional data, if necessary and clearly state it.**
6) **All sub-questions of the same question should be grouped together.**

Q.1	**(a)**	Give the function of each layer of a seven-layer IoT architectural reference model published by IoTWF architectural committee.	**10**
	(b)	What is meaning of Smart object? Give the Security and privacy concerns of Smart objects in Internet of things.	**05**
	(c)	Explain the characteristics of Smart object. Give the trends in smart objects.	**05**
Q.2	**(a)**	Explain the architectural classification of smart objects according to Things: Sensors and Actuators Layer. Give the classification of networks according to access technologies and distances considering in IoT based applications.	**10**
	(b)	What are the factors based on the type of device involved and the function it will perform helps to choose right protocol for a particular IoT application?	**05**
	(c)	Compare with suitable parameters COAP and MQTT application protocols used for IoT applications.	**05**
Q.3	**(a)**	Describe top 10 applications of IoT in existing market place.	**10**
	(b)	Compare with suitable parameters between Raspberry Pi and Arduino.	**05**
	(c)	Why RESTful JSON is a popular choice for IoT applications?	**05**
Q.4	**(a)**	What is Fog Computing? Give advantages and disadvantages of Fog computing.	**05**
	(b)	What is Edge Computing? Give advantages and disadvantages of Edge computing.	**05**
	(c)	Explain the different types of sensors are used for measuring one of the physical properties and give its representative examples.	**10**
Q.5	**(a)**	Explain in detail about Smart services in IoT system.	**05**
	(b)	Write a short note on "Data Analytics Versus Business Benefits".	**05**
	(c)	Draw and explain neat diagram of Protocol Stack for Transporting Serial DNP3 SCADA over IP. Give meaning of a master/slave relationship in DNP3.	**10**
Q.6	**(a)**	Explain at least five use cases where IoT involvements will convert cities into smart cities.	**10**
	(b)	Compare any Five IoT software platforms with suitable parameters.	**10**

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