IOT
Question Bank

Unit 1	
Chapter 1 **THE INTERNET OF THINGS: AN OVERVIEW**	
1)	**What are the flavours of the Internet of Things?**
2)	**Write an equation of the "Internet" of "Things". And explain the purpose of IOT.**
3)	**Explain the technology of the Internet of Things.** **OR** **Explain how and where IOT fits with the help of history of technology.**
4)	**What are enchanted objects? Explain with examples how the technology has always been associated with magic.**
5)	**Who is making the Internet of Things?**
Chapter 2 **DESIGN PRINCIPLES FOR CONNECTED DEVICES**	
6)	**What is CALM and AMBIENT technology? Explain with the example of Live Wire.**
7)	**Explain the terms "Magic as Metaphor" and "Manufactured Normalcy Field" along with few examples.**
8)	**Describe "KEEPING SECRETS" with the example of "An Instrumented Car Park".**
9)	**Define and explain following terms :** 1) web thinking for connected devices 2) small pieces, loosely joined 3) first-class citizens on the internet
10)	**What is graceful degradation? Also explain affordance with respect to technology.**
Chapter 3 **INTERNET PRINCIPLES**	
11)	**Describe use of following protocols :** **IP, TCP and UDP.**
12)	**Write a note on DNS.**

13)	Compare static and dynamic IP address assignment.
14)	Differentiate between TCP and UDP protocols.
15)	What are the benefits of using IPV6 in IOT?
16)	Write a note on MAC address.
17)	Explain the use of TCP and UDP ports. Give examples.
18)	List and explain application layer protocols.

Unit 2

Chapter 4

THINKING ABOUT PROTOTYPING

1)	Explain the process of prototyping using following terms: 1.sketching 2.familiarity 3.costs versus ease of prototyping
2)	Write the case study of "BUBBLINO" to explain the process of prototyping.
3)	Which are the new sets of challenges we face while scaling up the production?
4)	Compare open source and closed source.
5)	What are disadvantages of open source? Explain "open source as a competitive advantage" and "open source as a strategic weapon".
6)	Explain "mixing open and closed source" and "closed source for mass market projects".

Chapter 5

PROTOTYPING EMBEDDED DEVICES

7)	What are two main categories of electronics? OR Explain sensors and actuators used in prototyping embedded devices.
8)	How to scale up the electronics from bradboard to PCB?
9)	Compare microcontrollers with System–On-Chips.
10)	List and explain the factors that you need to weigh when deciding how to build your device.
11)	Write a note on Arduino.

12)	How to develop code using Arduino? And what os can be is used on Arduino?
13)	Write and explain code to blink LED using Arduino.
14)	How debugging works in Arduino?
15)	Explain Arduino hardware with the help of a diagram.
16)	Write a note on Raspberry Pi.
17)	Compare Arduino Due and Raspberry Pi model B.
18)	Which Operating Systems can be used with Raspberry Pi?
19)	Write and explain code to blink LED using python and Raspberry Pi.
20)	Contrast Python with C++.
21)	Explain Raspberry Pi hardware with the help of a diagram.

Unit 3

Chapter 6

PROTOTYPING THE PHYSICAL DESIGN

1)	How to prepare for prototyping physical design?
2)	Explain sketch, iterate, and explore stages of prototyping physical design. Also explain evolution of the design for the Goodnight Lamp.
3)	List and explain Non-digital methods or traditional techniques used while prototyping a physical form of a device.
4)	How the laser cutter can be used to produce parts of design? When choosing a laser cutter which two main features should be considered?
5)	Which software can be used with laser cutter?
6)	List and explain the types of hinges and joints.
7)	Write a note on 3D printing.
8)	What are the types of 3D printing?
9)	Which software can be used for 3D printing?
10)	What is CNS milling?
11)	Explain the concept of repurposing/recycling with respect to prototyping physical design.
12)	Write the case study of "the ackers bell" to explain prototyping physical design.

Chapter 7

PROTOTYPING ONLINE COMPONENTS

13)	What is an API? Explain the concept of mashing and scrapping APIs.
14)	How to write new API? Explain with example of timer.
15)	Explain the concept of security with example of timer.
16)	List and explain the standards to consider for implementing the API.
17)	Explain what parameters you should consider when deciding on a platform for your web back end with the help of example (such as PERL).
18)	Explain the following factors with respect to api. 1. API rate limiting. 2. Interaction via html 3. Designing a web application for humans
19)	What are real-time reactions? Explain two options such as "Polling" and "Comet".
20)	Explain how to implement Comet? And how scaling works with Comet?
21)	Which other protocols are available to replace HTTP?

Unit 4

Chapter 8

TECHNIQUES FOR WRITING EMBEDDED CODE

1)	What are the memory management issues in embedded code?
2)	How to make the most of your RAM?
3)	Explain organising RAM: Stack versus Heap.
4)	Explain the concept of performance and battery life.
5)	List and explain habits that help make your code generally more efficient (or to increase performance).
6)	Why we need libraries? List few libraries available for embedded coding.
7)	Explain various methods of debugging software and hardware.
8)	What is Logging? Explain issues with Logging.

Chapter 9

BUSINESS MODELS

9)	Explain the history of Business Models.
10)	What is the use of the Business Model Canvas? Explain each template box.
11)	Who is the Business Model for?
12)	Explain some of the models that internet of things companies have used or might use.
13)	List and explain the possible ways to get funds for an Internet of Things Startup?
14)	What are Lean Startups?
15)	How to go for government funding and crowd funding for projects.
16)	What is Venture Capital?

Unit 5

Chapter 10

MOVING TO MANUFACTURE

1)	What are the different possibilities that we should consider before producing a product. Also explain designing kits in detail.
2)	How to design printed circuit boards? Explain software choices for it.
3)	What makes up a PCB?
4)	Explain the design process for PCB.
5)	List and explain possible ways of manufacturing PCB.
6)	Explain the concept of assembly and testing with respect to PCBs.
7)	How to go for Mass-Producing the case and other fixtures?
8)	Explain manufacturing process with case study of the " berg's little printer".
9)	Discuss certification issues with IOT products.
10)	Which things affect the cost of PCB?
11)	How to scale up software? Also explain various factors that require polish.

	Chapter 11 **ETHICS**
12)	Summarize what the internet of things is?
13)	Explain the issues on privacy. Also explain how internet affects privacy.
14)	Who controls data collected by devices (sensors)?
15)	Explain the terms "Disrupting Control" and "Crowd-Sourcing".
16)	List and explain five critical requirements observed in Fisher's original definition for a sensor commons project.
17)	Which things affect more to the environment and how to measure environmental cost?
18)	Explain use of the Internet of Things as part of the solution.
19)	What is Cautious Optimism?
20)	Explain the open Internet of Things definition.