

**N.B. :** (1) All questions are compulsory.

(2) Make suitable assumptions wherever necessary and state the assumptions made.

(3) Answers to the same questions must be written together.

(4) Numbers to the right indicate marks.

(5) Draw neat labeled diagrams wherever necessary.

(6) Use of Non-programmable calculators is allowed.

1. Attempt the following (any **THREE**)

[15]

- (a) What is IOT? Discuss different technologies involved in IOT.
- (b) (i) Why have we yet to be enchanted by the internet of things?  
(ii) Who is making the Internet of Things?
- (c) Explain the term Calm and Ambient Technology.
- (d) (i) Explain the reason why loosely coupling is encouraged?  
(ii) Explain the term Affordances with example.
- (e) Explain OSI Model with diagram.
- (f) (i) What is HTTPS? Also explain importance of encrypted HTTP.  
(ii) Discuss other application layer protocols.

2. Attempt the following (any **THREE**)

[15]

- (a) (i) What is a Prototype? Explain the benefits of prototyping.  
(ii) What is Sketching?  
(iii) State difference between Sketching vs. Prototyping.  
(iv) Explain with an example how cost affects the ease of Prototyping.
- (b) Discuss Open Source Versus Closed Source.
- (c) What are the ways the electronics devices are placed?
- (d) Explain the Different components involved in Arduino.
- (e) State difference between Arduino and Raspberry Pi.
- (f) Explain the block diagram of Raspberry pi.

3. Attempt the following (any **THREE**)

[15]

- (a) Discuss different non digital methods for designing.
- (b) (i) What is 3D printing?  
(ii) How 3D printer works?
- (c) Explain different types 3D printing technologies.
- (d) Explain the concept of CNC milling.
- (e) Write short note on real time reactions.  
Explain, what is comet?
- (f) What is repurposing or recycling of components?

4. Attempt the following (any **THREE**)

[15]

- (a) What is debugging? Explain some tools for debugging.
- (b) (i) How to make most of the RAM? Explain.  
(ii) Explain the concept of stack and heap in RAM.
- (c) Explain the Business Model Canvas with a neat diagram.
- (d) Explain the various Business Models.
- (e) Explain Lean startups.
- (f) Explain three key principles of lean method.

5. Attempt the following (any **THREE**)

[15]

- (a) (i) What Are You Producing?  
(ii) What are the different parts involved in designing any kit?
- (b) How the PCB's are manufactured? Explain the steps.
- (c) Why to scale up the software and what are the key points for doing the same?
- (d) Write a short note on Environment and other components.
- (e) Define the solution and different applications of IoT.
- (f) Write a short note on Cautious optimism.



**Paper Discussion Schedule for all Subjects**

<b>Date</b>	<b>Day</b>	<b>Timing</b>	<b>Centre</b>
12 Nov. 2018	Monday	9.00 a.m. to 11.00 a.m.	Nerul
12 Nov. 2018	Monday	12.00 p.m. to 2.00 p.m.	Thane
12 Nov. 2018	Monday	3.00 p.m. to 5.00 p.m.	Dombivli
13 Nov. 2018	Tuesday	9.00 a.m. to 11.00 a.m.	Ghatkopar
13 Nov. 2018	Tuesday	12.00 p.m. to 2.00 p.m.	Andheri
13 Nov. 2018	Tuesday	3.00 p.m. to 5.00 p.m.	Borivali
14 Nov. 2018	Wednesday	9.00 a.m. to 11.00 a.m.	Dadar