

(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 (Each of 5Marks)****(15M)****(a) Multiple Choice Questions**

1. \_\_\_\_\_ command potentially offers a fine-grained choice of permissions for users and groups to access portions of the admin user's powers

- (a) grep (b) mkuser (c) sudo (d) ls

2. Which one of the following is **not** an HTTP Method

- (a) GET (b) POST (c) UNDO (d) DELETE

3. The command \_\_\_\_\_ sets the last modified time-stamp of the specified file(s) or creates it if it does not already exist.

- (a) set date-time (b) set time (c) date-time (d) touch

4. \_\_\_\_\_ is Tools for achieving security

- (a) Virtual Private Networks (b) TRIG security (c) MQTT (d) DDoS

5. LED stands for \_\_\_\_\_

- (a) Light Emitting Diode (b) Light End Diode

**(b) Fill in the blanks**

{2, Hard Disk , do not connect, cross compiler, do not communicate , 5,10, monitor, connecting }

1. DASH7 provides multi-year battery life, range of up to \_\_\_\_\_ km.
2. The disadvantage of Raspberry Pi is, it does not have a \_\_\_\_\_ associated with it
3. The breadboard is a way of \_\_\_\_\_ electronic components to each other without having to solder them together.
4. In GPIO, **DNC** stands for \_\_\_\_\_.
5. A \_\_\_\_\_ is a compiler that runs on one platform/architecture but generates binaries for another platform/architecture

**(c) Answer in 1 – 2 sentences**

1. What is GND in GPIO.
2. State the full form of ASIC.
3. List stages of 3-stage pipeline organisation.
4. What is SenseIoT
5. What is REST ?

**P.T.O.**

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

- (a) Define Raspberry pi hardware.
- (b) Write a short note on Graphic Processing Unit (GPU)
- (c) What is SoC? Discuss the structure of SoC.
- (d) Explain Compute Unit with block diagram.
- (e) Define steps of configuring boot sequence and hardware.
- (f) Define SoC products and explain FPGA.

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

- (a) Discuss any one Programming interface used with Raspberry Pi
- (b) Write a short note on free open source Raspbian OS.
- (c) Explain the following Linux commands: rmdir ,touch, mv, cp, chmod
- (d) What is node.js? Explain benefits of node.js.
- (e) Define and explain with an example Pulse Width Modulation.
- (f) What is python? Explain its features?

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

- (a) Write a short note on Security tools for IoT.
- (b) Explain XMPP protocol used in IoT communication with block diagram.
- (c) What is the role of CoAP protocol in IOT.
- (d) Write a python program and diagrammatically represent circuit connection to blink an LED using raspberry pi kit.
- (e) Explain the following tools:
  - 1.VPN
  - 2.X.509 certificates and encryption.
- (f) Discuss any two real time applications of IoT.

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

- (a) Explain ARM8 architecture with block diagram.
- (b) Explain following terms:
  - 1.Booth multiplier
  - 2. Register file
- (c) Explain IoT security in detail.
- (d) Define GPIO programming.
- (e) Explain Carriots as IoT service platform in embedded designing.

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