

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

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

2. The \_\_\_\_\_ command changes the user and/or group that owns a file

- (a) chown (b) sudo (c) change permission (d) ls

3. LED stands for \_\_\_\_\_

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

4. Raspberry Pi GPIO has \_\_\_\_\_ number of pins.

- (a) 20 (b) 40 (c) 25 (d) 30

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

- (a) Virtual Private Networks (b) DDoS

**(b) Fill in the blanks**

{ publisher, HTTP, Advanced RISC Machine, UART , Advanced Raspberry Machine, Internet protocols, GND , UDP , Client &amp; server }

- \_\_\_\_\_ works on request - response architecture.
- The role of the \_\_\_\_\_ is to connect to the message broker and publish content
- \_\_\_\_\_ is an asynchronous serial communication protocol.
- \_\_\_\_\_ are the pins you use to ground your devices.
- ARM is \_\_\_\_\_.

**(c) Answer in 1 – 2 sentences**

- What is PWM.
- What is thinger.io
- What is the main difference between CoAP and HTTPU.
- Define the term - Protocol.
- List stages of 5-stage pipeline organisation

P.T.O.



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

- (a) Explain, How small SoC boots without BIOS.
- (b) Explain FPGA.
- (c) Write the steps to install Raspbian operating system on raspberry pi model B.
- (d) What is ARM? Write a short note on features of ARM 8.
- (e) Explain the basic hardware components of Raspberry Pi.
- (f) State the difference between Soc and CPU

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

- (a) Explain following terms:
  - 1. Booth multiplier
  - 2. Control unit
- (b) Write a short note on free open source Raspbian OS.
- (c) Define and explain with an example Pulse Width Modulation
- (d) Explain cross compiler with example.
- (e) Explain, what is node.js? Write note features of node.js?
- (f) Define and explain GPIO programming.

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

- (a) Explain XMPP protocol used in IoT communication with block diagram.
- (b) Explain IoT Service as a Platform
  - 1. Clayster platform
  - 2. thinger.io
- (c) What are different attacks possible in IOT? Explain the following
  - 1. Guessing the credentials
  - 2. Getting access to stored credentials
- (d) Explain HTTP protocol and its working with IOT.
- (e) Explain Node-RED as software tool in IoT.
- (f) What is IOT and what are its features?

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

- (a) Discuss the characteristics of SPI. How one can connect Camera module using SPI.
- (b) Explain different security tools in IOT.
- (c) Explain general architecture of an SoC with block diagram.
- (d) Explain the following Linux commands: ls, pwd, cat, tar, unzip
- (e) Explain the working of MQTT protocol in IOT.

\*\*\*\*\*