SAMPLE PAPERS

DIPLOMA FIFTH SEMESTER EXAMINATION 2025 (JUT)

INTERNET OF THINGS

DIPLOMA WALLAH

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Full Marks: 70 marks | Time: 3 Hours

Instructions:

- Question No. 1 is compulsory.
- Answer any **FOUR** questions from the remaining (Q.2 to Q. 7 marks).

SECTION A (Compulsory)

Q.1 Multiple Choice Questions (7 × 2 = 14 Marks)

(i) Which communication API model is based on a client-server architecture?

(A) REST-based

(B) WebSocket-based (can be, but REST is the classic example)

(C) Magnetic-based

(D) Spectrum-based

(ii) Identify the standard wireless technology often used in IoT.

(A) ZigBee

(B) COBOL

(C) Fortran

(D) Pascal

(iii) In the IoT Security Life Cycle, what comes after Secure Initialization?

(A) Secure Operation

(B) Secure Destruction

(C) Secure Abandonment

(D) Secure Rejection

(iv) Which of the following is NOT a functional block of IoT?

(A) Sensing

(B) Actuation

(C) Decoration

(D) Management

(v) Which protocol is typically used for Network Management in traditional networks but is often too heavy for constrained IoT devices?

(A) SNMP

(B) HTTP

(C) MQTT

(D) CoAP

(vi) A system that monitors soil health in agriculture is an example of:

(A) Industrial IoT

(B) Domain Specific IoT

(C) Personal IoT

(D) Local IoT

(vii) GPIO pins on a Raspberry Pi are used for:

(A) General Purpose Input Output

(B) Graphical Processing Input Output

(C) Global Position Input Output

(D) General Peripheral Internal Output

Q.2

(A) Explain the detailed process of IoT Systems Management using NETCONF-YANG. Describe the role of YANG data modeling language. [7 Marks]

(B) Discuss the major Security, Privacy, and Governance issues in IoT. Explain the purpose of the IoT security life cycle. [7 Marks]

Q.3

(A) Explain the Physical Design of IoT (Things, Protocols) with a neat block diagram. [7 Marks]

(B) Select two Domain-specific IoT Case Studies (e.g., Agriculture, Urban Cities) and explain the system's objective and key functionalities. [7 Marks]

Q.4

(A) Describe the IoT Design Methodology step-by-step using a Smart City case study example. [7 Marks]

(B) Explain the significance of Raspberry Pi interfaces (GPIO, SPI, I2C, UART) for connecting peripherals. [7 Marks]

Q.5

(A) Distinguish clearly between M2M (Machine-to-Machine) and IoT based on architecture and scope. [7 Marks]

(B) Discuss the crucial role of Wireless Sensor Networks (WSN) and Big Data Analytics as IoT Enabling Technologies. [7 Marks]

Q.6

(A) Explain the concept of IoT Levels and Deployment Templates (Level-1 to Level-6). [7 Marks]

(B) Define IIoT. Compare and contrast IoT and IIoT in terms of security and application criticality. [7 Marks]

Q.7 Write Short Notes on (Any FOUR): [4 × 3.5 = 14 Marks]

(A) IoT Communication Models (Push-Pull, Exclusive Pair)

(B) Networking Protocols in IoT

(C) IoT Security Challenges

(D) Popular IoT Platforms (AWS, Azure)

(E) Difference between IoT Level-3 and Level-4

PAPER 3 - SOLUTIONS

MCQ Answer Key

1. **(A)** REST-based
2. **(A)** ZigBee
3. **(A)** Secure Operation
4. **(C)** Decoration
5. **(A)** SNMP
6. **(B)** Domain Specific IoT (or Agriculture IoT)
7. **(A)** General Purpose Input Output

Model Answers (Brief Hints)

Q.2(A) NETCONF-YANG:

- **NETCONF:** Protocol for installing/deleting config. Uses XML/RPC.
- **YANG:** Modelling language to describe the data sent over NETCONF.

Q.3(A) Physical Design:

- Explain "Things" (Nodes with unique ID) and "Protocols" (6LoWPAN, ZigBee, MQTT, etc.).

Q.7 Short Notes:

- **(D) Platforms:** AWS IoT, Azure IoT, Google Cloud IoT.
- **(E) Level-3 vs Level-4:** Level 3 has single node storing data in cloud; Level 4 has multiple nodes + local gateway + cloud.