**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **2BC3179** | Roll No. | Total Printed Pages: 1 |
| **2BC3179** |  |
| BCA II Year III-Semester (Back) End Semester Examination, November 2022 | |
| **BCA03107.2/ BCM03107.2/ BCT03107.2 : Fundamentals of IoT and its Applications** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2.------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | What do you mean by machine to machine (M2M) communication? Explain from M2M towards IoT communication. | **(6)** | **Understand** |
|  | **(b)** | List and give brief description of some most useful microcontroller based motherboards which are required to design an IoT application. | **(6)** | **Understand** |
|  |  | **OR** |  |  |
| **Q.2** | **(a)** | What are M2M Value Chains and IoT Value Chains? Explain emerging industrial structure for IoT. | **(6)** | **Understand** |
|  | **(b)** | Discuss various standards and technologies that enable IoT connectivity between devices that forms the basis of IoT. | **(6)** | **Understand** |
|  |  | **UNIT-II (CO2)** |  |  |
| **Q.3** | **(a)** | Draw the IoT Architecture Reference Model and explain the functions of each entity. | **(6)** | **Apply** |
|  | **(b)** | Write an arduino IDE code for automatic street/road light ON/OFF. | **(6)** | **Apply** |
|  |  | **OR** |  |  |
| **Q.4** | **(a)** | List various IoT sensors and give their brief description with characteristics and the deployment scenarios. | **(6)** | **Apply** |
|  | **(b)** | Give the parametric description of mostly used library functions in arduino IDE. | **(6)** | **Understand** |
|  |  | **UNIT-III (CO3)** |  |  |
| **Q.5** | **(a)** | Differentiate between Infrastructure as a Service (IaaS) and Storage as a service (SaaS) | **(8)** | **Apply** |
|  | **(b)** | Discuss Limitations of Cloud Computing. | **(4)** | **Remember** |
|  |  | **OR** |  |  |
| **Q.6** | **(a)** | Design a home autonomous system using Arduino Uno board. Write code, list components, and draw block diagram. | **(8)** | **Design** |
|  | **(b)** | Suppose you are IoT engineer in a cloud service provider company and you are said to design IoT as a Service (IaaS). How will you design? | **(4)** | **Design** |
|  |  | **UNIT-IV (CO4)** |  |  |
| **Q.7** |  | Suppose you want to design an IoT system which will count the students entering in university campus and will display the total at reception. List the required components and explain data flow by block diagram. | **(12)** | **Design** |
|  |  | **OR** |  |  |
| **Q.8** | **(a)** | How can we use IoT in Governance? | **(6)** | **Understand** |
|  | **(b)** | List the components required for developing a city as a smart city. Draw block diagram for garbage collection. | **(6)** | **Understand** |
|  |  | **UNIT V (CO5)** |  |  |
| **Q.9** | **(a)** | Design a smart agricultural system which will monitor each and everything and will generate alarm to farmers. Sketch the block diagram of system and describe the role and functions of each component. | **(6)** | **Design** |
|  | **(b)** | Suppose you are IoT engineer in a cloud service provider company and you are said to design IoT as a Service (IaaS). How will you design? | **(6)** | **Design** |
|  |  | **OR** |  |  |
| **Q.10** | **(a)** | How to design a system which can collect data from various sensors and can be analyzed on cloud. | **(6)** | **Design** |
|  | **(b)** | Discuss the various IoT services which are provided by prominent cloud service provider companies. | **(6)** | **Remember** |