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BT–7/D-23 **47431**

WORKING WITH RASPBERRY PI & ARDUINO PLATFORM

Paper–PE-CS-AIML-425A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. (a) What is an embedded system? How does an embedded system work?

   (b) Draw and discuss the block structure of an embedded system.

   (c) Describe the term Microcontroller along with its various types.

2. (a) What is IoT? Describe the main components used in IoT.

   (b) Draw the layered architecture of IoT. Also, explain the functioning of each layer in detail.

UNIT–II

3. Explain Arduino along with its key features? Discuss the different parts of Arduino program. Also describe the use of functions in Arduino with suitable examples.

4. (a) Draw and explain the architecture of home automation system.

(b) How to make real time clock-based home automation? Explain in detail.

UNIT–III

5. (a) Differentiate between Arduino and Raspberry Pi.

(b) There are two models of Raspberry Pi i.e. A and B. which model is suitable for IoT applications? Justify your answer with necessary technical details by comparing and contrasting the above two models.

6. (a) What are various data types in python? Explain with the help of suitable example.

(b) How to write and run a python program on the Raspberry Pi?

(c) Describe some applications of python.

UNIT–IV

7. What is a DHT 11 sensor? Explain its working principle. Also, draw and discuss the DHT 11 pinout configuration for the following :

(a) DHT 11 sensor. (b) DHT 11 sensor module.

8. (a) What is Stepper motor? How to connect a stepper motor with Raspberry Pi? Explain with suitable diagrams.

(b) How ultrasonic sensor work? Also, discuss how the obstacle can be detected using ultrasonic sensor?