

Seat No. _____

Enrollment No. _____

THE CHARUTAR VIDYA MANDAL UNIVERSITY
M.Sc. (INFORMATION TECHNOLOGY) – SEMESTER 2
APRIL 2023 REGULAR EXAMINATION

Course Title: INTERNET OF THINGS(IoT)

Course Code: 201410211

Total Printed Pages : 02

Date: 17/04/2023

Time: 02.00 pm to 04.00 pm

Maximum Marks: 50

Instructions:

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

Q. 1 Answer the following multiple choice questions. (04)

- (I) Who coined the term IoT?
A. IBM B. Kevin Ashton
C. Ross Ihaka D. Guido van Rossum
- (II) A/An _____ is a device that produces a motion by converting energy and signals going into the system.
A. Sensor B. Secure Digital
C. Actuator D. Multimedia Card
- (III) Arduino IDE is written in which programming language?
A. JAVA B. C/C++
C. Python D. JavaScript
- (IV) MQTT stands for _____.
A. Message Query Telemetry Transport
B. Meta Query Telemetry Transport
C. Multiple Query Telemetry Transport
D. Multi-Queue Query Telemetry Transport

Q.2 Answer in brief and to the Point (3 questions of 2 marks each) (06)

- (I) What is IOT? Explain how IOT works?
(II) Define Sensor and Actuator with suitable examples.
(III) Enlist domain specific IoT applications.

Q.3 (a) Write a note on IoT reference architecture. (05)

(b) List and explain any one IoT Application fields in detail. (05)

OR

(b) Explain Threats and Security issues with IoT System. (05)

Q.4 (a) Write a note on Sensing devices and smart IoT end points. (05)

(b) Explain Architecture of an Embedded System. (05)

OR

(b) Explain role of Arduino and Raspberry Pi in the field of IoT Applications. (05)

Q.5 (a) Write a note on wireless communication protocol in IoT. (05)

(b) Explain Short range communication and protocols used in IoT. (05)

OR

(b) Explain IoT Cloud Service Models. (05)

Q.6 (a) Write a note on Home Automation domain specific IoTs. (05)

(b) Explain Wearable Electronics and the Internet of Things. (05)

OR

(b) Explain role of IoT in Smart Payment. (05)

- Q.4** (a) Write a note on ASP.NET MVC Architecture (05)
(b) Write a snippet code for full CRUD operation in ASP.NET MVC (05)

OR

- (b) Explain Action Method and Action Selectors in ASP.NET MVC. (05)
Q.5 (a) Write a note on OpenID and OAuth Login in ASP.NET Core. (05)
(b) Explain ASP.NET Core Program.cs and Startup.cs files. (05)

OR

- (b) Explain Websockets and SignalR in ASP.NET Core. (05)
Q.6 (a) Write a note on AngularJS MVC. (05)
(b) Explain Two-way data binding in AngularJS. (05)

OR

- (b) Explain Directives and Pipes in AngularJS. (05)

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THE CHARUTAR VIDYA MANDAL UNIVERSITY
M.Sc. (INFORMATION TECHNOLOGY)– SEMESTER II
APRIL 2023 REGULAR EXAMINATION

Course Title: Data Science Using Python and R

Course Code: 201410213

Total Printed Pages : 02

Date: 21/04/2023

Time: 02.00 pm to 04.00 pm

Maximum Marks: 50

Instructions:

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

Q. 1 Answer the following multiple choice questions. (04)

(I) Which of the following is the most important language for Data Science?

- (A) Java (C) Ruby
(B) R (D) None of these

(II) What will be the datatype of the var in the below code snippet?

```
var = 10
print(type(var))
var = "ISTAR"
print(type(var))
```

- (A) str and int (C) int and int
(B) str and str (D) int and str

(III) What will be the output of the following R program?

```
r<-0:10
r[2]
```

- (A) 0 (C) 2
(B) 1 (D) 3

(IV) _____ data that depends on data model and resides in a fixed field within a record.

- (A) Structured data (C) Semi-Structured data
(B) Un-Structured data (D) Scattered

Q.2 Answer in brief and to the Point (3 questions of 2 marks each) (06)

- (I) Explain Data Science Components.
(II) Write a short note on Pandas.
(III) Write down difference between R and Python.

- Q.3** (a) Explain Data Science Methodology using a diagram. (05)
- (b) Explain classification of machine learning in brief. (05)
- OR**
- (b) Briefly explain Data Science tasks. (05)
- Q.4** (a) Explain Data Visualization in python using matplotlib with suitable example. (05)
- (b) What is Numpy? Write down the advantages of Numpy. Explain Numpy Array in detail using with example. (05)
- OR**
- (b) Explain List and Tuple data type using with example. Write down difference between List and Tuple. (05)
- Q.5** (a) Briefly explain all R Operators using with examples. (05)
- (b) Briefly explain array data structure in R programming using with examples. (05)
- OR**
- (b) Briefly explain R Vectors in brief. (05)
- Q.6** (a) Briefly explain Reexpressing categorical data as numeric data preparation task in Python and R. (05)
- (b) Briefly explain adding an index field data preparation task in python and R (05)
- OR**
- (b) Explain Data Preparation Task. (05)

- Q.4 (a)** Given below are two histograms (i) and (ii), modify the histogram (i) as given by histogram(ii). **(05)**

(i)

Gray level(rk)	0	1	2	3	4	5	6	7
No. of pixels(nk)	790	1023	850	656	329	245	122	81

(ii)

Gray level(rk)	0	1	2	3	4	5	6	7
No. of pixels(nk)	0	0	0	614	819	1230	819	614

- (b) Explain Histogram processing techniques in brief. **(05)**

OR

- (b) Compute the median value of the marked pixels (128, 24, 172, 26) shown in fig. using a 3*3 mask. **(05)**

18	22	33	25	32	24
34	128	24	172	26	23
22	19	32	31	28	26

- Q.5 (a)** What is the noise model? Enlist types of models. Explain any two models in brief. **(05)**

- (b) Briefly explain Image degradation model. **(05)**

OR

- (b) Explain image restoration using spatial filtering in brief. **(05)**

- Q.6 (a)** What is image segmentation? Enlist Image segmentation techniques. Explain types of image segmentation. **(05)**

- (b) What is Edge based segmentation? Enlist Edge detection operators. Explain any two operators in brief. **(05)**

OR

- (b) Explain morphological image processing in brief. **(05)**
