Seat No. _____ Enrollment No. _____

THE CHARUTAR VIDYA MANDAL UNIVERSITY

M.Sc. (INFORMATION TECHNOLOGY) – SEMESTER 2

SUMMER (REGULAR) 2022 EXAMINATION

Course Title: INTERNET OF THINGS (IOT)

Course Code: 101410211

Total Printed Pages : 02

Date: 05/05/2022 **Time: 10:30 am to 12:30 pm** **Maximum Marks: 60**

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.** **(12)**

(1) IOT stands for _____

A. Internet of Things
B. Internet of Technology
C. Incorporate of Things
D. Incorporate of Technology

(2) Which of the following is not considered as characteristics of IOT?

A. Connectivity
B. Scalability
C. Safety
D. Reliability

(3) 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

(4) Digital Camera, Washing Machine and Microwave oven are Examples of microcontroller applications. **True/False**

(5) A _____ Sensor is a non-contact type sensor that detects the presence of an object.

A. Proximity Sensor
B. Temperature Sensor
C. IR Sensor
D. Ultrasonic Sensor

(6) Full form of Embedded SBC is?

A. Single Board Computer
B. Smart Business Centre
C. Standard Building Centre
D. Smart Board Computer

(7) Which of the following IoT networks has a very short range?

A. Short Network
B. LPWAN
C. SigFox
D. Short-range wireless network

(8) What is the Arduino UNO?

A. Software
B. Hardware device
C. Network
D. Protocol

(9) Which one of the following is Cloud Platform by Amazon?

A. Azure
B. AWS
C. Cloudera
D. All of these.

(10) BLE Stands for _____

A. Bluetooth Low Energy
B. Bluetooth Low Ethernet
C. Bluetooth Law Energy
D. None of these.

(11) Among the various wireless options for wearable devices, which one needs to connect to a smart phone and is the most popular?

A. Bluetooth
B. WiFi
C. RFID
D. None of the above

(12) Which of the following is not an application of IoT?

A. Wearables
B. Smart Grid
C. Arduino
D. Smart City

Q.2 **Attempt any eight of the following.** **(16)**

(1) What is IOT? Explain how IOT works?
(2) Explain vulnerability and Threats in IOT Solutions.
(3) Define Sensor, Actuators and Embedded System with suitable examples.
(4) Explain Arduino and Raspberry Pi.
(5) Explain Message Queuing Telemetry Transport (MQTT) protocol.
(6) Explain IOT Cloud service models.
(7) Explain Data management system for IOT.
(8) Explain role of IOT in smart city parking apps.
(9) Explain Wearable Electronics IOT.
(10) Explain Smoke/Gas detection IOT based apps.

Q. 3 Draw and Explain IOT Architecture in detail. **(08)**

OR

Q.3 Write a note on IOT Application Fields. **(08)**

Q. 4 List and Explain different types of IOT Sensors in detail. **(08)**

OR

Q. 4 Write a note on Embedded System and its role in IOT. **(08)**

Q. 5 Write a note on IOT Communication Protocols. **(08)**

OR

Q. 5 Write a note on wearable IOT Networks. **(08)**

Q. 6 Write a note on any domain specific IOT application in detail. **(08)**

OR

Q. 6 Write a note on Smart appliances IOT apps in detail. **(08)**

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Seat No. _____ Enrollment No. _____

THE CHARUTAR VIDYA MANDAL UNIVERSITY

M.Sc. (INFORMATION TECHNOLOGY) – SEMESTER 2

SUMMER (REGULAR) 2022 EXAMINATION

Course Title: APPLICATION DEVELOPMENT USING ADVANCED .NET

Course Code: 101410212

Total Printed Pages : 02

Date: 06/05/2022 **Time: 10:30 am to 12:30 pm** **Maximum Marks: 60**

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.** **(12)**

(1) When a User's Session times out which event should you respond to?

A. Application_Start B. Session_End
C. Session_Start D. Application_End

(2) What are the client-side state management options that ASP.NET supports?

A. Application B. Session
C. Query String D. A and B are correct

(3) AJAX is abbreviated as _____

A. Asynchronous JavaScript B. Anonymous JavaScript an
C. Asynchronous JavaScript and XML D. None of these

(4) The advantages of AJAX is_____

A. Bandwidth Utilization B. More Interactive
C. Speeder retrieval of data D. All of these

(5) The Razore View Engine uses to render server side content.

A. @ B. $
C. Both A and B D. None of these

(6) How to print value from Controller to View in MVC?

A. ViewBag.Name = "my firstname"; and in view @ViewBag.Name
B. ViewBag.Name = "my firstname"; and in view ViewBag.Name
C. ViewBag.Name = "my firstname"; and in view @ViewBag.Title
D. None of these

(7) ASP.NET Core is an _____ framework.

A. Licensed B. Open Sourced
C. Obsolete D. UI

(8) Which of the following is an entry point of ASP.NET Core application?

A. Main method of Program class
B. Configure method of Startup class
C. ConfigureService method of Startup class
D. Application_start method of Global.asax

(9) The _____method in Startup class is used to registering services with IoC container.

A. ConfigureService
B. Configure
C. Main
D. All of the above

(10) AngularJS is perfect for?

A. SPA
B. MPA
C. DPA
D. ZPA

(11) Which directive binds application data to the HTML view?

A. ng-app
B. ng-model
C. ng-bind
D. ng-init

(12) Which of the following is an advantage of AngularJS?

A. AngularJS code is unit testable.
B. AngularJS provides reusable components.
C. AngularJS uses dependency injection and makes use of separation of concerns.
D. All of the above

Q.2 **Attempt any eight of the following.** **(16)**

(1) What is ASP.NET? List and Explain Advantages of ASP.NET
(2) What is the concept of Globalization and Localization in .NET?
(3) Explain ASP.NET MVC folder structure.
(4) List and explain Action Selectors in MVC.
(5) Explain TempData, ViewBag and ViewData in ASP.NET MVC.
(6) What are OAuth2 and OpenID Connect in ASP.NET Core?
(7) Write a note on Multiple Environments in ASP.NET Core.
(8) What is AngularJS? Explain Two Way Data Binding in AngularJS.
(9) Explain AngularJS Directives.
(10) Explain Pipes in AngularJS.

Q. 3 Write a detail note on ASP.NET State Management. **(08)**

OR

Q.3 What is AJAX? Explain any one control of AJAX control toolkit. **(08)**

Q. 4 Write a snippet code for full CRUD operation in ASP.NET MVC. **(08)**

OR

Q. 4 Explain Routing in MVC. Also define Route, URL Pattern and Route constraints. **(08)**

Q. 5 Write a note on AngularJS MVC Architecture & Components. **(08)**

OR

Q. 5 What is NoSQL? Explain detail note on NOSQL Database Types. **(08)**

Q. 6 What is AJAX? Explain SPA in AngularJS. **(08)**

OR

Q. 6 What is AngularJS Services? Explain Types of services in AngularJS. **(08)**

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Seat No. _____ Enrollment No. _____

THE CHARUTAR VIDYA MANDAL UNIVERSITY

M.Sc. (Information Technology)– SEMESTER II

SUMMER 2022 EXAMINATION

Course Title: Data Science Using Python and R

Course Code: 101410213

Total Printed Pages : 03

Date: 07/05/2022 **Time: 10.30 am to 12.30 pm** **Maximum Marks: 60**

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. **(12)**

(1) Which of the following is one of the key data science skills?

(A) Statistics (C) Machine Learning

(B) Data Visualization (D) All of the mentioned

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

(A) Java (C) Ruby

(B) R (D) None of these

(3) To create sequences of numbers, NumPy provides a function _____ analogous to range that returns arrays instead of lists.?

(A) arange (C) aline

(B) aspace (D) all of the mentioned

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

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

(A) str and int (C) int and int

(B) str and str (D) int and str

(5) Which of the following is not a core data type in Python programming?

(A) Tuples (C) Class

(B) Lists (D) Dictionary

(6) Identify the type of learning in which labeled training data is used.?

(A) Semi unsupervised learning (C) Reinforcement learning

(B) Supervised learning (D) Unsupervised learning

(7) R is an _____programming language?

(A) Closed source (C) Open source

(B) GPL (D) Definite source

(8) _____ function is used to watch for all available packages in library.?

(A) lib()
(B) libr()
(C) fun.lib()
(D) library()

(9) In the expression x <- 4 in R, what is the class of 'x' as determined by the `class()' function?

(A)Character
(B) Integer
(C)Numeric
(D) Word

(10) What will be the output of the following R code?

```
> x <- 1:4
> y <- 6:9
> z <- x + y
> z
```

(A) 7 9 11 13
(B) 9 7 11 13
(C) 7 13
(D) NULL

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

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

(12) The ——— function creates a 2-D array with all values 1.

(A) numpy. ones()
(B) numpy.zeros()
(C) numpy.eye()
(D) numpy.empty()

Q.2 Attempt **any eight** of the following. **(16)**

(1) Write down the difference between Business Intelligence and Data Science.

(2) Explain Data Science Components.

(3) Write down Comparison between R and Python.

(4) Difference between copy and view in numpy array using examples.

(5) Draw a line in a diagram from position (1,3) to (2,8) then to (6,1) and finally to position (8,10).

(6) How can we create the string in Python, explain using example?

(7) Write a short note on R pie chart.

(8) Explain any five math functions in R using examples.

(9) What are the two main objectives of the bank marketing analysis, as stated in the problem understanding phase?

(10) Enlist data preparation tasks.

Q. 3	Explain classification of machine learning in brief.	(08)
	OR	
Q. 3	Explain Data Science Methodology using a diagram.	(08)
Q. 4	What is numpy? Write the five advantages of numpy. Briefly explain any five functions of numpy using examples.	(08)
	OR	
Q. 4	Explain List and Tuple data type using with example. Write down difference between List and Tuple.	(08)
Q. 5	Briefly explain R vector in data structure using examples.	(08)
	OR	
Q. 5	Briefly explain array data structure in R programming using examples.	(08)
Q. 6	Briefly explain adding an index field data preparation task in python and R	(08)
	OR	
Q. 6	Briefly explain re-expressing categorical data as numeric data preparation task in Python and R.	(08)

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Seat No. _____ Enrollment No. _____

THE CHARUTAR VIDYA MANDAL UNIVERSITY

M.Sc. (Information Technology)– SEMESTER II

SUMMER 2022 EXAMINATION

Course Title: Digital Image Processing

Course Code: 101410216

Total Printed Pages : 03

Date: 09/05/2022 **Time: 10.30 am to 12.30 pm** **Maximum Marks: 60**

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. **(12)**

(1) What is Digital Image Processing?
(A)It's an application that alters digital videos
(B)It's a software that allows altering digital pictures
(C)It's a system that manipulates digital medias
(D)It's a machine that allows altering digital images

(2) An image is considered to be a function of **a(x,y),** where **a** represents?
(A) Height of image (C) Amplitude of image
(B) Width of image (D) Resolution of image

(3) Which of the following is the application of Histogram Equalisation?
(A) Blurring (C) Contrast adjustment
(B) Image enhancement (D) None of the Mentioned

(4) If f(x,y) is an image function of two variables, then the first order derivative of a one dimensional function, f(x) is:
(A) f(x+1)-f(x) (C) f(x-1)-f(x+1)
(B) f(x)-f(x+1) (D) f(x)+f(x-1)

(5) Median filters belong to which category of filter?
(A)Frequency Domain Filter (C) Order Static Filter
(B)Linear Spatial Filter (D) Sharpening Filter

(6) Which of the following is the abbreviation of JPEG?
(A) Joint Photographic Experts Group
(B) Joint Photographs Expansion Group
(C) Joint Photographic Expanded Group
(D) Joint Photographic Expansion Group

(7) PDF in image processing is called_____
(A) probability degraded function
(B) probability density function
(C)probabilistic degraded function
(D) probabilistic density function

(8) Which of the following step deals with tools for extracting image components those are useful in the representation and description of shape?
(A) Segmentation
(B) Compression
(C) Representation & description
(D) Morphological processing

(9) Principle sources of noise arise during image _____
(A) destruction
(B) degradation
(C) restoration
(D)acquisition

(10) Example of discontinuity approach in image segmentation is
(A) edge based segmentation
(B) region based segmentation
(C) boundary based segmentation
(D) Both a and c

(11) Image segmentation is also based on _____
(A) morphology
(B) extraction
(C) set theory
(D) recognition

(12) _____ filter is known as averaging filters.
(A)Bandpass
(B) High pass
(C) Low pass
(D) None of the Mentioned

Q.2 Attempt **any eight** of the following. **(16)**

(1) Explain the concept of sampling and quantization of an image.

(2) Distinguish between a monochrome and a grayscale image.

(3) Mention any four fields that use digital image processing.

(4) Compute the median value of the marked pixel shown in fig. using a 3*3 mask.

$$\begin{bmatrix} 1 & 5 & 7 \\ 2 & \boxed{4} & 6 \\ 3 & 2 & 1 \end{bmatrix}$$

(5) What is the difference between spatial domain and frequency domain?

(6) What is the difference between image restoration and image enhancement?

(7) Write a short note on Degradation model.

(8) Write a short note on Erosion.

(9) Enlist Image Segmentation Techniques.

(10) Write a short note on Morphological Image processing.

Q. 3 What is digital image? Explain Fundamental steps in Digital Image Processing. **(08)**

OR

Q. 3 Draw and explain structure of human eye and discuss human vision System. **(08)**

Q. 4 Given below are two histograms (i) and (ii),modify the histogram (i) as given by histogram(ii). **(08)**

(i)

Gray level(rk)	0	1	2	3	4	5	6	7
No. of pixels(nk)	80	100	90	60	30	20	10	0

(ii)

Gray level(rk)	0	1	2	3	4	5	6	7
No. of pixels(nk)	0	0	0	60	80	100	80	70

OR

Q. 4 Explain Histogram Processing techniques in brief. **(08)**

Q. 5 What is the noise model? Enlist type of models. Explain all of them. **(08)**

OR

Q. 5 Explain Mean Filters, Order Statistics Filters, and Adaptive Filters in brief. **(08)**

Q. 6 Briefly discuss Edge based segmentation. **(08)**

OR

Q. 6 Briefly discuss Region based Segmentation. **(08)**

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