

Printed Pages: 02

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech (CSE/ CCV/ DA/ CSF/ IoT), IIIrd Year, Vth Semester

BCSC 0007: Introduction to Microprocessors

Time: 2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

3 x 2 = 6 Marks

- I. Which two microprocessor pins are used for request and acknowledge a DMA data transfer?
- II. What is the difference between ADD M and ADC B instruction?
- III. What is the necessity to have two status pins S1 and S0 in 8085 Microprocessor?

Section- B

Note: Attempt All Three Questions.

3 x 3 = 9 Marks

- I. Draw the pin diagram with all signals of 8085 Microprocessor.
- II. Draw and explain flag register of 8085 Microprocessor. What will be the value of all flags of 8085 after performing addition between FF and 0F hexadecimal data?
- III. Write an assembly language program to exchange the contents of two different memory locations.

Section - C

Note: Attempt Any Three Questions.

3 x 5 = 15 Marks

- I. Draw the architecture of 8085 Microprocessor.
- II. Explain the function of following instructions.
 - (a) LHLD 2000H
 - (b) LDAX B
 - (c) XCHG
 - (d) DAD D
 - (e) INX B
- III. Explain all the types of addressing modes of 8085 microprocessor. Also give suitable examples of each addressing mode.
- IV. Explain the function of following pins:
 - (a) ALE
 - (b) Ready
 - (c) CLK Out
 - (d) TRAP
 - (e) Reset OUT

Printed Pages: 15

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech. - CS & ECE, III - Year, V - Semester

BCSE - 0904: Machine Learning FOR IIOT

Time: 1 Hour

Maximum Marks: 30

Note: Attempt All Questions.

$60 \times 0.5 = 30$ Marks

Q1- Data Analysis is a process of

- a) inspecting data
- b) cleaning data
- c) transforming data
- d) All of Above

Q2- Which of the following is not a major data analysis approach?

- a) Data Mining
- b) Predictive Intelligence
- c) Business Intelligence
- d) Text Analytics

Q3- The Process of describing the data that is huge and complex to store and process is known as

- a) Analytics
- b) Data Mining
- c) Big Data
- d) Data Warehousing

Q4- How many main statistical methodologies are used in data analysis?

- a) 3
- b) 2

- c) 1
- d) 4

Q5- In descriptive statistics, data from the entire population or a sample is summarized with?

- a) Integer Descriptor
- b) Floating descriptor
- c) Numerical descriptor
- d) Decimal descriptor

Q6- _____ have a structure but cannot be stored in a database.

- a) Structured
- b) Unstructured
- c) Semi Structured
- d) None of These

Q7- Which of the following is a data visualization method

- a) Line
- b) Pentagon
- c) Circle and Triangle
- d) Pie Chart and Bar chart

Q8- In which scale of measurement, classification, order and equality of units are ensured?

- a) Ordinal
- b) Nominal
- c) Interval
- d) Ratio

Q9- A university teacher administers a self-made test for the summative evaluation of his/her students. The distribution of scores of students is found to be positively skewed. What inference he/she should make about the difficulty level of this test?

- a) The test is much too easy for students
- b) The test is difficult for students
- c) C)The test is quite interesting
- d) The test is favoring those students who have low ranks

Q10- NumPY stands for?

- a) Numbering Python
- b) Number in Python
- c) Numerical Python
- d) None of the above

Q11- NumPy is often used along with packages like?

- a) Node.js
- b) Matplotlib
- c) SciPy
- d) Both B and C

Q12- The most important object defined in NumPy is an N-dimensional array type called?

- a) Ndarray
- b) narray
- c) nd_array
- d) darray

Q13- What will be output for the following code?

```
import numpy as np  
a = np.array([1,2,3])  
print a
```

- a) [[1, 2, 3]]
- b) [1]

c) [1, 2, 3]

d) Error

Q14- What will be output for the following code?

```
import numpy as np
```

```
a = np.array([1, 2, 3], dtype = complex)
```

```
print a
```

a) [[1.+0.j, 2.+0.j, 3.+0.j]]

b) [1.+0.j]

c) Error

d) [1.+0.j, 2.+0.j, 3.+0.j]

Q15- If a dimension is given as ____ in a reshaping operation, the other dimensions are automatically calculated.

a) Zero

b) One

c) Negative One

d) Infinite

Q16- What will be output for the following code?

```
import numpy as np
```

```
dt = dt = np.dtype('i4')
```

```
print dt
```

a) int32

b) int64

c) int128

d) int16

Q17- Which of the following Numpy operation are correct?

- a) Mathematical and logical operations on arrays.
- b) Fourier transforms and routines for shape manipulation.
- c) Operations related to linear algebra.
- d) All of the above

Q18- The basic ndarray is created using?

- a) numpy.array(object, dtype = None, copy = True, subok = False, ndmin = 0)
- b) numpy.array(object, dtype = None, copy = True, order = None, subok = False, ndmin = 0)
- c) numpy_array(object, dtype = None, copy = True, order = None, subok = False, ndmin = 0)
- d) numpy.array(object, dtype = None, copy = True, order = None, ndmin = 0)

Q19- Which of the following thing can be data in Pandas?

- a) a python dict
- b) an ndarray
- c) a scalar value
- d) all of the mentioned

Q20- Point out the correct statement.

- a) If data is a list, if index is passed the values in data corresponding to the labels in the index will be pulled out
- b) NaN is the standard missing data marker used in pandas
- c) Series acts very similarly to an array
- d) None of the mentioned

Q21- Series is a one-dimensional labeled array capable of holding any data type.

- a) True
- b) False

- c) Maybe
- d) None of above

Q22- Which of the following statement will import pandas?

- a) import pandas as pd
- b) import panda as py
- c) import pandaspy as pd
- d) all of the mentioned

Q23- Which of the following object you get after reading CSV file?

- a) Data Frame
- b) Character Vector
- c) Panel
- d) All of the mentioned

Q24- The plot method on Series and Data Frame is just a simple wrapper around _____

- a) gplt.plot()
- b) plt.plot()
- c) plt.plotgraph()
- d) none of the mentioned

Q25- Point out the correct combination with regards to kind keyword for graph plotting.

- a) 'hist' for histogram
- b) 'box' for boxplot
- c) 'area' for area plots
- d) all of the mentioned

Q26- Which of the following value is provided by kind keyword for barplot?

- a) bar
- b) kde

- c) hexbin
- d) none of the mentioned

Q27- You can create a scatter plot matrix using the _____ method in pandas.tools.plotting.

- a) sca_matrix
- b) scatter_matrix
- c) DataFrame.plot
- d) all of the mentioned

Q28- Which of the following plots are used to check if a data set or time series is random?

- a) Lag
- b) Random
- c) Lead
- d) none of above

Q29- With reference to the code, what will be the color of the last point?

```
import matplotlib.pyplot as plt  
#arr1, arr2 defined here  
colors = ['r', 'b', 'K', 'g', 'm']  
sizes = [50, 120, 220, 150, 80]  
plt.scatter(arr1, arr2, c = colors, s = sizes, marker = "s")
```

- a) Red
- b) Blue
- c) Black
- d) Magenta

Q30- Which of the following is not a valid chart type?

- a) histogram
- b) statistical

- c) Pie
- d) Box

Q31- Pandas follow the NumPy convention of raising an error when you try to convert something to a bool.

- a) True
- b) False

Q32- Which of the following Numpy operation are correct?

- a) Mathematical and logical operations on arrays.
- b) Fourier transforms and routines for shape manipulation.
- c) Operations related to linear algebra.
- d) All of the above

Q33- Which of the following is correct Features of DataFrame?

- a) Potentially columns are of different types
- b) Can Perform Arithmetic operations on rows and column.
- c) Labeled axes (rows and columns)
- d) All of the above

Q34- What will be output for the following code?

```
import pandas as pd  
import numpy as np  
s = pd.Series(np.random.randn(4))  
print s.ndim
```

- a) 0
- b) 1
- c) 2
- d) 3

Q35- Which of the following signs are used to indicate repetition?

- a) #
- b) *
- c) -
- d) All of the mentioned

Q36- Study the following program:

```
x = ['xy', 'yz']
for i in a:
    i.upper()
print(a)
```

Which of the following is correct output of this program?

- a) ['xy', 'yz']
- b) ['XY', 'YZ']
- c) [None, None]
- d) None of these

Q37- Study the following program:

```
i = 1:
while True:
    if i%3 == 0:
        break
    print(i)
```

Which of the following is the correct output of this program?

- a) 1 2 3
- b) 3 2 1
- c) 1 2
- d) Invalid syntax

Q38- Study the following program:

```
i = 0
while i < 5:
    print(i)
    i += 1
    if i == 3:
        break
else:
    print(0)
```

What will be the output of this statement?

- a) 1 2 3
- b) 0 1 2 3
- c) 0 1 2
- d) 3 2 1

Q39- Study the following program:

```
x = 'pqrs'
for i in range(len(x)):
    x[i].upper()
    print(x)
```

Which of the following is the correct output of this program?

- a) PQRS
- b) pqrs
- c) qrs
- d) None of these

Q40- Which of the following option is not a core data type in the python language?

- a) Dictionary
- b) Lists
- c) Class

d) All of the above

Q41- Which of these is not a core data type?

- a) Lists
- b) Dictionary
- c) Tuples
- d) Class

Q42- Which keyword is used for function in Python?

- a) Fun
- b) Define
- c) Def
- d) Function

Q43- What will be the output of the following Python code?

```
1.def printMax(a, b):  
2.    if a > b:  
3.        print(a, 'is maximum')  
4.    elif a == b:  
5.        print(a, 'is equal to', b)  
6.    else:  
7.        print(b, 'is maximum')  
8.printMax(3, 4)
```

- a) 3
- b) 4
- c) 4 is maximum
- d) None of the mentioned

Q44- To create sequences of numbers, NumPy provides a function _____ analogous to range that returns arrays instead of lists.

- a) arange
- b) aspace
- c) aline
- d) all of the mentioned

Q45- Point out the correct statement.

- a) NumPy main object is the homogeneous multidimensional array
- b) In Numpy, dimensions are called axes
- c) Numpy array class is called ndarray
- d) All of the mentioned

Q46- Which of the following function stacks 1D arrays as columns into a 2D array?

- a) row_stack
- b) column_stack
- c) com_stack
- d) all of the mentioned

Q47- Which of the following returns an array of ones with the same shape and type as a given array?

- a) All_like
- b) Ones_like
- c) One_alike
- d) All of the mentioned

Q48- Which of the following set the floating-point error callback function or log object?

- a) setter
- b) settercall
- c) setterstack
- d) all of above

Q49- Which of the following is used for machine learning in python?

- a) scikit-learn
- b) seaborn-learn
- c) stats-learn
- d) none of the mentioned

Q50- The _____ project builds on top of pandas and matplotlib to provide easy plotting of data.

- a) yhat
- b) Seaborn
- c) pycharm
- d) pysigal

Q51- Which of the following is prominent python “statistics and econometrics library”?

- a) Bokeh
- b) seaborn
- c) Statsmodels
- d) None of above

Q52- Which of the following input can be accepted by DataFrame?

- a) Structured ndarray
- b) Series
- c) DataFrame
- d) All of the mentioned

Q53- Which of the following takes a dict of dicts or a dict of array-like sequences and returns a DataFrame?

- a) DataFrame.from_items
- b) DataFrame.from_records
- c) DataFrame.from_dict

- d) All of the mentioned

Q54- Where is function defined?

- a) Module
- b) Class
- c) Another function
- d) All of above

Q55- Which of the following is the use of id() function in python?

- a) Id returns the identity of the object
- b) Every object doesn't have a unique id
- c) All of the mentioned
- d) None of the mentioned

Q56- Which of the following refers to mathematical function?

- a) sqrt
- b) rhombus
- c) add
- d) rhombus

Q57- What will be the output of the following Python code?

```
1. def cube(x):  
2.     return x * x * x  
3. x = cube(3)  
4. print x
```

- a) 9
- b) 3
- c) 27
- d) 30

Q58- Python supports the creation of anonymous functions at runtime, using a construct called _____

- a) lambda
- b) pi
- c) anonymous
- d) none of the above

Q59- What will be the output of the following Python code?

```
1.y = 6  
2.z = lambda x: x * y  
3.print z(8)
```

- a) 48
- b) 14
- c) 64
- d) none

Q60- What will be the output of the following Python code?

```
1.def writer():  
2. title = 'Sir'  
3. name = (lambda x:title + ' ' + x)  
4. return name  
5. who = writer()  
6.who('DON')  
  
a) DON sir  
b) sir DON  
c) DON  
d) None
```

Printed Pages: 02

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech (CSE), Year III/ IV, Semester V/ VII

BCSE 0105: Machine Learning

Time: 2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

- (I) State the types of Machine Learning.
- (II) State the difference supervised learning and unsupervised learning.
- (III) What's the difference between Type I and Type II error?
Differentiate it with the help of an example.

Section- B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

- (I) Define the terms Hypothesis space. Illustrate with an example.
- (II) Given the confusion matrix, find: Classification Accuracy, Recall, Precision, F-measure.

		Predicted		N=165
		yes	no	
Actual	yes	100	5	105
	no	10	50	60
		110	55	

- (III) Differentiate between Traditional Programming and Machine Learning. Briefly explain with one example each.

Section – C

Note: Attempt Any Three Questions.

3 x 5 = 15 Marks

- (I) With respect to following sample space for events A and B

A holds	T	T	F	F	F	F	T
B holds	T	F	T	F	T	F	F

We have $P(A)=4/7$, $P(B)=3/7$, $P(B/A) = 2/4$, $P(A/B) = 2/3$

Verify the correctness of Bayes' Theorem.

- (II) It is estimated that 50% of emails are spam emails. Some software has been applied to filter these spam emails before they reach your inbox. A certain brand of software claims that it can detect 99% of spam emails, and the probability for a false positive (a non-spam email detected as spam) is 5%.

Now if an email is detected as spam, then what is the probability that it is in fact a non-spam email?

- (III) The values of independent variable x and dependent value y are given below:

x	1	2	3	4	5	6	7
y	9	8	10	12	11	13	14

Find the least square regression line $y=ax+b$. Estimate the value of y when x is 9.

- (IV) Using the following equation for classifier;

$$0.5X_1+0.5X_2 \geq 0 \text{ (Class A)}$$

$$0.5X_1+0.5X_2 < 0 \text{ (Class B)}$$

Classify the test data $X_1=1$ and $X_2=-2$, $X_1=-2$ and $X_2=1$

Printed Pages: 2

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech (CSE), 3rd Year, Vth Semester

Introduction to Big Data Analytics

BCSE-0157

Time :2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions:

$3 \times 2 = 6$ Marks

Q1. What are the sources of Big Data? And also explain difference between small Data and Big Data.

Q2. Explain IBM's Definition of Big Data and also explain difference between RDBMS and Big Data.

Q3. What is min/max block size in Hadoop File System? Discuss Big Data need in IT Industry with suitable example?

Section- B

Note: Attempt All Three Questions

$3 \times 3 = 9$ Marks

Q1. What do you mean by schema and also explain What Jaccard Similarity Explain it with any example?

Q2. Discuss various Types of Digital Data and also explain challenges of unstructured data from various perspectives such as storage and processing...Etc.

Q3.What do you understand by Scalability? Compare various types of scalability from operational and costing perspectives.

Section - C

$3 \times 5 = 15$ Marks

Note: Attempt Any Three Questions.

Q1. Draw Diagram of CAP theorem and also discuss its all features.

Q2.Explain various types of Analytics with suitable example.

Q3.Compare Traditional BI and Big Data environment and also discuss that "Can ever Big Data replace RDBMS"?

Q4. Write Short Note on any three of the followings.

- a) In Memory Analytics
- b) Shared Nothing Architecture
- c) Symmetric Multiprocessor System (SMP)

Mid Term Examination, 2021-22

Course: B.Tech.(CSE) Year: III Semester: V
Cloud Computing (BCSE 0207)

Uni. Roll No:

Time: 2 Hrs.

Total Marks: 30

Section A

Note: Attempt All Questions

(3x2=6)

- I. What are the different billing options available with end users while using services of public cloud? Can community cloud be formed using public cloud? Justify.
- II. Based on Total Cost of Ownership and Return on Investment, out of public and private cloud which will be more economical to end user. Elaborate your answer.
- III. Four different companies provide Storage as a Service capability:
 - Company A stores user data in its primary data center in New York and replicates the data to a backup data center also in New York.
 - Company B stores user data in its primary data center in Chicago and replicates it to a data center in Atlanta.
 - Company C stores user data in its primary data center in Los Angeles and stores replicas in the same data center.
 - Company D stores user data in its primary data center in St Louis and does not replicate the data.

Which company is likely to provide the highest availability?
Justify your answer.

Section B

Note: Attempt All Questions

(3x3=9)

- I. Differentiate between
 - a. Type I and Type II Hypervisors
 - b. Cluster Computing and Grid Computing

- II. Discuss the Hypervisor reference architecture. Compare cloud computing with traditional computing.
- III. What are the factors that lead to the growth of cloud computing? An enterprise needs highly controlled storage and access to their databases as well as managing the infrastructure for web front ends and other applications. They have a large existing IT infrastructure and they are continually expanding the capabilities. Which cloud computing model will satisfy all their current needs and enable them to reduce cost?

Section C

Note: Attempt Any Three Questions

(3x5=15)

- I. Define Hypervisor. How Hypervisors are different from Virtual Machine? Specify the key components of VM infrastructure?
- II. What is the usage of virtualization platform in implementing cloud? How resource virtualization can help an organization to reduce the cost?
- III. Discuss the three layers of cloud deployment model. What does each layer provide to the user? Discuss full virtualization, para virtualization, and partial virtualization.
- IV. Compare the cost of Scaling the Hardware in traditional and cloud? Which one is more beneficial and why?

Printed Pages: 2

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

Program B.Tech CSE(AIML), Year: III, Semester: 5th

Subject Code (BCSE0703): Fundamental of Data Mining and
Predictive Modeling

Time :2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

1. What do you mean by logistic regression?
2. What is data mining?
3. What is the importance of deep learning in data mining?

Section- B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

1. What is supervise learning? Explain with an appropriate example.
2. What do you mean by classification problem? What are different machine learning algorithms that can solve the classification problems.
3. What are different data cleaning techniques are there? Explain detail on one of these techniques.

Section - C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

1. What are five different steps in Data Mining to analysis a given data set.

2. What is knowledge-based system? Explain basic elements of KBS in detail.
3. What is skewness and Kurtosis? How these two elements play an important role in feature extraction of any dataset.
4. What is gradient descent algorithm? Explain the working principle details with an appropriate example.

Printed Pages: 02

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

Programme: B-Tech

Branch: CCV

Year: III

Cloud Computing Architecture & Deployment Models, BCSE 0503

Time: 2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

- I.** Any request you made to a server over internet is transferred in plain text form. Suggest a networking technique that provides more security and also help in hide your identity. Compare the suggested technique with network proxy.
- II.** Suppose your Organization prefers to deal with a cloud vendor that has implemented certain standard for quite a while. It will provide you with greater confidence in doing business with them. Suggest some standards for effective delivery of services that an organization expects from a provider.
- III.** What are the different security standards that need to be considered for data on the fly?

Section- B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

- I.** What kind of support does IBM Smart Cloud Entry provides to various cloud implementations? Also, discuss all the components of vCloud Director Architecture.
- II.** Define Cloud Bursting? Also, what are the different solutions provided by hybrid cloud to avoid the problem of vendor lock-in?
- III.** Explain anatomy of cloud with the help of example.

Section – C

Note: Attempt Any Three Questions.

3 x 5 = 15 Marks

- I. Based on Cloud Computing Reference Architecture Model, differentiate between NIST reference model and IBM CC RA.
- II. Suggest some KPI to quantify the performance of SLA. What should be the key components that need to be cover within the SLA, between an IaaS provider and customer?
- III. Explain XaaS. Also, explain at least five different types of services that fall in the category of XaaS?
- IV. A Newspaper agency wants to move its archive and current database to cloud. The company has limited infrastructure but high storage capacity. The company wants that its users are able to read both archive and current news on the go. The datasets the company are unsorted. Suggest the cloud deployment and service model for the agency. What problems can be encountered while deploying agency infrastructure and data set on to the cloud?

Printed Pages: 02

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

Programme: B-Tech

Branch: CSF

Year: III

Cloud Architecture & Deployment Models, BCSE 0604

Time: 2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

- I. Any request you made to a server over internet is transferred in plain text form. Suggest a networking technique that provides more security and also help in hide your identity. Compare the suggested technique with network proxy.
- II. Compare desktop virtualization with the application virtualization.
- III. Explain different types of Cloud deployment models with the help of examples.

Section- B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

- I. Explain the differences between cloud & virtualization. Also, explain the fields where cloud and virtualization overlap.
- II. Explain different types of hypervisor with the help of examples.
- III. Define Cloud Bursting? Also, what are the different solutions provided by hybrid cloud to avoid the problem of vendor lock-in?

Section – C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

- I. Explain Operating system level virtualization. Also, compare virtualization with containerization.

- II.** Compare full virtualization with para virtualization? Also, compare hardware assisted virtualization with software assisted virtualization.
- III.** Explain XaaS. Also, explain at least five different types of services that fall in the category of XaaS?
- IV.** Explain with the help of example, how cloud computing is related to client server model, cluster computing, grid computing and utility computing?

Printed Pages: 2

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

Program B.Tech CSE(DA), Year: III, Semester: 5th

Subject Code (BCSE0553): Data Mining and Predictive Modeling

Time :2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

1. What is the importance of deep learning in data mining?
2. What do you mean by logistic regression?
3. What is data mining?

Section- B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

1. What are different data cleaning techniques are there? Explain detail on one of these techniques.
2. What do you mean by classification problem? What are different machine learning algorithms that can solve the classification problems.
3. What is supervise learning? Explain with an appropriate example.

Section – C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

1. What is skewness and Kurtosis? How these two elements play an important role in feature extraction of any dataset.
2. (ii) What is knowledge-based system? Explain basic elements of KBS in detail.

3. What are five different steps in Data Mining to analysis a given data set.
4. What is gradient descent algorithm? Explain the working principle details with an appropriate example.

Printed Pages:01

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech, III Year, V Sem.

BCSE0653: Descriptive analytics for IoT

Time :2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

- Q1. Why Analytics is important today?
- Q2. Enlist all the types of analytics?
- Q3. Define BI?

Section- B

Note: Attempt All Three Questions. $3 \times 3 = 9$ Marks

- Q1. Explain about predictive analytics in detail?
- Q2. Why DSS is important for any business organization?
- Q3. Enlist application area of data analytics for IoT? Describe any one with proper example.

Section – C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

- Q1. Explain about the functional areas of BI tool in detail?
- Q2. Which are the important components of BI architecture? What is a collaborative BI? Explain with example.
- Q3. Explain the sequence of activities for preparing a project plan?
- Q4. How IoT Device help in any organization? Explain with example.

No. of Printed Pages: 02 University Roll No.....

Mid - Term Examination, Even Semester 2021-22

B. Tech (CSE), 3rd Year, 5th Semester

BCSC0011: Theory of Automata & Formal Languages

Time: 2 Hours

Maximum Marks: 30

Section-A

Attempt All Three Questions.

[3 x 2 = 6]

1. Draw a deterministic finite automaton (DFA) that recognizes the language over the alphabet {0, 1} consisting of all those strings that contain an odd number of 1's.
2. Find all strings in $L((a + b)^*b(a + ab)^*)$ of length less than four.
3. Draw a NFA for the language $L = \{ w \in \Sigma^* \mid w \text{ contains the substring } 0101, \text{ i.e., } w = x0101y \text{ for some } x, y \in \Sigma^* \}$

Section-B

Attempt All Three Questions.

[3 x 3 = 9]

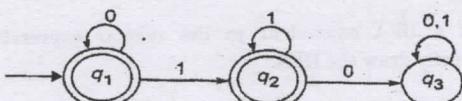
4. Construct a DFA for the set of strings over {a, b} containing both ab and ba as substrings.
5. Construct a **Moore machine** that takes binary numbers as input and produces residue modulo '3' as output.
6. Let $\Sigma = \{a, b\}$. For each of the following languages over Σ , find a RE representing it.
 - a. All string that contain exactly one b
 - b. $L = \{w \mid w \text{ contains at least three consecutive 1s}\}$
 - c. All strings that contain either sub-string aaa or bbb.

Section - C

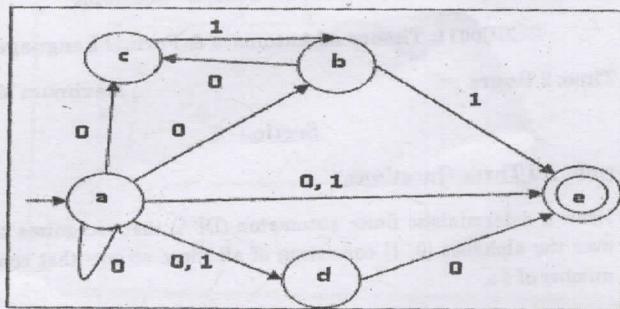
Note: Attempt Any Three Questions.

[3 x 5 = 15]

7. Apply Arden's theorem to find the Regular Expression corresponding to the following FA



8. Convert the following Non Deterministic Finite Automaton into an equivalent deterministic automaton M. Clearly mention all the 5 tuples of M and draw the complete transition graph.



9. Minimize the DFA whose transition table is given below. Draw the transition graph for the minimized DFA.

Present State	Next State	
	a	b
$\rightarrow q_0$	q_1	q_5
q_1	q_6	q_2
q_2 (Final state)	q_0	q_2
q_3	q_2	q_6
q_4	q_7	q_5
q_5	q_2	q_6
q_6	q_6	q_4
q_7	q_6	q_2

10. Attempt both of the following.

[2.5 + 2.5 = 5]

- a. Consider a language over the alphabet {0, 1} consisting of the strings that meet the following conditions:
- The length of the strings is 6.
 - The last two characters must both be zero. For example, 110000, 001100, and 111100 are all in the language; 000011, 001010, and 111001 are not.

Write a regular expression that defines this language.

- b. Construct a DFA equivalent to the regular expression $a^* (ba^*)^*$.
Note: Directly draw the DFA.

Printed Pages: 2

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech. (CS), 3rd Year, 5th Semester

BCSE0251: Full Stack Using Scripting Technologies

Time : 2 Hours

Maximum Marks: 30

Section - A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

Qus1. What are different ways to implemented CSS in your web page?
Explain each with an example.

Qus2. Explain how lists are created in HTML5. Elaborate with its types
in detail.

Qus3. Explain how Hyperlink can be created. Elaborate it with all its
attributes.

Section - B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

Qus1. What is the importance of Semantic Elements in HTML5? Create
a layout using semantic elements.

Qus2. What is Difference between Git and GitHub. Write Important
Steps to publish a website live on GitHub.

Qus3. Explain Position and Display property of CSS with example.

Section – C

Note: Attempt Any Three Questions.

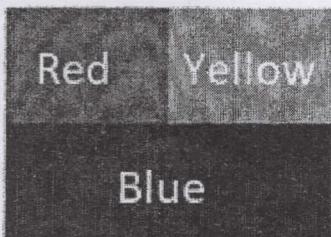
3 x 5= 15 Marks

Qus1. How an animation is created in HTML with the help of CSS.
Create a small animation to explain all its properties.

Qus2. Explain Pseudo class and Pseudo elements available in CSS3.
Explain each with atleast two of its types with example.

Qus3. Write Media Query to Create a responsive website template for
desktop, tablet and mobile screens.

Qus4. Write Code to create below Layout.



Mid-Term Examination, Even Semester 2021-22

B. Tech. (CS), 3rd Year, 5th Semester

BCSE0254: PHP Scripting Language

Time: 2 Hours

Maximum Marks: 3

Section- A

Note: Attempt All Three Questions. $3 \times 2 = 6$ Marks

- Q1. Illustrate the differences between printf() and print() functions.
Q2. What will be the output of the following code? Explain with justification.

```
<?php  
$res=0;  
$res = sprintf(sprintf("%x",printf("PHP examination")));  
echo $res  
?>
```

- Q3. Write a PHP script to delete given element from the array?
`$array_demo = [20, 30, 40, 50, 80];`
You have to delete 40 from the given array.

Section- B

Note: Attempt All Three Questions. $3 \times 3 = 9$ Marks

- Q1. Describe the working and symbol of Spaceship Operator in PHP. Explain With an example.
Q2. Write a short note on foreach() loop .Give an example.
Q3. a) Explain the role of define().
b) What will be the output of following PHP Script. Justify your answer .

```
<?php  
    $m=null;  
    $n="50";  
    if($m??$n)  
    {  
        printf("%o",$m=11);  
    }  
    else{  
        echo $n;  
    } ?>
```

Section - C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

- Q1. Write a PHP script to create chess board in PHP using for loop and HTML table tag.
- Q2. Explain the role of all array operators supported in PHP 7 with suitable examples.
- Q3. a) Write a PHP script to check whether a given number is ADAM number or not.
b) Differentiate between GET and POST.
- Q4 a) Define block and inline elements in details.
b) Design a web page which reads three numbers from user and calculate the greatest among these numbers using switch statement.

Printed Pages: 2

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

Program (B.Tech CSE (AIML), III Year, V Semester

Subject Code: BCSE0704

Subject Name: Computational Linguistics and Natural Language Processing

Time :2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

1. Compute the Jaccard similarity between following two sets :
 $A = \{0, 1, 2, 5, 6\}$ and $B = \{0, 2, 3, 5, 7, 9\}$.

2. Explain N-Gram model with an example and compute the Jaccard similarity using trigram model for following two strings

S1=tight

S2=fight

3. Explain word2Vec model and its need in NLP? Define tf and Idf with an example.

Section- B

Note: Attempt All Three Questions.

$3 \times 3=9$ Marks

1. Compute cosine similarity for vectors A & B

$A = (3, 8, 7, 5, 2, 9)$ $B = (10, 8, 6, 6, 4, 5)$

2. Draw the inverted index that would be built for the following document collection and design the term-document incidence matrix for this document collection.

Doc 1 breakthrough drug for schizophrenia

Doc 2 new schizophrenia drug

Doc 3 new approach for treatment of schizophrenia

Doc 4 new hopes for schizophrenia patients

3. Explain Morpheme, Phoneme and Grapheme with an example

Section - C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

1. Consider the following four documents

D1 : I am Sam.

D2 : Sam I am.

D3 : I do not like green eggs and ham.

D4 : I do not like them, Sam I am.

a) Compute ($k = 1$)-shingles of D1UD2UD3UD4

b) Compute ($k = 4$)-character shingles of D1UD2.

2 Consider a document containing 100 words wherein the word cat appears 3 times. Compute **tf** for this and assume we have 10 million documents and the word cat appears in one thousand of these. Compute **idf** for this. Compute **tf-idf** weight for above. Explain the significance of computing tf-idf.

3. Why is language processing difficult? Discuss any five NLP applications?

4. Information extraction through NLP techniques are essentially heuristics? Explain this with an example. How NLP is different from rest of the computer science?

Printed Pages: 02

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

Program: B.Tech. Branch: CSE-CCV Year: III Semester: V

Subject Code: BCSE0510 Subject Name: Container Orchestration & Infrastructure Automation

Time: 2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

Q.1 How do you create a Docker container from a Docker image?

Q.2 What command should you run to see all running container in Docker?

Q. 3 How do you start, stop, and kill containers?

Section- B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

Q.1 Containers provide an isolated environment for running the application. And write any two commands to pull the image from docker hub.

Q.2 Will the Docker Container's Registries and Repositories be used? Get them differentiated. How to login into docker repository? Differentiate between virtualization and containerization.

Q.3 Give the procedure to build a Dockerfile? And also explain what is it with an appropriate example?

Section – C

Note: Attempt Any Three Questions.

3 x 5 = 15 Marks

Q.1 How many Docker components are there? Explain the architecture for docker components with the proper explanation of each components.

Q.2 Explain Docker Life cycle with the proper diagrammatic presentation along with the explanation of each command.

Q.3 What is the basic idea behind Docker Compose? What can it be used for? Explain in detail. What command do you use to push a new image to the Docker Registry?

Q.4 How you can make your own repository onto Docker Hub and add ten number of files inside any directory of the image of ubuntu. Give the step by step procedure for it.

Printed Pages: 2

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech. CSE (Specialization in CSF), III Year, V Semester

BCSE0603: Information Security Audit & Monitoring

Time : 2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

- I. Which standard is used for credit or debit card processing security, and what is the formal title of the latest version of this standard?
- II. Enlist various global best practices to align the business with information security functions.
- III. Briefly discuss about SOX-IT Control Testing.

Section- B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

- I. Briefly introduce the governance, risk, and compliance framework.
- II. What are the roles and responsibilities of Chief Information Security Officer?
- III. What do you mean by Risk Mitigation? And also discuss how the risk mitigation is achieved.

Section – C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

- I. Elaborate the Information Security Framework in detail. Also discuss the need of this framework for a business organization.
- II. Describe the various global information security standards in brief.
- III. What benefits an organization gain through the Business-Information Security Alignment? Also discuss the limitation and capabilities of new technology in Business-Information Security Alignment.
- IV. Discuss why the risk management is needed and steps taken to perform risk assessment?

Printed Pages: 2

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech (CSE-DA), 3rd Year, Vth Semester

Enterprise Business Intelligence and Data Warehousing
(BCSE0558)

Time :2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

3 x 2 = 6 Marks

Q1. What is difference between Database and Data warehouse?

Q2. Discuss the importance of Business Intelligence in IT Industry and also enlist few technologies used in it.

Q3.Explain few methods to extract data from Semi Structured and Unstructured Data?

Section- B

Note: Attempt All Three Questions.

3 x 3=9 Marks

Q1. "There is a prominent need of creating Data warehouse over database from Business Context" Justify this Statement with appropriate reasoning.

Q2. Draw Detailed BI architecture and also explain its few components.

Q3. Explain dimensional modeling with Fact and Dimension Table with suitable example.

Section – C

Note: Attempt Any Three Questions.

3 x 5 = 15 Marks

Q1. Edward is working in ABC Company and suppose that Edward is performing Business Intelligence activities on daily basis , He received data from many Banks , Now illustrate step by step process to handle this requirement as Radhey has to report to CEO of ABC with all useful Business Insights.

Q2. Differentiate Data Mart and Data Warehouse and also explain any three functional areas of Business Intelligence?

Q3. Draw Star Schema with suitable data set and also enlists advantages and disadvantages of Star Schema.

Q4. Compare Snowflake schema with star schema and also discuss disadvantages of Snowflake schema.

Printed Pages: 2

University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B.Tech (CS-IoT), III Year, V Semester

BCSE 0654: IPV6 ANALYSIS AND APPLICATIONS

Time : 2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

3 x 2 = 6 Marks

Q1. How Does Ipv6 Solve the Problem of Ipv4 Address Exhaustion? Also write the temporary solutions to shift from IPv4.

Q2. Who Created Ipv6 and How Long Has Ipv6 Been Available? Is It New?

Q3. What are the Full Ipv6 Address Represented by Ff02::130f:5 and 0:23::0?

Section- B

Note: Attempt All Three Questions.

3 x 3= 9 Marks

Q1. Show abbreviations for the following addresses:

A: 0000:0000:3456: 0000:0000:0000:0000: FFFF

B: 0000:0001:0000: 0000:0000: FFFF: 1200:0001

C: 0000:0000:0000:0000: FFFF: F0FF:00ED:0000

Q2. What are the purpose of Dual Stack, Tunneling and Fragmentation?

Q3. Can IoT networking drive adoption of IPv6? Explain.

Section – C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

Q1. What do you mean by networking protocols? Mention the OSI model.

Q2. Explain all Other Advantages to Ipv6 Besides Increased Address Space?

Q3. Explain all the extension headers(optional) are available with IPv6 datagram.

Q4. Draw IPv6 header format block diagram and explain each and every field with their sizes.

ALL THE BEST

Printed Pages: University Roll No.....

Mid-Term Examination, Odd Semester 2021-22

B. TECH (CEA). III-YEAR, V-SEMESTER

BCSC 0012: DESIGN & ANALYSIS OF ALGORITHMS

Time: 2 Hours

Maximum Marks: 30

Section- A

Note: Attempt All Three Questions.

$3 \times 2 = 6$ Marks

- I. What do you mean by asymptotic analysis of an algorithm?
Explain different types of asymptotic notations.
- II. What are the properties of a red-black tree?
- III. Define an algorithm. Explain the characteristics of an algorithm.

Section- B

Note: Attempt All Three Questions.

$3 \times 3 = 9$ Marks

- I. Write and explain merge sort algorithm using divide and conquer strategy. Also analyze the complexity.
- II. Explain the differences between BFS and DFS.
- III. Write an algorithm for Insertion sort using a suitable example.

Section - C

Note: Attempt Any Three Questions.

$3 \times 5 = 15$ Marks

- I. Solve the following recurrence equation using Master's method.
 - a) $T(n) = 2T(n/2) + n$
 - b) $T(n) = 16 T(n/4) + n^3$
- II. Write the partition procedure of quick sort and perform quick sort algorithm on the following list $<10, 80, 30, 90, 40, 50, 70>$.
- III. Why Counting sort is known as stable sort, Explain using a suitable example with algorithm.
- IV. Write an algorithm for Heapify using a suitable example.