7E1724

Roll No. _____ Total No. of Pages: 2

7E1724

B. Tech. VII - Sem. (Main) Exam., Feb.- March - 2021
PCC Information Technology
7IT4 – 01 Big Data Analytics

Time: 2 Hours **[To be converted as per scheme]**

Max. Marks: 82

Min. Marks: 29

Instructions to Candidates:

Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 What is Hadoop Distribution File System? [2]

Q.2 Write down the difference between Pseudo distributed mode and Fully distributed mode. [2]

Q.3 What is Pig Script interfaces? [2]

Q.4 What is ABCs of Pig Latin? [2]

Q.5 What is Mapper code? [2]

Q.6 Write down the features of configuring XML files. [2]

Q.7 What is Job Tracker in building blocks of Hadoop? [2]

Q.8 Write down the types of data. [2]

Q.9 What is Google File System? [2]

Q.10 What is the meaning of Hive Clients? [2]

PART – B

(Analytical/Problem solving questions) **[4×8=32]**

Attempt any four questions

Q.1 How the Hive Data Manipulation Language Works? [8]

Q.2 Explain the Application flow of Pig Latin. [8]

Q.3 How can Examining the Hive Clients? Explain it properly. [8]

Q.4 Explain the scripting with Pig Latin with the help of block diagram. [8]

Q.5 How can Creating and Managing Databases and Tables? Explain it. [8]

Q.6 Explain the architecture of Hadoop Distributed File System (HDFS). Explain. [8]

Q.7 How can implementing a Raw Comparator for speed? [8]

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[2×15=30]**

Attempt any two questions

Q.1 Explain the complete building blocks of Hadoop. Draw the block diagram and explain all the blocks separately. Also draw the flow diagram of building blocks of Hadoop. [15]

Q.2 What is Hadoop API? Explain Hadoop API for MapReduce framework (old and new). [15]

Q.3 How can implementation a raw comparator for speed? Explain the flow diagram of this and also write the advantages of this method. [15]

Q.4 Explain the working through the ABCs of Pig Latin. How can check out the Pig Script interfaces? [15]

Q.5 Explain how the Hive is put together also explain the working with Hive Data Types. [15]

7E1721

Roll No. _____ Total No of Pages: 2

7E1721

B. Tech. VII - Sem. (Main) Exam., Feb.- March - 2021
PCC Computer Science & Engineering
7CS4 – 01 Internet of Things

Time: 2 Hours **[To be converted as per scheme]**

Max. Marks: 82

Min. Marks: 29

Instructions to Candidates:

Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 What is wireless sensor network?

Q.2 What is big-data and why we are using big-data in IoT?

Q.3 What is cloud computing?

Q.4 Differentiate between WiFi and WiMax.

Q.5 What is the role of controller service in an IoT system?

Q.6 How do data collection and analysis approaches differ in M2M and IoT?

Q.7 What instruction set architecture is used in Raspberry Pi?

Q.8 How to collect data in structural health monitoring system?

Q.9 What are the architectural constraints of REST?

Q.10 How to monitor Air-Pollution?

PART – B

(Analytical/Problem solving questions) **[4×8=32]**

Attempt any four questions

Q.1 Explain about IoT Communication APIs in detail.

Q.2 Describe functional view specification of IoT design methodology.

Q.3 Describe home automation in domain specific IoT.

Q.4 Explain about interfacing an LED and switch with Raspberry Pi.

Q.5 Differentiate between IoT and M2M.

Q.6 What is IEEE 802.15.4 protocol? How it is related to IoT?

Q.7 What is the difference between sensors and actuators? Explain with an example.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[2×15=30]**

Attempt any two questions

Q.1 What is the function of communication functional block in an IoT system? What are the other components of a complete IoT system? Explain with diagram.

Q.2 What are the different layers of IoT protocols? Explain functions of all the layers.

Q.3 Explain IoT cloud based data collection, storage and computing services.

Q.4 Explain in detail about network function virtualization.

Q.5 Design and implement the functionality of a home intrusion detection IoT system by interfacing a webcam. Implement the function in the controller to capture the image from webcam and send it as an attachment in the email alert when an intrusion is detected.

7E1711

Roll No. _____ Total No of Pages: 2

7E1711

B. Tech. VII - Sem. (Main) Exam., Feb.- March - 2021
OE -I Open Elective-I Agricultural Engineering
7AG6 – 60.2 Environmental Engineering & Disaster Management

Time: 2 Hours **[To be converted as per scheme]**

Max. Marks: 82

Min. Marks: 29

Instructions to Candidates:

Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Define Environmental Engineering.

Q.2 What is disaster management?

Q.3 What is environment?

Q.4 What is water sanitation?

Q.5 List the sources of water supply.

Q.6 Define the pH of drinking water.

Q.7 What is air pollutant?

Q.8 Define smog with an example.

Q.9 What is bio-magnification?

Q.10 Enlist different types of air pollutants.

PART – B

(Analytical/Problem solving questions) **[4×8=32]**

Attempt any four questions

Q.1 Describe the components of environment in short.

Q.2 Write in brief, standards of drinking water.

Q.3 Write down steps /ways to meet the water crisis.

Q.4 What is waste and why does it require management?

Q.5 Write in short the various types of natural, human induced and slow acting disasters.

Q.6 When is the National Disaster Reduction Day celebrated in India and why?

Q.7 Report the state of urban air pollution in India. What is its impact on health, especially on that of children?

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[2×15=30]**

Attempt any two questions

Q.1 Elaborate – scope and importance of Environmental Engineering. Why do we say that any study of the environment becomes an interdisciplinary one?

Q.2 Discuss the requirements for urban and rural water supply system. How does intake and transportation of water affect its quality?

Q.3 How will you measure the quality of drinking water? Why water is a unique source and how much water do we need daily?

Q.4 What is a solid waste? Describe sources of solid waste. Give a detailed account of solid waste management.

Q.5 Explain how do educated people view global warming and climate change. Why do we have so many sceptics? How can we convince them of the urgency of climate change?

7E7051

Roll No. _____ Total No. of Pages: 2

7E7051

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
Information Technology
7IT1A Software Project Management

Time: 2 Hours **[To be converted as per scheme]**

Max. Marks: 48

Min. Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit.** All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) What is W^5HH Principle? Define its importance. [8]

(b) Define a project. What are the different stages of project? [8]

OR

Q.1 (a) Define metrics for software quality & integrating matrics within software process. [8]

(b) What do you mean by organizing a Software Engineering Project? Explain. [8]

UNIT- II

Q.2 (a) What do you mean by Software Scope and Feasibility? Explain. [8]

(b) Explain the Project Planning Process. [8]

OR

Q.2 (a) Describe the Software Project Estimation & the features come under this estimation. [8]

(b) Explain the Empirical Estimation Model. [8]

UNIT- III

Q.3 (a) Describe Project Scheduling & Earned Value Analysis in brief. [8]

(b) Differentiate between Reactive V/S Proactive Risk Strategies. [8]

OR

Q.3 (a) Define Quality Process Planning & Defect Prevention Planning. [8]

(b) What is the use of Task Set and Task Network? Explain with example. [8]

UNIT- IV

Q.4 (a) Explain the architecture of Software Quality Assurance (SQA). [8]

(b) Explain the Software Configuration Management (SCM) process. [8]

OR

Q.4 (a) Describe the Formal Technical Reviews in Quality Management. [8]

(b) Explain the Software Configuration Management & its repository. [8]

UNIT- V

Q.5 (a) What is NAH Syndrome? How can organization overcome from NAH Syndrome? [8]

(b) Explain Project Tracking, Activities Tracking & Defect Tracking. [8]

OR

Q.5 (a) Explain Project Closure Analysis & the role of Closure Analysis. [8]

(b) Explain Risk-Related Monitoring in project monitoring and control. [8]

7E7031

Roll No. _____ Total No. of Pages: 2

7E7031

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
Computer Science & Engineering
7CS1A Cloud Computing

Time: 2 Hours **[To be converted as per scheme]**

Max. Marks: 48

Min. Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit.** All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) What are the advantages of cloud computing over the internet? Explain. [8]

(b) What is ubiquitous computing? Explain the ubiquitous cloud concept also. [8]

OR

Q.1 (a) What is cloud computing? Explain the properties and characteristics of cloud computing. [8]

(b) Explain about various issues and challenges in cloud computing. [8]

UNIT- II

Q.2 (a) Discuss about various cloud services model in detail. [8]

(b) Discuss the features provided by Google App Engine. [8]

OR

Q.2 (a) How does cloud storage work? Explain. [8]

(b) Explain the various layers of cloud computing. [8]

UNIT- III

Q.3 (a) Discuss about virtual cluster in detail. [8]

(b) Explain the benefits of virtualization. [8]

OR

Q.3 (a) Explain the different states of a VM in Xen hypervisor. [8]

(b) Describe the server virtualization and desktop virtualization in detail. [8]

UNIT- IV

Q.4 (a) Describe all the attacks that can be used to disrupt cloud services. [8]

(b) Discuss the need of security in cloud computing environment. [8]

OR

Q.4 (a) Why trust management becomes a very crucial component in cloud computing security? Explain. [8]

(b) What are the legal issues in cloud computing? Explain in detail. [8]

UNIT- V

Q.5 (a) Describe the main characteristics of AWS. [8]

(b) What is Google App Engine? Explain its architecture and major components. [8]

OR

Q.5 (a) Compare Amazon, Azure and Google cloud computing solution features. [8]

(b) What is Aneka? Describe the main characteristics of Aneka. [8]

7E7032

Roll No. _____ Total No of Pages: 2

7E7032

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021

Computer Science & Engineering

7CS2A Information System Security

CS, IT

Time: 2 Hours **Maximum Marks: 48**

Min. Passing Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit.** All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) What is Cryptanalysis? Explain the Substitution and Transposition cryptographic technique. [8]

(b) What are the basic differences between passive and active attack? [8]

OR

Q.1 (a) Explain all block cipher modes of operation with suitable diagram. [8]

(b) Describe the Data Encryption Standard (DES) algorithm in detail. [8]

UNIT- II

Q.2 (a) What is AES? Explain the processing of plain text with suitable diagram. [8]

(b) What do you mean by bent function? Explain. [8]

OR

Q.2 (a) Explain RC6 in detail. [8]

(b) What is S-box? Explain the design criteria in the S-box structure. [8]

UNIT- III

Q.3 Discuss the Diffie-Hellman key exchange algorithm in detail. Also discuss the "Man in the middle attack" problem associated with the algorithm. [16]

OR

Q.3 (a) Explain the distribution of secret keys using Public Key Cryptosystem. [8]

(b) Explain the RSA algorithm with suitable example. [8]

UNIT- IV

Q.4 (a) Describe the MD5 message-digest algorithm in detail. [8]

(b) What is the Digital Signature? How authentication is accomplished using digital signature? [8]

OR

Q.4 (a) Explain the concept of MAC and its function. [8]

(b) Explain symmetric and Asymmetric authentication. [8]

UNIT- V

Q.5 (a) Explain Lamport's Hash protocol in detail. [8]

(b) Describe how PGP provides confidentiality and authentication services for e-mail application. [8]

OR

Q.5 Write short notes on- [2×8=16]

(a) IP Security Architecture

(b) Authentication Header

7E7033

Roll No. _____ Total No of Pages: 2

7E7033

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
Computer Science & Engineering
7CS3A Data Mining & Ware Housing
CS, IT

Time: 2 Hours **Maximum Marks: 48**
Min. Passing Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) What do you mean by data mining? Describe it and differentiate between data warehouse and data mining. [8]

(b) Describe Data Integration and Transformation in detail. [8]

OR

Q.1 (a) What do you mean by data reduction? What are the different processes of data reduction? [8]

(b) Explain the following terms –

(i) Noisy Values

(ii) Concept of Hierarchy Generation

UNIT- II

Q.2 (a) What is Apriori algorithm? Explain with a suitable example. [8]

(b) Explain different graph display of basic statistical class description. [8]

OR

Q.2 Explain the following terms –

(a) Association Rule Mining [8]

(b) Concept of data association & data generalization [8]

UNIT- III

Q.3 (a) Explain density based method in cluster analysis. [8]

(b) Describe the ID3 algorithm of the decision tree construction. Is it suitable for data mining applications? [8]

OR

Q.3 Explain the following terms –

(a) CURE algorithm [4]

(b) Genetic algorithm [4]

(c) Bayesian classification [4]

(d) Concept of classification and prediction [4]

UNIT- IV

Q.4 (a) Explain the differences between database system and data warehouse. [8]

(b) Explain 3 – tier architecture of data warehouse [8]

OR

Q.4 (a) Explain the Data cubes and Concept Hierarchy. [8]

(b) Explain the following terms –

(i) Fact constellations [4]

(ii) Process architecture [4]

UNIT- V

Q.5 (a) Differentiate between ROLAP, MOLAP and HOLAP in detail. [8]

(b) Explain the need of back – up and recovery with respect to data warehouse using a relevant example. [8]

OR

Q.5 (a) Explain OLAP functions and tools. [8]

(b) Explain the differences between Tuning data warehouse and testing data warehouse. [8]

7E7034

Roll No. _____ Total No of Pages: 2

7E7034

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021

Computer Science & Engineering

7CS4A Computer Aided Design for VLSI

Time: 2 Hours **Maximum Marks: 48**

Min. Passing Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) What is cell based design style? Explain in terms of library binding. [8]

(b) What are the circuit models? Discuss the classification of models on the basis of levels and views. [8]

OR

Q.1 (a) Describe computer-aided synthesis and optimization. [8]

(b) What is Moore's law? Locate the present status on it and predict its validity in the near future. [8]

UNIT- II

Q.2 Explain Boolean functions and its derivatives also. Find out cofactor consensus and smoothing of equation f = ab + bc + ca with respect to 'c' [16]

OR

Q.2 (a) Explain Bryant's reduction algorithm in detail. [8]

(b) Explain data flow and sequencing graph with the help of an example. [8]

UNIT- III

Q.3 (a) Explain list scheduling with the required algorithms in detail. [8]

(b) Explain scheduling in pipelined circuit in detail. [8]

OR

Q.3 (a) What is the need of scheduling in Architectural synthesis? Explain. [8]

(b) What is synchronization problem? Explain. [8]

UNIT- IV

Q.4 (a) Explain the testability properties on two – level logic cover positional cube notation. [8]

(b) Explain the exact logic minimization and principle for logic operation. [8]

OR

Q.4 (a) What are the combinational circuits and sequential circuits? [8]

(b) Explain the functions with multi volume inputs and list oriented manipulation. [8]

UNIT- V

Q.5 (a) Define floor planning. Write goals and objectives of floor planning. [8]

(b) What is global routing? Explain the methods used for global routing in detail. [8]

OR

Q.5 (a) What is placement? What are the different levels of placement? Explain in detail. [8]

(b) Explain clock routing and power routing. [8]

7E7052

Roll No. _____ Total No of Pages: 2

7E7052

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
Information Technology
7IT4A Internet Programming

Time: 2 Hours **Maximum Marks: 48**
Min. Passing Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit.** All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) Explain the significance of XHTML with the help of a real time application. Write necessary code snippets. [8]

(b) What is style sheet? Explain linking external style sheet. [8]

OR

Q.1 (a) What are different Text Flow Media Types? Explain one in detail. [8]

(b) Explain the various types of cascading style sheets with examples. [8]

UNIT- II

Q.2 (a) Write a JAVA program that inputs three integers from the user and displays sum of the largest number, the smallest number and determines whether the third number is a product of the first two numbers. [8]

(b) Explain control structures of JavaScript. [8]

OR

Q.2 (a) What is CSS3? What are the needs of it? [8]

(b) Write short note on - [4×2=8]

(i) XML namespaces

(ii) Events

UNIT- III

Q.3 (a) Discuss the structure of the HTTP request message. [8]

(b) Discuss the merits and demerits of DOM and SAX parsers with neat examples. [8]

OR

Q.3 (a) How to create, publish and test a web service? Explain with suitable examples using WSDL. [8]

(b) Explain Microsoft Internet Information Services (IIS). [8]

UNIT- IV

Q.4 (a) Explain how cookies one handled in PHP with example. [8]

(b) What is AJAX? Explain the AJAX client-server architecture. [8]

OR

Q.4 (a) Write a PHP program that tests whether an e – mail address is input correctly. Verify that the input begins with a series of characters followed by the @ character a period '.' and a final series of characters. Test your program with both valid and invalid e-mail address. [8]

(b) What is ASP.net? Draw operator precedence chart of Asp.net 2.0 and ASP.net. [8]

UNIT- V

Q.5 (a) Write a Java program to find the second smallest number in the array of size 10. [8]

(b) Discuss the concept of synchronization in thread and display a JAVA code for reader/writer problem. [8]

OR

Q.5 (a) Write a Java program to reverse a number. [8]

(b) What do you mean by an Applet? Create a Java program that repeatedly flashes image on the screen. [8]

7E7053

Roll No. _____ Total No of Pages: 2

7E7053

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
Information Technology
7IT5A Computer Graphics & Multimedia Techniques

Time: 2 Hours

Maximum Marks: 48
Min. Passing Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) Describe the Raster Scan Displays with suitable diagram. [8]

(b) Explain the Aliasing & Anti-Aliasing Algorithm. [8]

OR

Q.1 (a) Explain DDA Line Drawing Algorithm. [8]

(b) Explain Interactive Display Devices in Computer Graphics. [8]

UNIT- II

Q.2 (a) Describe the Cohen-Sutherland Line Clipping Algorithm. [8]

(b) Explain Flood Filling in detail. [8]

OR

Q.2 (a) Describe Translation, Rotation & Scaling with examples. [8]

(b) Explain Composite Transformation. [8]

UNIT- III

Q.3 (a) Explain the depth-buffer method. [8]

(b) Describe the Bezier Curve & B-Spline curve. [8]

OR

Q.3 (a) Discuss scan line algorithm in computer graphics. [8]

(b) Explain Image Space & Object Space with suitable example. [8]

UNIT- IV

Q.4 (a) Explain the basic Illumination model. [8]

(b) What is meant by Ray Tracing? Explain. [8]

OR

Q.4 (a) Explain the various color models with examples. [8]

(b) Describe Phong Shading & Gourand Shading. [8]

UNIT- V

Q.5 (a) State the components of multimedia in detail. [8]

(b) Define Animation & Animation-Techniques. [8]

OR

Q.5 (a) Explain the Multimedia Input / Output Technologies. [8]

(b) Describe the JPEG & MPEG. [8]

7E7035

Roll No. _____ Total No of Pages: 2

7E7035

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
Computer Science & Engineering
7CS5A Compiler Construction

Time: 2 Hours **Maximum Marks: 48**
Min. Passing Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) What are the different phases of compiler? Explain with the help of suitable example. [10]

(b) Describe Bootstrapping in detail. [6]

OR

Q.1 (a) Explain the following terms in detail -

(i) Input buffering [4]

(ii) Functions of lexical analyzer [4]

(b) Define the terms NFA and DFA with example. What are the rules to get a NFA for a regular expression? [8]

UNIT- II

Q.2 (a) What do you mean by context free grammar? Give distinction between regular and context free grammar & limitations of context free grammar. [8]

(b) Explain – top down and bottom up parsing technique in detail. [8]

OR

Q.2 (a) Explain operator precedence parsing and functions. [8]

(b) Give the model for LR Parser & explain its action. [8]

UNIT- III

Q.3 (a) Explain syntax directed translation schemes in detail. [8]

(b) Write the specification of a simple type checker with example. [8]

OR

Q.3 (a) What is the process and importance of intermediate code generation? [8]

(b) Write a program to translate an infix expression into postfix form. [8]

UNIT- IV

Q.4 (a) Explain the symbol management system. [8]

(b) Write a short note on -

(i) Parameter Passing [4]

(ii) Activation resend [4]

OR

Q.4 (a) Differentiate between stack allocation and heap allocation. [8]

(b) Write a short note on -

(i) Storage allocation strategies [4]

(ii) Data structure used in symbol table [4]

UNIT- V

Q.5 (a) Construct the DAG and generate the code for given block- [10]

$d := b + c$

$e := a \times b$

$b := b - c$

$a := e \times d$

(b) Explain basic block and control flow graph. [6]

OR

Q.5 (a) Write a short note on -

(i) Code optimization [4]

(ii) DAG [4]

(b) What is peephole optimization? Explain it in detail. [8]

7E7036

Roll No. _____ Total No of Pages: 3

7E7036

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
Computer Science & Engineering
7CS6.1A Advance Data Base Management Systems
CS (Old & New), IT (Old)

Time: 2 Hours **Maximum Marks: 48**
Min. Passing Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) Define ADBMS? What do you understand by DBMS performance and Query optimization? [6]

(b) Explain steps of Query Processing for SQL query- [10]

SELECT Ename FROM Employee WHERE Salary>5000; with a suitable diagram.

OR

Q.1 (a) Discuss plan in Query Optimization. What are the alternative ways of evaluating a given query? [8]

(b) Explain the following with example -

(i) System catalog in RDBMS [4]

(ii) Enumeration of Alternative plans [4]

UNIT- II

Q.2 (a) Define and differentiate between RDBMS, ODBMS, OODBMS and ORDBMS. Give some examples of ODBMS and ORDBMS. [6]

(b) Classify the term Complex Data Types and explain its application areas with example. What do you mean by lexical and non-lexical class? [10]

OR

Q.2 (a) Does any object associate with OID? Discuss what do you understand by structural and behavioral properties of an object. [8]

(b) List all the domains of an attribute of non-lexical class. Explain encapsulation and ADT. [8]

UNIT- III

Q.3 List all the merits of Concurrency Control and Recovery in Distributed Database. Define data flow in parallel database. Explain Successful Distributed Transaction. [16]

OR

Q.3 Explain the following with suitable diagrams or examples -

(a) Architecture of Distributed DBMS [8]

(b) Storing Data in Distributed DBMS [8]

UNIT- IV

Q.4 (a) Signify the role of security in database. Explain different types of Access Control. [8]

(b) Explain the following topics –

(i) Covert channels [4]

(ii) DOD security level [4]

OR

Q.4 (a) Regarding the Database security, identify the importance of Multilevel Relations and Polyinstantiation. [8]

(b) Specify the role of Database Administrator and explain the encryption in database. [8]

UNIT- V

Q.5 (a) Explain how POSTGRES belongs to Advanced Database using an example. Write a short note on SQL variation and extensions. [8]

(b) Clearly explain the logic behind the storage and Indexing of advance database. What are the principles of Transaction management? [8]

OR

Q.5 How is XML related with Database? Explain structure of XML data, querying and transformation. [16]

7E7038

Roll No. _____ Total No of Pages: 2

7E7038

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
Computer Science & Engineering
7CS6.3A Data Compression Techniques

Time: 2 Hours **[To be converted as per scheme]**

Max. Marks: 48

Min. Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit.** All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 What do you understand by loss less compression? Compare lossless compression with lossy compression. [16]

OR

Q.1 (a) Explain minimum variance Huffman code and length extended codes. [8]

(b) Explain prefix codes with its advantages. [8]

UNIT- II

Q.2 (a) Encode L = OBRSDDB using move to front encoding technology. [8]

(b) Explain JPEG – LS with diagram and write the equation of all 9 regions. [8]

OR

Q.2 (a) A sequence is encoded using LZW algorithm and the initial dictionary is shown in the table - [8]

Index	Entry
1	a
2	b
3	r
4	t

The output of LZW encoder in following sequence -
3, 1, 4, 6, 8, 4, 2, 1, 2, 2, 5, 10, 6, 11, 13, 6
Decode the sequence.

(b) Explain run length encoding with a suitable example. [8]

UNIT- III

Q.3 (a) Give the differences between uniform and non-uniform quantization in detail. [8]

(b) What is quantization error in process of analog to digital signal conversion? [8]

OR

Q.3 (a) Explain the Linde–Ruzo–Grey algorithm of quantization. [8]

(b) What is distortion? Explain the various distortion criteria. [8]

UNIT- IV

Q.4 (a) Explain the process of delta modulation with suitable diagrams & its disadvantages. [8]

(b) Define the steps required in DPCM compression of images and video signals. [8]

OR

Q.4 (a) Write and explain the properties of z – transform. [8]

(b) Explain the Ideal sampling – time domain view. [8]

UNIT- V

Q.5 Write a short note on "Wavelet based compression". [16]

OR

Q.5 Explain the following –

(a) Standard of MPEG [8]

(b) FIR and IIR Filter [8]

7E7054

Roll No. _____ Total No of Pages: 2

7E7054

B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021

Information Technology

7IT6.2A Intelligent Systems

Time: 2 Hours **Maximum Marks: 48**

Min. Passing Marks: 15

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) What do you mean by knowledge organization and manipulation? [8]

(b) Discuss the knowledge importance of AI. [8]

OR

Q.1 Explain the implication of LISP programming language. Compare it with other programming languages. [16]

UNIT- II

Q.2 (a) What do you mean by Syntax Semantics? Discuss Inference rules. [10]

(b) Explain Non-deductive inference methods. [6]

OR

Q.2 (a) Explain fuzzy logic and natural language computations. [10]

(b) What do you mean by probabilistic reasoning? [6]

UNIT- III

Q.3 What are search and control strategies for knowledge organization and manipulation? [16]

OR

Q.3 Write a detailed note on knowledge organization and management. [16]

UNIT- IV

Q.4 Draw and explain Non production knowledge system architecture. [16]

OR

Q.4 Write short notes on –

(a) Rule based knowledge system [8]

(b) Uncertainty knowledge system [8]

UNIT- V

Q.5 Discuss the general concepts of learning by induction. [16]

OR

Q.5 Define the term knowledge acquisition. What are different issues to be considered for planning knowledge acquisition? [16]

7E1730

Roll No. _____ Total No. of Pages: 2

7E1730

B. Tech. VII - Sem. (Main) Exam., Feb.- March - 2021

OE -I Open Elective-I Electronics & Communication Engineering

7EC6 – 60.1 Principle of Electronic Communication

Time: 2 Hours **[To be converted as per scheme]**

Max. Marks: 82

Min. Marks: 29

Instructions to Candidates:

Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Define depth of modulation. [2]

Q.2 What are the degrees of modulation? [2]

Q.3 Define Detection or Demodulation? [2]

Q.4 Why PSK is always preferable over ASK in coherent detection? [2]

Q.5 Discuss the utility of Wireless LAN. [2]

Q.6 Describe the function of core & cladding in optical fiber. [2]

Q.7 Differentiate between GSM and CDMA. [2]

Q.8 Define RFID communication. [2]

Q.9 What do you mean by paging? [2]

Q.10 State Snell's Law and TIR. [2]

PART – B

(Analytical/Problem solving questions) **[4×8=32]**

Attempt any four questions

Q.1 Define QPSK modulation & demodulation scheme. [8]

Q.2 Derive the relationship between index profile (n_1 & n_2) and acceptance angle a. [8]

Q.3 A modulating signal $m(t) = 10 \cos (2\pi \times 10^3 t)$ is amplitude modulated with a carrier signal; $c(t) = 50 \cos(2\pi \times 10^5 t)$. Find the modulation index, the carrier power and power required for transmitting AM wave. [8]

Q.4 Differentiate between attenuation, distortion and noise. [8]

Q.5 What is a 'PoE'? Can we connect non-PoE devices to the PoE Switch's PoE ports? [8]

Q.6 What do you mean by Zigbee network. [8]

Q.7 Differentiate between PAM, PWM and PCM. [8]

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[2×15=30]**

Attempt any two questions

Q.1 (a) Discuss FSK modulation technique with suitable diagram and required expression. [10]

(b) List out the need of modulation. [5]

Q.2 (a) Explain the construction and working of Token ring LAN. [10]

(b) Discuss the utility of Internet and Telephony. [5]

Q.3 Draw and explain satellite communication system. What do you mean by Satellite sub-systems? [15]

Q.4 (a) Explain wave length division multiplexing with suitable diagrams. [8]

(b) Write short note on cellular telephone system AMPS. [7]

Q.5 Briefly explain following terms with reference to Wireless Technologies- [15]

(a) WiMax

(b) UWB

(c) Infrared Wireless Networks
