

C022611(022)

B. Tech. (Sixth Semester) Examination,

April-May 2022

(AICTE-Scheme)

(Computer Science & Engg. Branch)

COMPILER DESIGN

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : All questions are compulsory. Part (a) is compulsory and answer any two parts from (b), (c) & (d) of each question. Part (a) carries 4 marks and part (b), (c) & (d) carries 8 marks each.

Unit-I

1. (a) Differentiate between single and multi-pass compiler?

(b) Explain in brief different phases of the compiler.

How the following statement is processed in different phases.

Amount = Amount + 50 * Cost

[2]

(c) Find the minimum state DFA for the following regular expression :

(i) $ab(a/b)^*abb$

(ii) $a(a/b)^*b$

(d) Write short notes on :

(i) Compiler writing tools

(ii) Role of Lexical Analyzer

Unit-II

2. (a) Differentiate between top down parsing and bottom up parsing?

(b) Consider the following grammar :

$$S \rightarrow AS/b$$
$$A \rightarrow SA/a$$

(i) List all the $LR(0)$ items for the above grammar

(ii) Is the grammar SLR? If so construct the SLR parsing table.

(c) Why there is a need to eliminate left recursion in top down parsing. Construct predictive parsing table for

[3]

$$S \rightarrow (L)/a$$
$$L \rightarrow L, S/S$$

(d) Write the algorithm for operator precedence parsing.

Unit-III

3. (a) Differentiate between inherited and synthesized attributes with an example.

(b) Using the given grammar, write the syntax directed definitions to evaluate an expression. Construct the annotated parse tree for the sentence $2+3*7$.

$$E \rightarrow E + T/T$$
$$T \rightarrow T * F/F$$
$$F \rightarrow (E)/\text{num}$$

(c) Write the syntax directed definition to translate Boolean expressions into three-address code.

(d) Translate the expression $-(a+b)*(c+d) + (a+b+c)$ into

[4]

- (i) Quadruples
- (ii) Triples
- (iii) Indirect Triples
- (iv) Postfix Notations

Unit-IV

4. (a) When call by name is preferred than other parameter passing techniques.
- (b) What is activation record? Explain different fields in the activation record.
- (c) Differentiate between stack, static and heap allocation strategies.
- (d) What is the use of symbol table? Explain different ways to implement symbol table and explain various fields of symbol table.

Unit-V

5. (a) Define the term loop optimization.
- (b) Explain in brief issues in the design the code generator.

[5]

- (c) Write in detail the steps of code generation algorithm including the function 'getreg' with an example. Generate assembly code for the following 'C' statement.

$$x = a/(b+c) - d*(e+f)$$

- (d) Write a short note on :
- (i) Global data flow analysis
 - (ii) Peephole optimization

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**B. Tech. (Sixth Semester) Examination,
April-May 2022**

(AICTE Scheme)

(Computer Science Engg. Branch)

**SOFTWARE ENGINEERING & PROJECT
MANAGEMENT**

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. Part (a) of each question is compulsory and carries 4 marks. Solve any two parts from part (b), (c) & (d) and carries 8 marks each.

Unit-I

1. (a) What are the 4 main roles of a project manager?

[2]

- (b) Explain Waterfall Model with its advantages and disadvantages.
- (c) What is re-engineering in software engineering?
- (d) What are the five steps in Agile development?

Unit-II

- 2. (a) What are the types of feasibility study?
- (b) Draw the level 1 Data Flow Diagram (DFD) of a food ordering system.
- (c) What is Cocomo model in Software Engineering?
- (d) Explain Data Dictionary in Software Engineering.

Unit-III

- 3. (a) What is Work Breakdown Structure?
- (b) Explain the Project Scope Management.
- (c) What is the importance of Out Sourcing? Give Pros and cons of Out Sourcing?

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[3]

- (d) What are the primary process of Project Procurement Management?

Unit-IV

- 4. (a) Explain the concept of Quality Management System with its benefit.
- (b) Explain Pareto Analysis in detail.
- (c) What is Software Engineering Institute Capability Maturity Model (SEICMM)?
- (d) Draw the Fishbone Diagram that shows the cause and effect relationship for any quality issue that has arisen or that may arise.

Unit-V

- 5. (a) What is Size Oriented Metrics? Give its advantages and disadvantages.
- (b) Why is ethics so important in leadership? What are the five principles of ethical leadership?

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[4]

(c) Give three main classifications of risks which can affect a software project? Explain the Principle of Risk Management.

(d) What are the metrics of reliability?

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B. Tech. (Sixth Semester) Examination, April-May 2022

(AICTE Scheme)

(Computer Science and Engineering Branch)

ARTIFICIAL INTELLIGENCE & EXPERT SYSTEM

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. Part (a) is compulsory from each questions and carry 4 marks. Attempt any two out of part (b), (c) and (d) in each question carry 8 marks. Diagram in necessary whenever if necessary.

Unit-I

1. (a) Differentiate informed search and uninformed search.
(b) State and explain best first search algorithm with example.

[2]

(c) Explain Alpha-Beta Pruning with example.

(d) Solve the crypt arithmetic problem :

$$\text{SEND} + \text{MORE} = \text{MONEY}$$

And describe how heuristic is implemented in it.

Unit-II

2. (a) Define FOPL.

(b) Write short note on :

(i) Skolemization

(ii) Resolution principle

(c) Distinguish between forward and backward chaining with example.

(d) State Bayes theorem along with example.

Unit-III

3. (a) What are the components of planning?

(b) What is Learning? Explain supervised and unsupervised learning.

(c) Explain blocks world problem.

[3]

(d) Write short note on :

(i) Naive Bayesian Classifier

(ii) Explanation based learning

Unit-IV

4. (a) What is NLP? What are its steps in NLP?

(b) Explain Bag of Words with example.

(c) Describe text classification in NLP with example.

(d) Write short note on :

(i) Information Retrieval

(ii) Question Answering

Unit-V

5. (a) What do you understand by Swarm Intelligence and Swarm Agents?

(b) Define Agents. Discuss the types of agent architecture.

(c) Explain expert system architecture with neat diagram and relationship between components.

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(d) Write short note on :

(i) Expert System Shell

(ii) Knowledge Acquisition

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**B. Tech. (Sixth Semester) Examination,
April-May 2022**

(AICTE Scheme)

(CSE Engg. Branch)

INTERNET of THINGS

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : All units are compulsory. Attempt any two questions from each unit.

Unit-I

1. (a) Discuss the application areas and Challenges of IoT. 10
- (b) Define M2M Transmission and how it is different from IoT transmission. 10

[2]

- (c) How Could Computing and Big data helps ~~IoT~~ ^{IOT} Systems? Explain. 10

Unit-II

2. (a) Draw the architecture of Bluetooth and explain its use in IoT. 10
- (b) Explain IEEE 802.15.4 and Zigbee protocols with proper diagram. 10
- (c) Draw the IPV4 and IPV6 headers and compare IPV4 and IPV6 Protocols with suitable examples. 10

Unit-III

3. (a) Differentiate the working principles of IR sensor and PIR Motion Sensors with proper diagram. 10
- (b) What are the different applications of actuators in IoT? Differentiate a thermal actuator with soft actuators. 10
- (c) Explain different types of DC motors in brief which are mostly used in IoT systems. 10

Unit-IV

[3]

4. (a) Explain different components of a Raspberry Pi board. 10
- (b) Write a pseudo code to run a stepper motor in 18 degree connected to an arduino board. 10
- (c) Explain the working of Node MCU ESP 8266 board and how it is different from other arduino board. 10

Unit-V

5. (a) Discuss the properties and characteristics of cloud computing models. 10
- (b) Explain Software as a Service (SaaS) and Platform as a service (PaaS) models of cloud Computing 10
- (c) Give a brief description on evolution and recent trends of cloud computing. 10

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B. Tech. (Sixth Semester) Examination, April-May 2022

(AICTE Scheme)

(Computer Science Engineering Branch)

SOFT COMPUTING (PROFESSIONAL ELECTIVE)

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. Part (a) of each question is compulsory and carry 4 marks each. Attempt any two parts out of part (b), (c) and (d) of each question carry 8 marks each.

Unit-I

1. (a) What is Computing? Explain soft computing.
(b) What do you understand by soft computing and hard computing in detail?

[2]

- (c) Write down the various application of soft computing.
- (d) Explain characteristics of soft computing in detail.

Unit-II

- 2. (a) What is Fuzzy logic? What do you understand by fuzzy logic membership function?
- (b) Demonstrate the various operations on fuzzy set with example.
- (c) Explain about fuzzy proposition, formation, decomposition in detail.
- (d) What is Defuzzification? Explain defuzzification method in detail.

Unit-III

- 3. (a) What is biological neural network structure in detail?
- (b) Explain various topology of neural network. What is difference between ANN and BNN?
- (c) Demonstrate error back propagation training algorithm.

[3]

- (d) Explain about perceptron training algorithm with one example.

Unit-IV

- 4. (a) What is genetic algorithm? Explain its principle.
- (b) Explain the differences between traditional and genetic algorithm.
- (c) Explain about the mutation operator and the basic operations in genetic algorithms.
- (d) Explain different cross over operations performed in GA.

Unit-V

- 5. (a) Define MOOP and its basic principle.
- (b) Write short notes on :
 - (i) Patrobased approach
 - (ii) Non patrobased approach
- (c) Explain multi objective evolutionary approach in detail.
- (d) Explain various application of MOOP with some issues of solving to them.

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**B. Tech. (Sixth Semester) Examination,
April-May 2022**

(AICTE Scheme)

(Computer Science Engineering Branch)

NETWORK PROGRAMMING

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. Part (a) of each question is compulsory. Attempt any two parts from (b), (c) and (d) of each question.

Unit-I

- | | |
|---|---|
| 1. (a) What is E-mail? | 4 |
| (b) Explain Network architecture in detail. | 8 |

[2]

- (c) Explain UUCP and XNS Protocol's for LAN. 8
- (d) Differentiate between IPV₄ and IPV₆ addressing. 8

Unit-II

- 2. (a) What is accept () system call? 4
- (b) Explain select and poll function in detail. 8
- (c) Describe the use of fork () and exec () with suitable program. 8
- (d) Explain about Java Socket Programming. 8

Unit-III

- 3. (a) What is blocking I/O model. 4
- (b) Explain the different DLL issues. 8
- (c) Describe about Winsock API. What are the different API's available in Winsock DLL? 8
- (d) Describe the basic steps for creating windows Client-Server Socket application. 8

Unit-IV

- 4. (a) What is RMI? 4

[3]

- (b) Write short notes on the following : 8
 - (i) CGI Programming
 - (ii) HAP architecture and service
- (c) Explain digital signature in detail. 8
- (d) Explain different types of firewall that can be used for providing security to internet world 8

Unit-V

- 5. (a) What is Web Server? 4
- (b) What is Parsing? How to retrieve web information from URL? 8
- (c) What is Web Server? Explain the working principle of Web (HTTP) Client Server application. 8
- (d) What is String Tokenizer? How we are passing data using string tokenizer? Explain. 8