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FACULTY OF ENGINEERING AND TECHNOLOGY

B.Tech. (VI-Semester) (CBCS) Examination

(Common for CSE / IT and Prof. Elective-II (b) Data Science and AI & ML)

Compiler Design

Time: 3 Hours] [Max Marks: 70

Answer all questions

PART-A (Marks: 5x2=10)

1 a) Differentiate between Compiler and Interpreter.
b) What do you mean by ambiguous grammar? Give an example.
c) Define L-attributed Grammar.
d) What is a Reducible Graph?
e) Define Activation Record.

PART-B (Marks: 5x12=60)

2 a) Explain phases of compiler in detail with neat diagram.

OR

b) Briefly explain about LEX Compiler.

3 a) Construct Predictive Parsing Table for the grammar productions:
E→E+T/T; T→T*F/F; F→(E)/id

OR

b) Construct CLR parser for the following grammar Productions: S→CC; C→cC/d

4 a) (i) Write semantic rules for simple desktop calculator. (4)
(ii) Describe about intermediate forms of source program. (8)

OR

b) Illustrate various implementations of three address code with an example.

5 a) Explain in detail about Global Data Flow Analysis.

OR

b) Briefly explain different sources of Code Optimization.

6 a) Explain about various storage allocation strategies.

OR

b) Write a Code Generation Algorithm. Give an example.

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FACULTY OF ENGINEERING AND TECHNOLOGY

B.Tech. (Mech, ECE, CSE, IT, Data Science, AI & ML) VI-Semester (CBCS) Examination

Open Elective-I (a)

MICROPROCESSOR AND INTERFACING

Time: 3 Hours] [Max. Marks: 70

Answer all questions

PART-A (Marks: 5x2=10)

1. a) Explain addressing modes of 8085 microprocessor with examples.

   b) Write the features of 8086 Microprocessor.

   c) Explain Arithmetic Instructions of 8086 Microprocessor.

   d) Explain Operating Modes of 8255 PPI.

   e) Explain Interrupts of 8086 Microprocessor.

PART-B (Marks: 5x12=60)

2. a) Explain the architecture of 8085 microprocessor with a neat block diagram and explain each block in detail.

   (OR)

   b) Differentiate between 8085 and 8086 Microprocessor.

3. a) Draw the pin diagram of 8086 microprocessor in both minimum and maximum mode and explain each pin in detail.

   (OR)

   b) Explain the architecture of 8086 microprocessor with a neat block diagram and explain each block in detail.

4. a) Write an ALP to Multiply and Divide two 16-bit numbers using Direct Addressing mode.

   (OR)

   b) Write an ALP to perform Addition of an Array of size 5.

5. a) Explain the block diagram of 8255 PPI with a neat diagram and explain each block in detail.

   (OR)

   b) Explain interfacing of ADC to 8086 Microprocessor.

6. a) Explain the block diagram of 8257 DMAC with a neat diagram and explain each block in detail.

   (OR)

   b) Explain the block diagram of 8251 USART with a neat diagram and explain each block in detail.

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FACULTY OF ENGINEERING AND TECHNOLOGY

B.Tech. (CSE) VI-Semester (CBCS) Examination

Prof. Elective-II (a)

ARTIFICIAL INTELLIGENCE

Time: 3 Hours] [Max. Marks: 70

Answer All Questions

Part A- (Marks: 5x2=10)

1. a) What is the significance of defining a problem as a state space search?
   b) State the difference between generate-and-test and best-first search.
   c) Define 'Isa' relationship in knowledge representation.
   d) Explain the purpose of alpha-beta cut-offs in game playing.
   e) Define semantic analysis in Natural Language Processing (NLP).

Part B (Marks 5x12=60)

2 a) Explain the structure and working of a production system and analyze its importance in solving real-world AI problems with suitable examples.

OR

b) Analyze the key issues and challenges in designing effective AI search programs, and explain how these challenges can impact the performance of intelligent systems.

3. a) Explain the working of the A* search algorithm with a suitable example, and discuss how it ensures both optimality and completeness in heuristic search.

OR

b) Discuss the importance of knowledge representation mappings in Artificial Intelligence. Evaluate how different types of mappings influence the accuracy and efficiency of reasoning processes in AI applications.

4. a) What is logic programming? Discuss its role in AI and how Prolog facilitates logic programming.

OR

b) Discuss the application of resolution and natural deduction in AI reasoning. How do they differ in terms of efficiency and suitability for various tasks?

5. a) Explain the MinMax algorithm with a suitable example. How is it applied in two-player deterministic games?

OR

b) What are the major implementation challenges in symbolic reasoning systems under uncertainty? Explain with relevant examples.

6. a) Describe the architecture of a typical AI planning system. Illustrate your answer with the Blocks World problem as an example.

OR

b) Explain the key levels involved in natural language understanding. How do syntax, semantics, discourse, and pragmatics collectively contribute to language interpretation?

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FACULTY OF ENGINEERING AND TECHNOLOGY

B.Tech. (CSE/IT/Data Science/AI & ML) VI-Semester (CBCS) Examination

COMPUTER NETWORKS

Time: 3 Hours] [Max. Marks: 70

Answer all questions

PART-A (Marks: 5x2=10)

1. a) List different un-guided media.
   b) What is channel allocation problem?
   c) What are datagrams?
   d) What is a service access point in transport layer?
   e) What are uri and url?

PART-B (Marks: 5x12= 60)

2. a) Discuss TCP/IP reference model with a neat diagram.

   OR

   b) What are switched and virtual circuit networks? Compare them.

3. a) Explain different framing techniques employed by data link layer.

   OR

   b) Write about IEEE Ethernet protocol.

4. a) Explain any two dynamic routing protocols employed by network layer.

   OR

   b) Discuss IPv4 address classification with examples.

5. a) Write about different elements of transport layer.

   OR

   b) Discuss how is TCP connection establishment done?

6. a) Explain POP3 protocol in detail.

   OR

   b) Write a brief note on symmetric key algorithms.

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FACULTY OF ENGINEERING AND TECHNOLOGY

B.Tech. (CSE & IT) VI-Semester (CBCS) Examination

Software Engineering

Time: 3 Hours] [Max Marks: 70

Answer all Questions

Part-A (Marks: 5x2=10)

1. a) List and define layered technology of software engineering.
   b) Distinguish functional and non functional requirements.
   c) What does use case diagram convey? Give an example.
   d) What is art of Debugging?
   e) What is meant by formal technical reviews? What is the need of them?

Part-B (Marks: 5x12=60)

2. a) In detail discuss about Process Patterns & Process Assessment?

   OR

   b) Explain briefly about (i) incremental model (ii) RAD model.

3. a) Explain in detail requirement engineering process.

   OR

   b) Describe in detail about various system models.

4. a) How does Architectural Design effect the Software? What type of architectural styles exists? Discuss.

   OR

   b) What are the goals and guidelines for user interface design?

5. a) Compare and explain in detail white box and black box testing.

   OR

   b) Describe the various software quality metrics.

6. a) Define and discuss the phases of risk management.

   OR

   b) How is RMMM plan is advantageous? Discuss.
