UKA TARSADIA UNIVERSITY

B.Tech (Computer Engineering)/B.Tech (Information Technology)/B.Tech CE (Software Engineering)/B.Tech CSE/B.Tech CSE (AI&ML)/B.Tech CSE (Cloud Computing)/B.Tech CSE (Cyber Security) (Semester 6)

CE5023(2024-25)

Compiler Design

Date :07/05/2025 **Time :**1:30PM- 4:30PM

Max. Marks:60

Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

SECTION - 1

Q 1 Answer the following in Detail (Any 2) [6]

I) List out phases of a compiler. Write a brief note on lexical analyzer.

II) Discuss any two phases of compiler with suitable example.

III) Write output of all the phases of compiler for following statements:
I = p*n*r / 100 (datatype : float).

Q 2 Answer the following in detail. (Any 2) [12]

I) Discuss Thompson's construction method for conversion from regular expression to NFA.

II) Construct DFA for following regular expression. Use firstpos, lastpos and followpos functions to construct DFA: (a* | b*)*.

III) Discuss the role of lexical analyzer with an example. Which technique is used for speeding up the lexical analyzer?

Q 3 Answer the following in detail. (Any 2) [12]

I) Define and discuss types of derivation with suitable example.

II) Check following grammar is LL (1) or not?
S → iCtSA | a
A → eS | €
C → b

III) Discuss classification of parsing methods.

SECTION - 2

Q 4 Answer the following in Detail (Any 2) [6]

I) Describe reference count and marking technique of implicit allocation.

II) Differentiate static and dynamic memory allocation.

III) Describe call by reference and call by name each with an example.

Q 5 Answer the following in detail. (Any 2) [12]

I) Describe different types of intermediate representation.

II) Construct a Syntax-Directed Translation scheme that translates arithmetic expressions from infix into postfix notation. Show the application of your scheme to the string "3 * 4 + 5 * 2".

III) Discuss static type checking and dynamic type checking.

Q 6 Answer the following in detail. (Any 2) [12]

I) Describe algorithm for global common subexpression elimination.

II) Explain DAG representation of basic block with example.

III) Explain peephole optimization.

UKA TARSADIA UNIVERSITY

B.Tech (Computer Engineering)/B.Tech (Information Technology)/B.Tech CE (Software Engineering)/B.Tech CSE (Semester 6)

CE5025(2024-25)

Software Project Management

Date :12/05/2025 **Time :**1:30PM- 4:30PM

Max. Marks:60

Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

SECTION - 1

Q 1 Answer the following in Detail (Any 2) [6]

I) Describe project execution and project planning.

II) Discuss smart criteria.

III) Differentiate between traditional and modern project management practices.

Q 2 Answer the following in detail. (Any 2) [12]

I) Discuss evaluation process of the feasibility for an individual project.

II) Calculate and discuss the ROI and NPV for a given project details.
Initial investment: INR 700,000,
Yearly cash flows: Year 1 – INR 150,000, Year 2 – INR 200,000, Year 3 – INR 150,000, Year 4 – INR 100000,
Project duration: 4 years.
Discount rate is 8%.

III) Describe types of benefits related to benefits management.

Q 3 Answer the following in detail. (Any 2) [12]

I) Discuss main challenges associated with over and under estimating software effort.

II) Explain the selection process of general life-cycle approach.

III) Explain albrecht Function Point(FP) analysis.

SECTION - 2

Q 4 Answer the following in Detail (Any 2) [6]

I) Discuss any three activities of review process.

II) Describe the advantages and disadvantages of time and materials contracts.

III) Explain Maslow's hierarchy of needs.

Q 5 Answer the following in detail. (Any 2) [12]

I) Explain risk identification and risk monitoring.

II) Calculate the expected duration **te** and standard deviation **s** for each activity and draw a PERT network using following details: E depends on C; F and G depends on D; I depends on G and H; J depends on E and F,
Activity C – Optimistic (a): 5; Most likely (m): 6; Pessimistic (b): 8,
Activity D – Optimistic (a): 3; Most likely (m): 4; Pessimistic (b): 5,
Activity E – Optimistic (a): 2; Most likely (m): 3; Pessimistic (b): 3,
Activity F – Optimistic (a): 3.5; Most likely (m): 4; Pessimistic (b): 5,
Activity G – Optimistic (a): 1; Most likely (m): 3; Pessimistic (b): 4,

Activity H – Optimistic (a): 8; Most likely (m): 10; Pessimistic (b): 15,
Activity I – Optimistic (a): 2; Most likely (m): 3; Pessimistic (b): 4,
Activity J – Optimistic (a): 2; Most likely (m): 2; Pessimistic (b): 2.5 (Activity duration measures in weeks).

III) Describe the process of creating and maintaining risk register.

Q 6 Answer the following in detail. (Any 2) [12]

I) Explain lagged activities, activity labelling and dangle using activity arrow network.

II) Consider a software project with eight tasks A–H. Duration of the eight tasks in weeks is 6, 4, 3, 4, 3, 10, 3 and 2 respectively. C can start when A is complete. D and E can start when B is complete. G can start when both E and F are complete. H can start when C and D are complete. Draw the CPM network representation of the project. When is the latest start week of the task H? What is the float time of the task G? Which tasks are on the critical path?

III) Discuss product based approach and hybrid approach.

UKA TARSADIA UNIVERSITY

B.Tech (Computer Engineering)/B.Tech (Information Technology)/B.Tech CE (Software Engineering)/B.Tech CSE/B.Tech CSE (AI&ML)/B.Tech CSE (Cloud Computing)/B.Tech CSE (Cyber Security) (Semester 6)

IT5053(2024-25)

Blockchain Technologies

Date :16/05/2025 **Time :**1:30PM- 4:30PM

Max. Marks:60

Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

SECTION - 1

Q 1 Answer the following in Detail (Any 2) **[6]**

I) Describe Merkle Trees and explain their role in Blockchain with a diagram.

II) What is Namecoin? Describe its features and use cases.

III) Discuss Ripple and its applications in cross-border payments.

Q 2 Answer the following in detail. (Any 2) **[12]**

I) Explain the smart property collateral use case in Blockchain applications.

II) How does a smart contract work? Explain with an example.

III) Discuss the "trust problem" in online systems and how Blockchain addresses it.

Q 3 Answer the following in detail. (Any 2) **[12]**

I) Describe the evolution from Web 1.0 to Web 3.0 with examples.

II) Write the difference between HTTP and IPFS in terms of content delivery.

III) Describe Swarm as a decentralized storage system and its core functionalities.

SECTION - 2

Q 4 Answer the following in Detail (Any 2) **[6]**

I) Explain different use cases of IoT-enabled Blockchain technologies.

II) What are the benefits of using Blockchain technology in IoT environments?

III) Discuss how Blockchain helps in securing IoT data.

Q 5 Answer the following in detail. (Any 2) **[12]**

I) Explain bugs in the core code of Blockchain systems with examples.

II) Discuss the impact of core code vulnerabilities on Blockchain networks.

III) What is sharding in Blockchain? Explain its role in improving scalability.

Q 6 Answer the following in detail. (Any 2) **[12]**

I) Define and describe the Ethereum network and its core functionalities.

II) Discuss the role and significance of DeFi (Decentralized Finance) in modern finance.

III) Explain crypto wallet and describe its types.