

Roll No.

220162010060

**SHAMBHUNATH INSTITUTE OF ENGINEERING AND TECHNOLOGY**

Subject Code: BCS-602  
Course: B.Tech

Subject: Compiler Design  
SEMESTER: VI<sup>th</sup>

SECOND SESSIONAL EXAMINATION, EVEN SEMESTER, (2024-2025)

Branch: COMPUTER SCIENCE & ENGINEERING

Maximum Marks-15

Time - 1 Hr.

NOTE : ( Attempt All Sections)

1. Attempt **ALL** Questions.

QN	QUESTION	Marks	CO	BL
a.	Explain parser.	1	CO2	L1
b.	Find first and follow Production Rules: S → aBDh B → cC C → bC D → EF E → g   ε F → f   ε	1	CO2	L3
c.	What is a regular expression?	1	CO2	L2
d.	Explain Operator precedence parsing.	1	CO2	L3
e.	Explain classification of grammars.	1	CO2	L2

2. Attempt Any **ONE** of the following.

QN	QUESTION	Marks	CO	BL
a.	Write the algorithm for FIRST() and FOLLOW() with example.	5	CO2	L3
b.	Explain Error Recovery in LR Parsing.	5	CO2	L3

3. Attempt Any **ONE** of the following.

QN	QUESTION	Marks	CO	BL
a.	Explain LL(1) Parser with example.	5	CO2	L4
b.	Explain Parsing Techniques in Compiler Design.	5	CO2	L3

Bloom's Taxonomy Level (BL):-

Remember(L1), Understanding(L2), Apply(L3), Analyze(L4), Evaluating(L5), Creating(L6)

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THIRD SESSIONAL EXAMINATION, EVEN SEMESTER, (2024-2025)

Branch: COMPUTER SCIENCE & ENGINEERING

Time – 2 Hr.

NOTE : ( Attempt All Sections)

Maximum Marks – 45

1. Attempt Any FIVE of the following.

QN	QUESTION	Marks	CO	BL
a.	What are the various types of intermediate code representation?	2	CO3	L1
b.	What is meant by viable prefixes?	2	CO3	L2
c.	What is an operator precedence parser?	2	CO3	L2
d.	What is code generation?	2	CO3	L1
e.	What are the benefits of intermediate code generation?	2	CO3	L1
f.	What is SDT?	2	CO3	L1

2. Attempt Any ONE of the following.

QN	QUESTION	Marks	CO	BL
a.	Construct syntax tree and postfix notation for the following expression: $(a + (b * c)^d - e / (f + g))$	5	CO3	L4
b.	Define syntax directed translation (SDT). Construct an annotated parse tree for the expression $(5 * 3 + 1) * 7$	5	CO3	L4
c.	Explain error detection and recovery technique.	5	CO3	L3

3. Attempt Any FIVE of the following.

QN	QUESTION	Marks	CO	BL
a.	What is dynamic scoping?	2	CO4	L5
b.	What is a basic block?	2	CO4	L2
c.	Write the algorithm for FIRST and FOLLOW.	2	CO4	L2
d.	What is meant by viable prefixes?	2	CO4	L1
e.	What is a flow graph?	2	CO4	L3
f.	What is hashing? Explain.	2	CO4	L4

4. Attempt Any ONE of the following.

QN	QUESTION	Marks	CO	BL
a.	Write the quadruples, triple and indirect triple for the following expression: $(x + y) * (y + z) + (x + y + z)$	5	CO4	L4
b.	Consider the following program code: Prod=0; I=1; Do { Prod=prod+a[i]*b[i]; I=i+1; } while (i<=10); a. Partition in into blocks b. Construct the flow graph	5	CO4	L2
c.	Explain intermediate code generation? With Example.	5	CO4	L1

5. Attempt Any FIVE of the following.

QN	QUESTION	Marks	CO	BL
a.	Define back patching?	2	CO5	L2
b.	Construct the SLR parse table for the following Grammar $E \rightarrow E + E$ $E \rightarrow E * E$ $E \rightarrow id$	2	CO5	L4
c.	Explain DAG with Example.	2	CO5	L2
d.	List the different storage allocation strategies.	2	CO5	L3
e.	What is code motion?	2	CO5	L2
f.	Define symbol table?	2	CO5	L3

6. Attempt Any ONE of the following.

QN	QUESTION	Marks	CO	BL
a.	What is an activation record? Explain how it is related with runtime storage organization?	5	CO5	L3
b.	Consider the following grammar: $E \rightarrow E + T   T$ $T \rightarrow TF   F$ $F \rightarrow F * a   b$ Construct the SLR parsing table and also parse the input "a*b+a"	5	CO5	L5
c.	Write a short note with example to optimize the code: a. Dead code elimination b. Variable elimination c. Code motion d. Reduction in strength	5	CO5	L4

Bloom's Taxonomy Level (BL):-

Remember(L1), Understanding(L2), Apply(L3), Analyze(L4), Evaluating(L5), Creating(L6)