

2021

Computer Science

[M. Sc]

(CBCS)

(M.Sc. Third Semester End Examination-2021)

PAPER-302

(Principles of Compiler)

Full Marks: 50

Time: 02 Hrs

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

Group A

1. Answer any FIVE questions of the following: 5x2=10

- a) What is cross compiler?
- b) What is token?
- c) Explain ambiguity (with example)
- d) Write the function of Lexical Analysis phase.
- e) What is left factoring and how can we remove left factoring?
- f) What is LL(1) grammar?
- g) What do you mean by LR parser?
- h) What is left recursion? How can we eliminate Left recursion?

(2)

Group B

Answer any **FOUR** questions of the following: **5x4 = 20**

- Find the FIRST and FOLLOW of the following grammar

$$S \rightarrow ACB / CbB / Ba$$

$$A \rightarrow da / BC$$

$$B \rightarrow g / \varepsilon$$

$$C \rightarrow h / \varepsilon$$

- Consider the grammar

$$S \rightarrow aAB / bA / \varepsilon$$

$$A \rightarrow aAb / bAa / \varepsilon$$

$$B \rightarrow bBa / aBb / \varepsilon$$

Frame the action Go to table (using predictive parsing technique)

- Consider the following grammar

$$S \rightarrow A$$

$$A \rightarrow B / BaA$$

$$B \rightarrow bc$$

$$C \rightarrow Cb / Cc / \varepsilon$$

Generate item sets.

- Eliminate left recursion in the following grammar

$$S \rightarrow Sab / SaS / X$$

$$X \rightarrow Xc / a / b$$

(3)

- Consider the following grammar

$$S \rightarrow Aa / Bb / cC$$

$$C \rightarrow Ab / Ba$$

$$A \rightarrow D$$

$$B \rightarrow D$$

$$D \rightarrow \varepsilon$$

Construct the LL(1) parsing table for this grammar

- Given a grammar with the following rules:

$$S \rightarrow A\#$$

$$A \rightarrow bB$$

$$B \rightarrow cC$$

$$B \rightarrow cCe$$

$$C \rightarrow dA$$

$$A \rightarrow a$$

Is the grammar LR (1)? If not, why?

Group C

Answer any **ONE** question of the following: **10x1 = 10**

- Consider the following grammar

$$A \rightarrow aCDq / aBg / \varepsilon$$

$$D \rightarrow d / \varepsilon$$

$$B \rightarrow e / \varepsilon$$

$$C \rightarrow Ct / p / \varepsilon / BD / rAb$$

Demonstrate that the grammar is LR(0) or not. (Construct parsing Table)

(4)

9. Construct LALR table for

10. Consider the following grammar

$$S \rightarrow S$$

$$S \rightarrow aAd / bBd / aBc / bAc$$

[Internal assesment – 10]
