

Total No. of Questions – [03]

Total No. of Printed Pages: 02

G.R. No.	
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PAPER CODE	032-254(ESE)
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MAY 2022 (ENDSEM) EXAM
T.Y. INFORMATION TECHNOLOGY (SEMESTER - II)
COURSE NAME: SYSTEM PROGRAMMING
COURSE CODE: ITUA32184
(PATTERN 2018)

Time: [1Hr]

[Max. Marks: 30]

Instructions to candidates:

- 1) Figures to the right indicate full marks.
- 2) Use of scientific calculator is allowed
- 3) Use suitable data where ever required

Q.1 a) Evaluate the first and follow for the following grammar [4]

E \rightarrow TQ
T \rightarrow FR
Q \rightarrow + TQ | - TQ | E
R \rightarrow *FR | /FR | E
F \rightarrow (E) | id

b) Construct LL(1) parser for following grammar [6]

$$\begin{aligned} S &\rightarrow iEtSS' \mid a \\ S' &\rightarrow eS \mid \epsilon \\ E &\rightarrow b \end{aligned}$$

OR

b) Construct SLR parser for [6]

$$S \rightarrow AA$$
$$A \rightarrow aA \mid b$$

Q2 a) Explain type checking and type conversion with suitable example. [4]

b) Translate the following expression to quadruple, triple and indirect triple- [6]

$$a + b * c / e \uparrow f + b * c$$

OR

- b) Construct three address code, quadruples, triples and indirect triple for the following. [6]

$$a = b * -c + b * -c$$

- Q.3 a) Elaborate induction variable strength reduction with suitable example? [4]

- b) Discuss peephole optimization techniques with suitable examples. [6]

OR

- b) Illustrate code generation algorithm. [6]