Total No. of Questions – [03]

Total No. of Printed Pages: 02

G.R. No.	

PAPER CODE	

MAY 2022 (ENDSEM) EXAM

T.Y. INFORMATION TECHNOLOGY (SEMESTER - II)

COURSE NAME: SYSTEM PROGRAMMING

COURSE CODE: ITUA32184

(PATTERN 2018)

Marking Scheme

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**

Ouestion No.	Question Description	Marks
Q.1	a) Evaluate the first and follow for the following grammar E-> TQ T-> FR Q-> + TQ|- TQ |E R-> *FR|/FR|E F-> (E)|id **Solution:** Calculation of first (2M) Calculation of follow (2M)	[4]
	b) Construct LL(1) parser for following grammar $S \rightarrow iEtSS' \mid a$ $S' \rightarrow eS \mid \epsilon$ $E \rightarrow b$ **Solution:** First & follow table (2 M) Parsing Table (2M)	[6]

	String acceptance table/ tree construction (2M) **OR** b) Construct SLR parser for S–>AA A–>aA | b **Solution:** Augmented grammar representation (1M) DFA diagram (2.5M) Parsing table (2.5M)	[6]
Q2	a) Explain type checking and type conversion with suitable example. **Solution:** Type checking with example (2M) Type conversion with example (2M) b) Translate the following expression to quadruple, triple and indirect triple- a + b * c / e ↑ f + b * c **Solution:** Quadruple (2M) Triples (2M) Indirect triple (2M) **OR** b) Construct three address code, quadruples, triples and indirect triple for the following. a = b * – c + b * – c **Solution:** Quadruple (2M) Triples (2M) Indirect triple (2M)	[4] [6] [6]
Q.3	a) Elaborate induction variable strength reduction with suitable example? **Solution:** Induction variable strength reduction explanation (2M) Example (2M) b) Discuss peephole optimization techniques with suitable examples. **Solution:** Peephole optimization techniques explanation (3M) Example (3M) **OR** b) Illustrate code generation algorithm. **Solution:** Code generation algorithm (6M)	[4] [6] [6]