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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
(T-2 Examination Oct-2019)
B.Tech. 5TH Semester

COURSE CODE: 10B11CI513

MAX. MARKS: 25

COURSE NAME: Theory of Computation

COURSE CREDITS: 4

MAX. TIME: 1.5 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

- Q. 1 a) Remove the null production from given CFG. (2*6=12)
- | | |
|-------------------------------|--------------------------------|
| i) $S \rightarrow ABAC$ | ii) $S \rightarrow AB$ |
| $A \rightarrow aA / \epsilon$ | $A \rightarrow aAA / \epsilon$ |
| $B \rightarrow bB / \epsilon$ | $B \rightarrow bBB / \epsilon$ |
| $C \rightarrow c$ | |
- b) Remove the unit production from given CFG.
- | | |
|---------------------------|----------------------------|
| i) $S \rightarrow Aa/B/c$ | ii) $S \rightarrow Aa B$ |
| $B \rightarrow A/bb$ | $A \rightarrow b B$ |
| $A \rightarrow a/bc/B$ | $B \rightarrow A a$ |
- c) Remove the useless symbol from given CFG.
- | | |
|-------------------------|---------------------------------|
| i) $S \rightarrow AB/a$ | ii) $S \rightarrow AB/\bar{A}C$ |
| $A \rightarrow BC/b$ | $A \rightarrow aAb/bAa/a$ |
| $B \rightarrow aB/C$ | $B \rightarrow bbA/aaB/AB$ |
| $C \rightarrow aC/B$ | $C \rightarrow abCA/aDb$ |
- Q. 2 What is the Chomsky classification of grammar? Explain Type 0, Type 1, Type 2 and Type 3 grammar. (5)
- Q. 3 Why the parse tree is important in context free grammar. Explain the rightmost and leftmost derivation of parse tree with help of suitable example. (4)
- Q. 4 What do you mean by unambiguous grammar? How it can affect the working of context free grammar. What are the various methods to overcome it. (4)

T-2 EXAMINATION

UIT Oct-2019