Reg. No. : | | | | | | | | | | |

Question Paper Code: 56201

B.E./B.Tech. DEGREE EXAMINATION, DEC 2020

Sixth Semester

Computer science and Engineering

15UCS601- PRINCIPLES OF COMPILER DESIGN

(Regulation 2015)

Duration: 1.15 hrs Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. A bottom up parser generates CO1-R

   (a) Right most derivation (b) Rightmost derivation in reverse

   (c) Leftmost derivation (d) Leftmost derivation in reverse

2. There are some Context Free Grammars for which shift reduce parsing cannot be used. Why? CO1- R

   (i) Cannot decide whether to shift or to reduce

   (ii) Cannot decide which of several reductions to make

   (a) Only i (b) only ii (c) i and ii (d) None of the above

3. Which of the following is not a function of backpatching? CO2-R

   (a) Backpatch(p,i) (b) Backpatch(i,p) (c) Makelist(i) (d) Merge(p1,p2)

4. What is the technique have been developed to reduce the amount of overhead required to process a single input character? CO2- R

   (i) Single Buffer Scheme

   (ii) Two-Buffer Scheme

   (a) Only i (b) only ii (c) i and ii (d) None of the above

5. Grammar that produce more than one Parse tree for same sentence is CO3-U

   (a) Ambiguous (b) Unambiguous

   (c) Complementary (d) Concatenation Intersection

6. What are the functions used to manipulate list of jumps in One-Pass code generation using Backpatching? CO3- R

(a) makelist(), merge(), backpatch() (b) makelist(), translate(), backpatch()

(c) makelist(), backpatch() (d) translate(), backpatch()

7. Code optimizations are carried out on the intermediate code because CO4-U

(a) Program is more accurately analyzed on intermediate code than on machine code

(b) Optimization information from data flow analysis cannot be used

(c) They enhance the portability of the compiler to the other target processor

(d) Optimization information from the front end cannot be used

8. In three-address code, how many operator must present on the right side of the instruction CO4- R

(a) At most one (b) At least one (c) More than one (d) None of the above

9. _____ reduces the dimensions of an array and reduces the number of memory locations accessed CO5-R

(a) Locality of Computed Data (b) Array contraction

(c) Pipelining (d) Communication Cost

10. What kind of information useful for locality optimization and parallelizing compiler? CO5- R

(i) Data reuse

(ii) Data dependence

(a) Only i (b) only ii (c) i and ii (d) None of the above

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Examine the different phases of compiler. Translate the following statement into its equivalent target assembly code. a := b + c * 60 CO1-App (8)

12. Construct parse tree for the input string w=id+id*id using top down parser. CO2-Ana (8)

E->TE’

E’->+TE’| ε

T->FT’

T’->*FT’| ε

F->(E)|id

13.	Explain the semantic actions required for translation of array reference.	CO3-U	(8)
14.	Construct DAGs for the following basic blocks of TACs a = b + c ; b = a- d; c = b + c; d = a – d;	CO4 -Ana	(8)
15.	Explain the principal sources of optimization techniques with suitable examples	CO5-U	(8)