

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH
BRANCH: CSE

SEMESTER : VI
SESSION : SP/2023

SUBJECT: CS305 COMPILER DESIGN

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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|--------|--|-----|------|------------|
| Q.1(a) | Write some important features of any standard Compiler. | [5] | CO-1 | Remember |
| Q.1(b) | For C-like statement - <code>int 9x, *p;</code>
Will we get any lexical error from this statement? Justify your answer. | [5] | CO-1 | Apply |
| Q.2(a) | Is <code>x+y=z;</code> a valid C-statement, where <code>x</code> , <code>y</code> and <code>z</code> all are identifiers? If not, then at which phase, error will be detected? Explain in details. Consider the augmented grammar given below:
$S' \rightarrow S$
$S \rightarrow \langle L \rangle \mid id$
$L \rightarrow L, S \mid S$
Let $I_0 = CLOSURE(\{[S' \rightarrow .S]\})$. Find the items in the set $GOTO(I_0, <)$. | [5] | CO-4 | Apply |
| Q.2(b) | How to reduce cost in designing compiler? Explain. | [5] | CO-3 | Understand |
| Q.3(a) | What do you mean by <i>semantic rule</i> of grammar? Explain its importance in designing compiler. Justify - "If an SDD is S-attributed, then it is also L-attributed SDD but the reverse is not true". | [5] | CO-1 | Understand |
| Q.3(b) | Design an SDT for <i>expression grammar</i> assuming <code>**</code> for <code>#</code> and <code>+</code> for <code>&</code> , and providing higher priority to <code>+</code> as compared to <code>**</code> . | [5] | CO-4 | Apply |
| Q.4(a) | Explain the importance of Intermediate code. Is <code>A[i]=B+C</code> an example of TAC? Justify. If it is not in TAC form, convert it into TAC and use QUADRUPLE to implement. | [5] | CO-1 | Understand |
| Q.4(b) | How is memory managed at the time of execution of a program? Discuss it with reference to any language of your choice. | [5] | CO-1 | Remember |
| Q.5(a) | Discuss the <i>issues</i> during target code generation. | [5] | CO-5 | Remember |
| Q.5(b) | Discuss about basic blocks and flow graphs and their role in code optimization. | [5] | CO-2 | Understand |

::::::26/04/2023::::::M