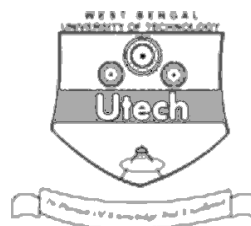


**CS / M.Tech (SE) / ME(CSE) / SEM-2 / PGSE-203 / PGCSE-204A / 09**  
**PRINCIPLES OF LANGUAGE TRANSLATION ( SEMESTER - 2 )**



1. ....  
Signature of Invigilator

2. ....  
Signature of the Officer-in-Charge

**Reg. No.**

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**Roll No. of the Candidate**

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**CS / M.Tech (SE) / ME(CSE) / SEM-2 / PGSE-203 / PGCSE-204A / 09**  
**ENGINEERING & MANAGEMENT EXAMINATIONS, JULY – 2009**

**PRINCIPLES OF LANGUAGE TRANSLATION ( SEMESTER - 2 )**

Time : 3 Hours ]

[ Full Marks : 70

**INSTRUCTIONS TO THE CANDIDATES :**

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. You have to answer the questions in the space provided marked 'Answer Sheet'. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification.**
9. Rough work, if necessary is to be done in this booklet only and cross it through.

**No additional sheets are to be used and no loose paper will be provided**

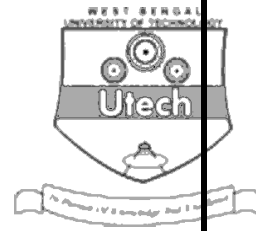
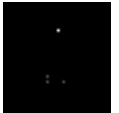
**FOR OFFICE USE / EVALUATION ONLY**

Marks Obtained

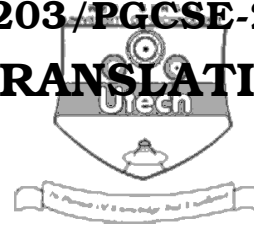
Question Number												Total Marks	Examiner's Signature
Marks Obtained													

.....  
**Head-Examiner / Co-Ordinator / Scrutineer**

**48008 ( 06/07 )**



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**CS/M.Tech (SE)/ME(CSE)/SEM-2/PGSE-203/PGCSE-204A/09****PRINCIPLES OF LANGUAGE TRANSLATION  
SEMESTER - 2**

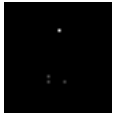
Time : 3 Hours ]

[ Full Marks : 70

*The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*Answer any *five* questions.

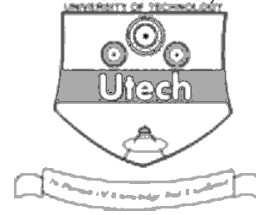
5 × 14 = 70

1. a) Write down the regular expression for the following :
    - i) Identifiers of C language
    - ii) Binary strings, such as, a '0' is followed by a '1'
    - iii) Any decimal number that is a multiplier of 5.
  - b) What do the following regular expressions mean ?
    - i)  $a(a|b)^*a$
    - ii)  $[0-7][0-7]^*$
  - c) Using Thompson's Construction convert the following regular expression to NFA.  
 $a(a|b)^*b$
  - d) Convert the NFA created in previous question to DFA. 3 + 2 + 3 + 6
- 
2. a) Prove that the following grammar is ambiguous.  
 $S \rightarrow AB$   
 $B \rightarrow ab$   
 $A \rightarrow aa$   
 $A \rightarrow a$   
 $B \rightarrow b$



- b) Does left recursion occur in the following grammar ? If so, remove the left recursion :

$$S \rightarrow Aa$$

$$A \rightarrow Sb|c$$


- c) Construct the predictive parsing table for the following grammar :

$$E \rightarrow ME'$$

$$E' \rightarrow \in$$

$$E' \rightarrow +ME'$$

$$M \rightarrow AM'$$

$$M' \rightarrow \in$$

$$M' \rightarrow *AM'$$

$$A \rightarrow \text{num}$$

$$A \rightarrow (E)$$

$$3 + 2 + 9$$

3. a) Construct the LR parsing table for the following grammar :

$$S \rightarrow L = R$$

$$S \rightarrow R$$

$$L \rightarrow *R$$

$$L \rightarrow id$$

$$R \rightarrow L$$

- b) What is the problem in constructing the SLR parsing table for the grammar given above ?

$$10 + 4$$

4. a) What do you mean by intermediate code and three address code ( 3AC ) ?

- b) How is multidimensional array handled in 3AC ? Write the intermediate 3AC for the code segment given below :

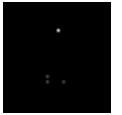
```
for (i = 0; i < 10; i++ )
```

```
{
```

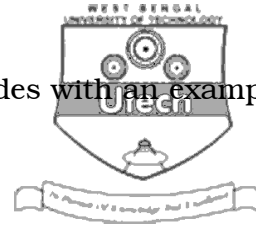
```
    x = x + y [i];
```

```
}
```

$$4 + 5 + 5$$



5. a) What are type checking and type conversion ?  
b) Write the algorithm for unification of a pair of nodes with an example. 5 + 9
6. a) What do you mean by parameter passing ?  
b) What are the different modes of parameter passing ?  
c) What do you mean by Symbol Table ?  
d) How does it maintain scope information of a variable ? Explain. 2 + 6 + 2 + 4
7. a) Discuss Register Allocation Problem. How can Graph Colouring Scheme be applied to solve it ?  
b) Generate code for the following expression :  
$$(A - B) + ((C + D) + (E * F))$$
  
when two registrars are available. 5 + 9
8. Write short notes on any *two* of the following : 2 × 7  
a) Runtime memory management  
b) Activation tree  
c) Shift-reduce parsing  
d) Recursive-descent parsing.



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END