



Sir Syed University of Engineering & Technology
Faculty of Computing & Applied Sciences
Department of Computer Science & Information Technology

Online End Semester Examinations (Spring 2021)

Course Code with Title	CS-310: Compiler Construction		Program	BS (Computer Science)
Instructor	Ms. Ayesha Urooj & Rajkumar Chawla		Semester	5 th
Start date & Time	June 15, 2021 at 11:30 AM	Submission Deadline	June 15, 2021 at 04:30 PM	
Maximum Marks	50			
Students must meet their submission deadline as there is no re-take or re-attempt after the deadline.				

IMPORTANT INSTRUCTIONS:

Read the following Instructions carefully:

- All Questions marks are mentioned.
- Attempt All Questions on MS-Word. Font theme and size must be Times New Roman and 12 points respectively. Use line spacing 1.5.
- You may provide answers HANDWRITTEN. The scanned solution must be submitted in PDF file format (Use any suitable Mobile Application for Scanning)
- For Diagrams, you can use paper and share a clear visible snapshot in the same Answer Sheet.
- Arrange questions and their subsequent parts in sequence.
- Make sure that your answers are not plagiarized or copied from any other sources. In case of plagiarism, **ZERO** marks will be awarded.
- Provide relevant, original and conceptual answers, as this exam aims to test your ability to examine, explain, modify or develop concepts discussed during the course.
- Recheck your answer before the submission on **VLE** to correct any content or language related errors.
- You must upload your answers via the VLE platform **ONLY**.

You must follow general guideline for students before online examination and during online examination which had already shared by email and WhatsApp.

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Q.1(a).

(15)

Construct a Context Free Grammar which can generate a program written in your own language. Program should start with the keyword which shows the beginning of code and ends with the keyword of your own choice. It generates the complete mark sheet of the student.

You have to enter your complete roll# so that it will display your mark sheet of current semester, display the message of Pass/Fail and if your percentage is less than 50% you are considered as FAIL.

User define functions, multiple declaration, Conditional Statements, loops must be covered in order to achieve the above mentioned scenarios.

Q.1(b)

(06)

Take any ambiguous clause from above grammar and proof the ambiguity of any sentence of your own choice by adopting any of the mentioned method.

- Derivation Method
- Parse tree method

Q.2.

(15)

Implement Non Recursive or SLR parser for evaluating the total marks in mark sheet, in this regard construct an expression grammar for the computation of any expression.

Show the stack implementation by taking the expression of your roll# as an input string?
e.g. Roll# 144 (10 * 12 + 24).

Q.3.

(06)

Construct a phrase of the grammar for multiple declaration which generates the code written in your own language. Enter your age, roll# and gender. In this regard you are asked to make a dependency graph which holds the individual digit of your roll# in each variable. Use proper attributes at each node.

Q.4.

(04)

Write down the semantic rules for the following grammar which converts your roll no into 0's and 1's (Binary format)?

Start \rightarrow Stmts.
Stmts \rightarrow Stmts Detail | Detail | ϵ
Detail \rightarrow 0 | 1



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Q. 5.

(04)

Write the expression for the following types, where,

A = add all digits of your Roll Number e.g. $1 + 4 + 1 = 6$ { if your roll no is 141 }

B = add all the digits of your DOB e.g. $0+2+1+0+1+9+9+8$ {if you DOB is 2nd October 1998 }

- a) An array of pointer to real, where the array index ranges from A to B
- b) A two dimensional array of integers(i.e. an array of array) whose rows are index form 0 to 9 and whose columns are indexed from A to B.