



**Sir Syed University of Engineering & Technology**  
**Faculty of Basic & Applied Sciences**  
**Department of \_Computer Science\_**

**End Semester Examinations (Spring 2020)**

<b>Course Title with Code</b>	<b>CS-209 Object Oriented Programming</b>	<b>Program</b>	<b>CS</b>
<b>Instructor</b>	<b>Mehwish Wahid Khan</b>	<b>Semester</b>	<b>3<sup>rd</sup></b>
<b>Start date &amp; Time</b>	June 27, 2020 at 10:30AM	<b>Submission Deadline</b>	June 27, 2020 at 4:30PM
<b>Maximum Marks</b>	50		

**IMPORTANT INSTRUCTIONS:**

**Read the following Instructions carefully:**

- Attempt All Questions on MS-Word. Font theme and size must be Times New Roman and 12 points respectively. Use line spacing 1.5. Convert file to PDF format before submitting.
- 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 been shared by email and WhatsApp.**

**This paper has a total of 02 pages including this title page**



**Sir Syed University of Engineering & Technology**  
**Faculty of Basic & Applied Sciences**  
**Department of \_Computer Science\_**

- Q :No1 Due to the current Pandemic condition, Motivation Public School wants to develop a management system which caters the needs of all of its campuses. It consists of finance, administration and grading departments. Different departments share data with each other. Some of the department takes data from another department for full filling their needs and some extends its attributes for further advance system. Administration will register only those students who have cleared their dues till June, and the code will be given for Google classroom only after the approval of finance department .Time table for the new session can be downloaded from administration by entering your registration number. Grading dept is responsible for the examination process of students, but due to current Pandemic all students have been promoted on their Half Yearly exams results, students having more than 50% marks in Half Yearly exam are eligible for promotion in the next class. (15)
- a) Think of a scenario where you can implement ALL of the following concepts of OOP in a single program. Your implementation should include main program in which all of the listed concepts should run.
- I. Hybrid Inheritance
  - II. Multilevel inheritance
  - III. Protected access modifiers
  - IV. Private access modifiers
  - V. Typecasting
  - VI. Virtual methods
  - VII. Multiple inheritance
- b) Suggest three more functions that according to you may increase the efficiency of the system
- Q No:2 Construct a Use Case diagram and a Class diagram for your proposed solution of the scenario given in Q1. (15)
- Q No:3 Referring to Q1 you may find any or some listed concepts impossible to implement using inheritance. Write your opinion why is this not possible. Also resolve the issue by showing its proper implementation. (10)
- Q No:4 How can you implement Polymorphism in the scenario given in Q1? Add an additional method with the name of Bio-data that should have X number of attributes in it. Implement Static and Dynamic polymorphism on it. (10).

**X = (the last digit of your roll number mod 3 ) + 4**

\*\*\*\*\* **Best Of Luck** \*\*\*\*\*