Kurdistan Regional Government

Ministry of Higher Education & Scientific Research

University of Salahddin – Hawler

College of Engineering

Software Engineering Dept.

Final Examinations (2011/2012)

Subject: Systems Analysis & Design

Second Year Students

Time allowed: 3 hours

Lecturer: Amanj Sherwany

The highest obtainable mark is 100, the minimum passing mark is 50

Q1/ A: (10 points)

Explain why a software system that is used in real-world environment must change or it will become progressively less useful.

B: (15 points)

Giving reasons for your answer based on the type of system being developed, suggest the most appropriate generic software process model that might be used as a basis for managing the development of the following systems:

- A social network web application (a facebook-like application)
- A system to control the traffic-lights in Erbil city.
- A music player with a built-in browser for purchasing music.

* * *

Q2: (25 points)

The following is an excerpt taken from a *Software Requirement Specification* (SRS) document:

> "The application should have three main windows: one for playing music, one for playing video and the other one for browsing the Internet. A lot of audio formats (codecs) should be supported. The program shall have a modular architecture. The video play back shall be very smooth. The Internet browser shall be very beautiful."

In the above paragraph:

- Find two ambiguous requirements. **(10 points)**
- Extract the possible functional and non-functional requirements. **(15 points)**

* * *

Q3: (20 points)

On Gtalk-like messengers a user can be either *online* or *offline,* while *online* she can be *invisible, busy* or *available,* draw a state-machine diagram to express that.

*   *   *

Q4/ A: (15 points)

You are writing a DocumentViewer class, which should be able to open (PDF, DOC and HTML) documents, what is the best design pattern to use here? show it in code.

B: (15 points)

The following interface violates one of the SOLID principles, identify it and re-write the code to obey the principle.

```
interface Radio{
    public void changeStation(int newFrequency);
    public void volumeDown();
    public void volumeUp();
}
```

Good Luck