	King Saud University **College of Computer and Information Sciences** **Computer Science Department**		
	Course Code:	CSC 342	
	Course Title:	Software Engineering	
	Semester: 2	Fall 2017	
		Midterm 1 Solution	**1:30 h**
Student Name:	……		
Student ID:	……		

Tick the Relevant	**Computer Science B.Sc. Program ABET Student Outcomes**	**Question No. Relevant Is Hyperlinked**	**Covering %**
	a) Apply knowledge of computing and mathematics appropriate to the discipline;	-------	-------
√	b) Analyze a problem, and identify and define the computing requirements appropriate to its solution	**2-3-4**	**70%**
√	c) Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;	---	----
√	d) Function effectively on teams to accomplish a common goal;	--------	------
√	e) Understanding of professional, ethical, legal, security, and social issues and responsibilities;	--------	------
	f) Communicate effectively with a range of audiences;	-------	------
	g) Analyze the local and global impact of computing on individuals, organizations and society;	-------	------
	h) Recognition of the need for, and an ability to engage in, continuing professional development;	-------	------
√	i) Use current techniques, skills, and tools necessary for computing practices.	---	-----
	j) Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;	-------	------
√	k) Apply design and development principles in the construction of software systems of varying complexity;	---	-----
√	General Question	**1**	**30%**

Exercise 1: *(4.5 points)*

True or False

a. User requirements: Statements in high level language plus diagrams of the services the system provides and its operational constraints.

b. Validation testing is intended to show that the software meets its requirements

c. System requirements are a deliverable report.

d. Computer-aided software engineering (CASE) one of the stages of software development.

e. Spiral is often a good choice for larger systems with vague requirements and many alternatives for designing and coding.

Circle the correct answer(s)

1. Requirements engineering is an activity that intends to:
   a. Satisfy the customers and users' needs.
   b. Transform the unclear requirements resources into clear, precise, and consistent specifications.
   c. Avoid the requirements confusion.
   d. All of the above**.**

2. Risk assessment is considered in which of the following software process models?
   a. Spiral model
   b. Rational Unified Process
   c. Incremental development
   d. Waterfall model

3. Which of the following process models is best suited for the development of systems whose requirements are well known?
   a. Agile
   b. Incremental development
   c. Waterfall
   d. Spiral model

4. Which of the following is not a project management activity?
   a. Project monitoring
   b. Proposal writing
   c. System designing
   d. Project planning

Answer:

a	b	c	d	e	1	2	3	4
T	T	F	F	T	d	a	c	c

Exercise 2: *(3 points)*

Suppose a large project related to the "Student Registration System" is will be developed. The system has two major subsystems:

- The user interface subsystem which shall be implemented as simple HTML without frames or Java applets but the Dean wants to participate in the development of this subsystem.
- And the registration subsystem whose requirements are well known.

Suggest the most appropriate software process model that might be used as a basis for managing the development of the system. Giving reasons for your answer based on the type of system being developed.

Answer:

Incremental Process Model:

- User interface subsystem: Evolutionary Development
- Registration subsystem: Waterfall

Exercise 3: *(3 points)*

For the five requirement statements below, indicate what type of requirement it is, Functional (F), or Non Functional (NF: Product requirement, Organisational requirement, and External requirement).

a. Customer can pay bill though ATM.
b. System Y shall process a minimum of 8 transactions per second.
c. The executable code of System Z shall be limited to 512Kbytes (Memory size of the system).
d. User can print document easily.
e. The system does not allow do display unethical pictures.
f. The system shall be developed using an object oriented approach.
g. Student can add and remove courses.
h. The access permissions for system data may only be changed by the system's data administrator.
i. The system shall not operate if the external temperature is below 4 degrees Celsius.
j. Customer can transfer money throw the website of bank.

Answer:

a	b	c	d	e	f	g	h	i	j
F	Pr	Or	F	Ex	Or	F	F	O	F

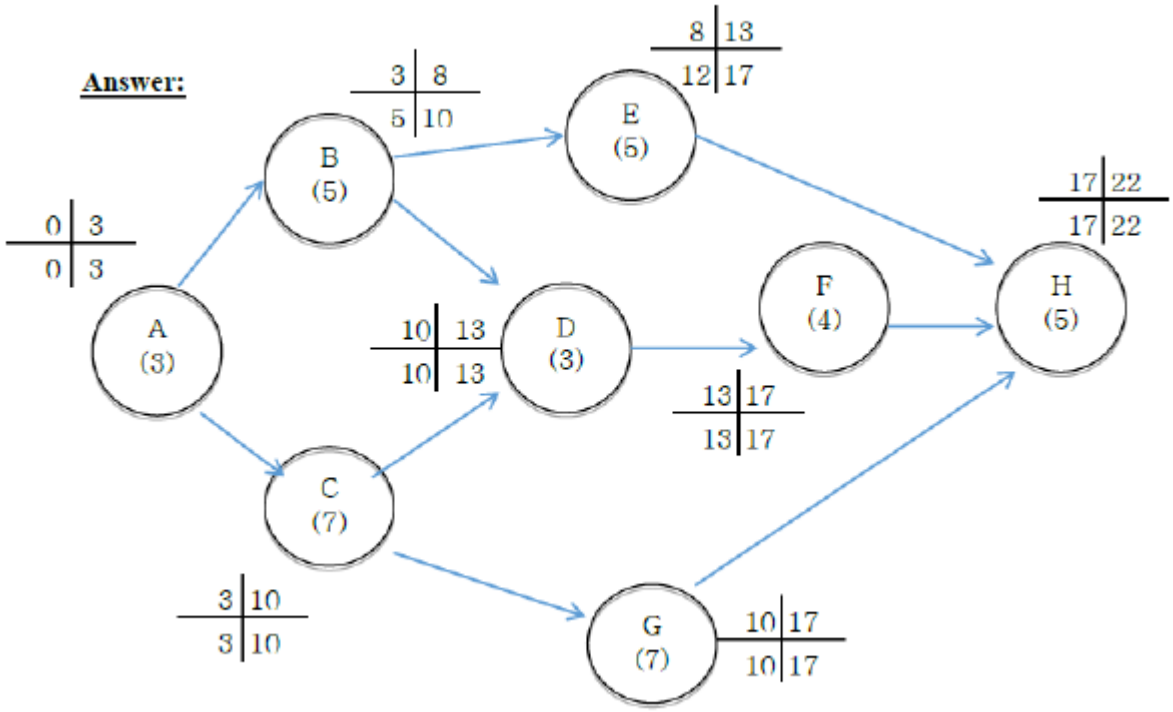
Exercise 4: *(4,5 points)*

Consider a project with the following activities. Times are given in weeks.

Activity	Preceding	Time (week)
A	--	3
B	A	5
C	A	7
D	B, C	3
E	B	5
F	D	4
G	C	7
H	E, F, G	5

1. Draw the network activity diagram and find the earliest and the latest start/finish time for each activity?
2. Identify critical path.
3. If activity E is delayed by 5 weeks, will the project completion time be affected? Justify your answer.
4. If activity F is delayed by 5 weeks, will the project completion time be affected? Justify your answer.

Answer:



1.

2. There are 2 critical paths: A-C-D-F-H and A-C-G-H

3. Yes, the project will be delayed. The slack of activity E is 4, and it can be delayed by 4 weeks without affecting the project. If it delays by more than 4 weeks the project will be delayed.
4. Yes, the project will be delayed. Activity F is part of the critical path, and any delays in activity F will affect the project.

Result					
Question No.	**Relevant Student Outcome**	**SO is Covered by %**	**Full Mark**	**Student Mark**	**Assessor's Feedback**
2	b	20%	3		
3		20%	3		
4		30%	4.5		
1	General	30%	4.5		
Totals		**100%**	15		
I certify that the work contained within this assignment is all my own work and referenced where required. **Student Signature:** **Date:**					**Feedback Received:** **Student Signature:** **Date:**