


National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Software Engineering Technologies	Course Code:	CS527
	Degree Program:	MS (Computer Science)	Semester:	Spring 2020
	Exam Duration:	180 Minutes + 15 Minutes to upload answer sheets (as per instructions)	Total Marks:	50
	Paper Date:	29 June 2020	Weight	45%
	Section:	MCS-2A	Page(s):	3
	Exam Type:	FINAL		

Student : Name: _____ **Roll No.** _____ **Section:** _____

- Instruction/Notes:**
- Solution **MUST** be scanned into **ONE multi-page PDF file** and uploaded to the provided location (SLATE).
 - It is your responsibility that you upload the correct soft file (containing answers). In case an incorrect answer sheet is uploaded, all responsibility lies with the student.
 - Scanning must be done in good lighting conditions with clear focus.
 - Read the questions carefully multiple times. Make sure that you answer what is being asked.
 - **Quality of thoughts/arguments has more weightage** than quantity. So think before attempting each question.
 - **DO NOT write long paragraphs rather use bullet points**, be precise and to-the-point when answering questions. Lengthy answers are not expected.
 - Cases of students found using **unfair means** such as cheating, copying, plagiarism etc. will be subject to **Disciplinary Action** – as per university policy.

Q1. [10 marks] You are a Chief Technology Officer at a small-sized Bank. The Bank systems (all IT Infrastructures comprising ~20+ Applications and Databases) are on a Private Cloud (IaaS services only) provided by Vendor X. With COVID19, the bank is facing massive revenue issues and planning to move all Infrastructure to Public Cloud (which could be risky in many aspects). You have multiple vendors bidding for the contract.

- (a) Identify and list the 5 most import factors you will consider in every vendor proposal/bid and why.
- (b) Discuss what will be your “Evaluation Criteria” for each one of the 5 factors above.

Q2. [10 marks] You are a User Experience (UX)/User Interface (UI) design specialist. You have applied for a job at a company which specializes in UI/UX development of websites. They have asked you to develop an operational prototype (in 15 days), implementing an online eLearning portal. All learning content is textual (there is no video tutorials). Potential learners can Sign Up and access courses.

You have been asked to come up with a new UI/UX layout (but not clarified on scope). You do not know about backend technologies that you need to integrate with. You are now meeting the senior technical manager to discuss how you will approach this prototype development. With new and emerging UI technologies such as React JS, Angular JS etc., UI development is not anymore only about the UI layer development and includes solid middle-tier development.

So, you have to work out on following to present your idea on delivery to senior manager

- Which prototype, ‘Mockup’ OR ‘Proof of Concept’ will you adopt and why? Provide reason(s).
- What risks (at least 3-4) in prototype development, you have chosen, exist? How will you mitigate those risks.

Q3. [15 marks] You are the Director of Project Management of a software development company, an expert Agile/Scrum Coach and Practitioner yourself. One of the development teams (~7 resources) is engaged in product development on a 10 month project, following 'Scrum' methodology (10 X 30 day Sprint Cycles). The development is in 3rd month and is troubled. Personal investigation and analysis by the Director of Project Management has revealed the following situation

1. *Product Owner doesn't have any experience in Agile methodologies. He used to be a technical architect in Waterfall projects. Therefore User Stories appear more like Waterfall's technical design artifacts, lacking estimation of work, no mention of requirements' priority, lacking requirement (not design) details, lack in determining the 'value' of work etc.*
2. *Half of the development team has not previously worked in Scrum. Scrum Master is a Sr. technical developer and has been estimating the scope of Sprints for all team members.*
3. *With Covid19 changes, the team is working remote and challenges in communication have led to miscommunicated requirements, lack of clarity on task assignments, incomplete work status updates by team members etc.*
4. *Development team has missed delivery of scope for the last 3 sprints. As a consequence high priority User Stories in the Product Backlog have been growing. Customers are frustrated in 'Sprint Reviews' due to missing deadlines and have started losing interest in product already.*

As an expert, you need to manage these issues bringing the product development back on track.

- a. Discuss at-least 4 Scrum artifacts/ceremonies/practices (in order of priority) you will review and bring changes to – keeping in mind the above issues.
 - Argue as to why you have chosen these particular artifacts/areas and not others.
 - Discuss the actual improvement/changes, you plan to bring, in the artifacts you have identified.

Provide strong arguments (for above question) supporting your views. Assume you have 3 Sprints (1 month each) cycles to bring back the project on track. So your plan to fix issues should be short term.

Note:

- You cannot send one or all team members for training and put the project on partial- or full-hold, as the deadlines do not allow for this.
- Read the question carefully, it does NOT require you to explain what Scrum and its artifacts are. So explaining Scrum theory will not get you any points.

Q4. [15 marks] Assume you have joined a software development company as a project management expert. You are a strong advocate of PMI Practices; however the company doesn't follow any project management methodology currently.

You are called upon by the senior management for a meeting to discuss what disadvantages/issues the company will potentially face if they don't follow a formal Project Integration Methodology (as advised by PMI). You need to understand that introducing new processes will incur more costs (skilled human resource, training, time etc.) and

without strong arguments the senior management will NOT buy your advice. Identify and provide strong arguments on 2 most important disadvantages the company will face and how they will impact project success - for each of the areas below, if PMI practices are NOT followed.

- Develop Project Charter
- Develop Project Management Plan
- Monitor and Control Project Work
- Integrated Change Control