

Exam Instructions:

1. Writing must be clear and readable.
2. You are required to write using bullet points only, do not write in paragraphs. Any opinion must be supported by a justification in the subsequent sentence. There will be no credit without providing justification that you think is correct.
3. If required divide your answer into multiple sections each having bullet points only.
4. Paragraphs will be discarded.
5. Solution must be scanned into one multi-page PDF file and uploaded to the provided location.
6. Scanning must be done in good lighting conditions with clear focus.
7. Read the questions carefully multiple times. Make sure that you answer what is being asked and nothing else. Frame the answer in your mind first before starting to attempt.

Q1. [10 marks]

A newly hired Director of Cyber Security, of a medium-sized Cloud based product company, has identified important and urgent Infrastructure Security improvements company-wide. She has laid out a plan to improve Infrastructure Security at a cost of \$1 Million. With other competing projects, the Director has to defend her proposal to the CIO. How can the CIO (you) sort out what really needs to be done without appearing to be micromanaging or discouraging the new Director of Cyber Security? What options are available to CIO to handle this situation, write at most 4.

Length of answer: Your answer must not exceed one page.

Assessment Criteria: [3 marks each for following 4 points - maximum marks 10]

The student should at least demonstrate following understanding

1. The security of computer systems is important and that it cannot be significantly compromised based on the budget constraints.
2. The budget constraints are real in such situations and there has to be a way to address the security requirements reasonably while keeping the costs within budget and available resources.
3. The CFO might have a trade-off need for security requirements with some other items on the budget.
4. The CFO should not challenge the CIO but rather appraise her about the budget constraints stressing the security requirements. He/she should request her to review the risk assessment report prepared by the CIO to prioritize items that should be addressed first within the budget constraints.

Q2. [5 marks]

You being the founder of a startup software development company have detected a patent infringement by another company. Your legal consultant has identified three options:

- (1) ignore the infringement, in court, due to financial reasons;
- (2) threaten to file a law-suit, with a possibility of out-of-court settlement; or
- (3) negotiate aggressively for a cross-licensing agreement

Which option would you pursue and why?

Length of answer: Your answer must not exceed half a page.

Assessment Criteria: [5 marks]

The student should at least demonstrate following understanding

1. Option 1 is not good. No credit for selecting this option
2. Option 2 is somewhat better but not the best. The student must explain why he/she has chosen this option. E.g. To get monetary benefit which is short term. [2 marks]
3. Option 3 is correct answer: The student should highlight following aspects
  - a. Crosslicensing will allow your organization to use patents of the competitor which will be a huge benefit for future product development. [5 marks]

Q3.

Apply IDEAL method to following problem:

Children's entertainment channel Nickelodeon developed an app for children (around 10 years of age) that was downloaded about 10,000 times in a month. But most of the downloaders did not sign up. The app testing team ran hundreds of A/B tests to confirm that the app's look was OK and it was easy to use.

How can you help identify the problem? Can you use the IDEAL method or problem reframing to help solve the problem?

One page answer

Assessment Criteria: [10 marks]

All 5 steps of IDEAL method are employed in the description [5 marks]

Correct diagnosis is done as per below solution [5 marks]

1. Problem reframing can help in this case as the problem is being framed here as "Is this app easy enough to use" but it should be framed as "Does a 10 year old feel safe using this app?"
2. Then using the IDEAL approach; we can design a survey to help us Identify the problem where users are asked why they are quitting.
3. Thought about it this way, it becomes obvious that 10 year old children do not feel safe entering password (without permission from parents) which is an essential part of sign up.
4. Design: Once problem is identified (the password problem), we can think of solutions such as making instructive videos explaining why entering a password is safe.
5. Explore: We explore alternative solutions such as possibly getting rid of passwords altogether, or sign up using google or facebook account
6. Action: Apply the solution
7. Learn: See if sign up rate has increased, if not go to second step.

Q4.

Opportunity Cost of capital is the loss of income you could have received by investing the money somewhere else, in a suitable interest bearing account for example. Calculate the opportunity cost for you under the following scenario.

Five years ago you gave a loan of 100,000 PKR to one of your friends. Your friend has returned the loan during the last five years with 20,000 PKR per year. What is the opportunity cost of this transaction for you? (Remember to factor in returned amounts)

Interest Rate = last two digits of your roll number. E.g. if your roll number is 16L-1234 the interest rate would be 34%

Assessment Criteria: [10 marks]

### Solution

Discount Rate	5%	Last two digits of student's roll number	Last two digits of student's roll number		
	Past Year Number	Loaned amount	Returned Amount	Present Value of loaned amount	Present Value of return amount
	5	100,000	-	127,628.16	-
	4		20,000	-	24,310.13
	3		20,000	-	23,152.50
	2		20,000	-	22,050.00
	1		20,000	-	21,000.00
	0		20,000	-	20,000.00
			100,000	127,628.16	110,512.63
			Present value of initial amount:	127,628.16	
			Peresent value of returned amounts:	110,512.63	
			Opportunity cost:	17,115.53	
			OR		
			Would have earned on initial amount:	27,628.16	
			Earned on the returned amount:	10,512.63	
			Opportunity cost:	17,115.53	

Q5.

Imagine you have been assigned to lead an internal organizational team to overcome issues in the “Professional Ethics” area. After reporting of some incidents, an initial investigation was conducted (by an internal team) and you are now required to come up with a solid policy to prevent and handle such issues in future.

- **Trade Secrets** – have been leaked through informal ways (emails, printouts etc.) to a competitor organization, which could be detrimental to the success of some projects within your organization.

Devise and document a new policy\procedure to address above items..

Half page

Assessment Criteria: [5 marks]

**[5 marks] Trade Secrets**

- Email cannot be sent out of the office domain, unless approved by your Line Manager and the HR Department. Approval will only be evaluated on business need basis.
- Public email access will be restricted on company network and domain.
- No official, project, technical, business info in form of printouts be taken out of office premises.
- Do not discuss your projects and work related trade secret info with friends, family etc.
- Do not discuss internal information, with any clients, which is not required as per business need. If unsure, check with your Line Manager and/of HR/Legal Department.
- If you find someone violating policy, report to HR Department (designated team member) immediately in formal writing (through email, written document etc.).

Q6. [25 marks]

All answers should not exceed 4 bullets.

A. [4 marks]

List down two instances of application of fair use doctrine that you have actually seen while studying in your university. Provide description and justification why you think it was a fair use.

B. [4 marks]

List down two instances of copyright infringement you have actually seen during your stay in the university. Provide description and justification of why do you think it was copyright infringement.

C. [4 marks]

Write the name of one tool or technique that has increased your productivity as a software developer the most. Justify your answer.

D. [4 marks]

You are incharge of networks in an organization and got a call from one of your operations team member Afzal at midnight that the company servers have been compromised and an attacker

was able to get access to the company network. Afzal tells you that he is currently working on identifying the attacker and he needs two more hours to do that. What are you going to do and why?

G. [4 marks]

Describe one example from your own experience when you failed to do proper time management, what was the result and how you could have avoided it. Actual experience from your life is needed.

H. [3 marks]

Provide a list of 2 fake news that you actually believed initially and then found out they were fake. Also describe the reason behind why you believed the news initially and how did you get to know that it is fake afterwards. Please don't mention anything discussed in the class. Provide actual incidents in your experience.

I. [2 marks]

List down one instance where an organization has done consumer profiling on you. Provide description, approximate date (year/month) and organization name.

Solutions

All questions above do not have any exact solution.