Suggested Solutions

a) State ONE risk a software project manager is likely to plan for, suggesting a risk management technique to mitigate it.

When marking I noticed some of you mentioned security, mainly talking about viruses, other malware and other security issues. These are most likely to affect the software once you have deployed it so this is not a risk the question was looking for. We are concerned about the risks of the software development process as a whole, not only the maintenance part.

[2 MARKS]

Risk item	***Risk management technique***
Personnel shortfalls	*Staffing with top talent; job matching; team-building;*
Unrealistic schedules & budgets	*Detailed multisource cost & schedule estimation; incremental development; software reuse*
Developing the wrong software functions	*Organization analysis; mission analysis; user surveys; prototyping; early users manuals*
Developing the wrong user interface	*Prototyping; scenarios; task analysis; user characterization*
Continuing stream of requirements changes	*Derive traceability information to assess requirements change impact, maximise information hiding in the design; incremental development (defer changes to later increments)*
Real-time performance shortfalls	*Simulation; benchmarking; modeling; prototyping*
Organisational financial problems	*Prepare a briefing document for senior management showing how the project is making a very important contribution to the goals of the business.*
Recruitment problems	*Alert customer of potential difficulties and the possibility of delays, investigate buying-in components.*
Staff illness	*Reorganise team so that there is more overlap of work and people therefore understand each other's jobs.*
Defective components	*Replace potentially defective components with bought-in components of known reliability.*
Organisational restructuring	*Prepare a briefing document for senior management showing how the project is making a very important contribution to the goals of the business.*
Database performance	*Investigate the possibility of buying a higher performance database.*
Underestimated development time	*Investigate buying in components, investigate use of a program generator*

b) Explain three (3) criteria you would consider when deciding whether to use agile process models or the Waterfall model for your organisation.

Many of you answered the question as if it was asking for the advantages of either the waterfall or the agile approach. It wasn't! I did not penalize for this this time, but be more careful in answering questions.

[9 MARKS]

		Waterfall	***Agile***
1		*Linear. Stages are distinct and separate; a stage begins only after the previous stage is complete.*	*Iterative*
2	*Spectrum*	*Cookbook. Implies structure.*	*Innovative. Implies adaptability. Incorporates high levels of change responsiveness.*
3	*Requirements Definition*	*Stable*	*Changing constantly*
4	*Change*	*Scope doesn't change/is stable.*	*New scopes that come later*
5	*Experience*	*New technologies, lower levels of experience (of the team)*	*People have the right level of experience, the project/technologies may not be new to the team, stable environment*
6	*Resources / Dedication*	*Some may be part-time*	*Right level of resources that are dedicated/committed to the project during its duration*
7	*Resources / Physical Location*	*Distributed networks, offshore resources*	*Located in the same location*
8	*Customer Involvement*		*Critical. Continuous feedback/interaction from client needed. Products delivered in very short cycles of time and customers required to give feedback continuously*
9	*Timelines*	*Fixed/constricted timelines.*	*More flexible in what can be delivered and at what time.*
10	*Documentation*	*Compliance/regulatory requirements that require you to produce various docs e.g. functional specs, technical specs, process and procedures, testing and training docs,*	*There is flexibility to streamline and eliminate some of the effort spent in coming up with the documentation, therefore require less documentation*
11			*Continuous feedback and links between the stages hence facilitating decision making and flow of information.*

c) List the process stages involved in the reuse approach for building business systems. **(4 MARKS)**

This one I just gave a free mark if SDLC stages were mentioned. However, that was not what was required.

Component analysis;
Requirements modification;
System design with reuse;
Development and integration.