Q1

There are three key areas of concerns that the audit should address:

1. Availability: whether the system will be available at all times when required and whether the system is well prepared for failures.

2. Confidentiality: whether the information in the system will be disclosed only to the company and its customers.

3. Integrity: whether the information in the system is always accurate, reliable and timely; whether any unauthorized modifications will be allowed.

The audit may cover physical and environmental review, system administration review, application software review, network security review, business continuity review and data integrity review.

Actions:

Conduct an inventory of the information systems and categorize them.

Identify which systems impact critical functions or assets.

Assess risks that affect the system assign a severity rating to them.

Rank Systems and decide audit priority, resources and schedule.

Catch defects

Q2

EBay system

EBay is an online auction site and it's the pioneer of C2C (Customer to Customer) business model, which is to enable the transaction of products and services between customers. It means eBay do not actually participate in the transaction, but build an online platform and provide these information of products and services, and sell these information. EBay make money through charging a fee when listing a product and every transaction complete. So ideally, eBay is always profitable almost from the beginning.

For the sellers, they can simply list their products online and wait for buyers to come to them, and it is much cheaper than running a retail store.

For the consumers, it's easier and more convenient to find a product and compare similar products, they don't need to drive around and search through stores.

The most serious negative issue is security problem. Online frauds cannot be totally eliminated because the transaction does not occur at the same time, so security is always an issue when money goes through the Internet. However, EBay has made best efforts to deal with the security problem. For example, a feedback system has been introduced and every consumer can comment on it, and also eBay use Paypal to reduce risks of online payment.

Q3

According to NZ police case study, there are some reasons which cause the failure of the whole project.

Firstly, the project requirements were incomplete at the planning stage. The requirements changed several times. Maybe the reason was poor communication with users and poor estimates of requirements at the project planning stage.

Secondly, the project budget was always overrun. (From initial estimate $NZ 30.1 million to 118 million and again to 126.7 million)

Thirdly, the project schedule was overrun. (The project was 12 months behind and the project manager resigned in 1997)

Poor change management.

In total, it was poor project planning. Specifically, inadequate risk management and a weak project plan.

Q4

The reading provides a list for judging a successful IT project:

The project achieves its purpose.

It provides satisfactory benefit to the owner.

It satisfies the needs of the owners, users, and stakeholders.

It meets its pre-stated objectives.

It is produced to specification, within budget and on time.

It satisfies the needs of the project team.

Therefore, to develop a successful proposal for a new IT project, the first thing should be done is provide a good overview of the project and analyze its benefits to the owners, users and stakeholders. Try to meet all the requirements. Secondly, make good project estimation, including make the budget for the project, distribute in-house resources and outsourced resources. Finally, make a detailed project plan, including work breakdown structure, timeline, resources, etc. and provide good risk management. Use Project Evaluation and Review Technique (PERT) to monitor the project.

Q5

The ADKAR model consists of five sequential steps or actions:

1. Awareness of the need for change.

   Understanding why change is necessary is the first key aspect of successful change. This step explains the reasoning and thought that underlies a required change. Planned communication is essential. When this step is successfully completed the individual (employee) will fully understand why change is necessary.

2. Desire to participate in and support the change.

   In this step the individual is able to reach a point where they make a personal decision to support the change and participate in the change. Naturally a desire to support and be part of the change can only happen after full awareness of the need for change is established. Building desire is partly achieved by addressing incentives for the individual and creating a desire to be a part of the change.

3. Knowledge on how to change.

   The third building block of the model, providing knowledge about the change, can be achieved through normal training and education methods. Other methods of transferring knowledge, such as coaching, forums and mentoring, are equally useful, so don't limit this process to formal training. Two types of knowledge need to be addressed: knowledge on how to change (what to do during the transition) and knowledge on how to perform once the change is implemented.

4. Ability to implement required skills and behaviors.

   In this model Ability is understood to be the difference between theory and practice. Once

knowledge on how to change is in place (theory) the practice, or actual performance of the individual, needs to be supported. This can take some time and can be achieved through practice, coaching and feedback.

5. Reinforcement to sustain the change.
   This final stage of the model is an essential component in which efforts to sustain the change are emphasised. Ensuring that changes stay in place and that individuals do not revert to old ways can be achieved through positive feedback, rewards, recognition, measuring performance and taking corrective actions.

Q6

Elements of project estimation:

EFFORT

The amount of human resource consumed (person-hours, person-days, person-months)

RESOURCES

Personnel committed, (or materials or equipment expended) in the completion of a task or activity.

DURATION

The time taken to complete a task (hours, days, weeks, months) DURATION = EFFORT / RESOURCES

COST

The amount which must be budgeted in order for a task to be completed (dollars). COST = RESOURCES X $ RATE

Six approach

In the reading, schedule delay and cost escalation were compared for individual projects and there was the expected strong correlation between the two, but only a small amount of the cost escalation was accounted for by schedule delay.

Q7

Possible risks

 Time overrun on particular task, e.g. INCIS

 Staff illness

 Staff leaving

 Technical 'hitch' – need for invention

 Technology failure

 Late delivery

 Failure to meet specifications

 Budget overrun

What to do

Avoid risk
- Ensure good staff conditions
- Employ multiple employees who can cover for each other
- Build some slack into the project schedule
- Have several projects on the go concurrently
- Have disaster recovery plan in place

Success Criteria

On-time

On-budget

Sponsor satisfaction

Steering group satisfaction

Project team satisfaction

Customer/user satisfaction

Stakeholder satisfaction

System implementation

Met requirements

System quality

System use

Business continuity

Met business objectives

Delivery of benefits

Q8

Benefits

Special interest groups (SIG), opportunities to communicate with other professionals in the area.

Careers service including job hunting, resume writing and interviews.

Publications and professional library. "Information Age" is the official bi-monthly publication of the ACS, supplied free to members.

Continuous professional development (seminars and information sessions).

Achieving Certified Status.

The student membership fee is quite cheap ($66 a year).

And it is free to apply for a Certified Professional (CP) status. It brings an added competitive edge and professional readiness, International Recognition Global acknowledgement of CP as the benchmark for professionalism, strengthening of employment and marketability and greater job mobility.

The codes of the ACS impress me, which are be honest, forthright and impartial; loyally serve the community; etc.

Q9

It's my responsibility to tell him not to do that. Copying software illegally (piracy) is an unethical behavior in IT. It may be illegal according to the law. E.g. Microsoft Office.

Personally

1. Ensure that such practices are brought attention of those with appropriate authority.
2. Try normal channels initially, if that fails:
   Make objections know promptly.
   Focus on issues in Focus on issues in 圆滑的 low-key manner.
   Keep records
   Consult colleagues avoid isolation

Seek legal advice

Q10

The rational decision making cycle:

Problem or Opportunities→(Intelligence) Environment scanning, Report & queries Comparisons, Benchmarks->(Design) Creativity, Finding alternatives, Analyzing solutions-> (Choice)Compare and select the best solution-> (implementation)Deploy: put solution into action

Q11

KPI

Cost variance

◻ $CV = EV - AC$

◻ 0 or positive is good (on track)

◻ Negative is 'bad' (budget over spent)

Schedule variance

◻ $SV = EV - PV$

◻ 0 or positive is good (on track)

◻ Negative is 'bad' (behind schedule)

Cost performance index (CPI)

◻ $CPI = EV / AC$

◻ Greater than 1 is good (on track)

◻ Less than 1 is 'bad' (budget over spent)

Schedule performance index (SPI)

◻ $SPI = EV / PV$

◻ Greater than 1 is good (on track)

◻ Less than 1 is 'bad' (behind schedule)

Estimated cost at completion (EAC)

◻ $EAC = $ Original budget estimate $/ CPI$

◻ Estimate of eventual cost of project at the present rate of spending.

Estimated time to complete (ETC)

◻ $ETC = $ Original time estimate $/ SPI$

◻Estimate of when the project will finally be completed if current rate of progress is maintained.

According to Nuaman, some Complexity Factors should be considered.

Structural organizational complexity

- The project manager didn't have direct control over project resources.

- Users provided insufficient support.

- The project had insufficient staffing.

- Project personnel did not have required knowledge/skills.

- Top management offered insufficient support.

Structural IT complexity

- The project involved multiple user units.

- The project team was cross-functional.

- The project involved multiple software environments.
- The system involved real-time data processing.
- The project involved multiple technology platforms.
- The project involved significant integration with other systems.
- The project involved multiple contractors and vendors.

Dynamic organizational complexity

- The project caused changes in business processes.
- Users' information needs changed rapidly.
- Users' business processes changed rapidly.
- The project caused changes in organizational structure.
- Organizational structure changed rapidly.

Dynamic IT complexity

- IT infrastructure changed rapidly.
- IT architecture changed rapidly.
- Software development tools changed rapidly.

Q12

A business intelligence system provides accurate information when needed, including a nearly real time view of corporate status and performance. There are four key components in a business intelligence system.

1. Data warehouse: It contains both internal and external data.
2. Business analytic tools: They are used for manipulating, mining and analyzing data.
3. Business performance indicators: They are responsible for monitoring and analyzing performance.
4. User interface.

The article from Chaudhuri (2011) on "Business Intelligence" is useful because it illustrates the whole typical business intelligence architecture. ETL tools are used to extract data from multiple diverse data sources, transform it to fit operational needs and load it into target data warehouse.

Data warehouse is a collection of integrated, subject-oriented databases and it allows users to perform extensive analysis more efficiently.

Online analytic process (OLAP) is used for data mining and provides advanced tools for decision making. OLAP servers expose the multidimensional view of data to applications or users and enable to common BI operations such as filtering, aggregation, drill-down and pivoting.

Q13

The Customer Relationship Management (CRM) system refers to the computer software designed to help companies keep track of and easily access information about the customers or clients the business is dealing with. The system contains a large amount of data but it needs analysis and integration to be more efficiently used. BI system is used to do such things.

A business intelligence system provides accurate information when needed, including a nearly real time view of corporate status and performance. It uses ETL tools to extract data, transform data and load data into data warehouse. OLAP provides advanced tools for decision making.

Q14

To eliminate the risks, we need to change the project plan.

First, outsource the major technology part to the third party if possible and then we can allocate our resource away from the fault line and try to catch up the timeline. For example, just focus on developing other components such as developing user interface and establishing database.

If no one can deal with the technology failure, just try to use older well-tried technology instead of new technology.

Q15

Before test the project, first step is to examine program specification and then decide variety of test cases. To define a test case, first decide what function is being tested, then decide a set of input data values to test the specific function and work out the expected outcomes. One or more test cases are required for each function of the system.

For a large banking integration project, test cases can be component or unit test first, then integration test and finally system test.

Component test is used to test every part of the banking system, such as database part, working as expected according to the specification. The testing type is usually white box testing because it can be more insightful.

Integration test is used to test interaction between related components and it usually focuses on interfaces between components. E.g. the online banking website which provides transfer services, etc.

System test is used to make sure that all the requirements have been met and the whole system works as expected. It usually focuses on the business process and normal workflow.

Q16

(Work out the critical path)

1. Mitigate the risk
   - Consider to hire more employees.
   - Build some slack into the project schedule.
   - Have several go concurrently.
2. Transfer the risk
   Outsource this critical element of the project
3. Share the risk
   Communicate with the project team members who are responsible for other elements of the project, try to allocate some of the job to those who are in free time.

Q17

Firstly, decide what information I want to present. Plan introduction and conclusion carefully and collect supporting evidence and data. Determine the aim and the structure of the presentation. The aim of the presentation is to show the progress of the new CRM system, so show our work breakdown structure and our timeline, tell them which task we are in at present. Then compared with the previous situation to illustrate our progress. Prepare some slides which contain these main points and use a strong visual aid including statistics, diagrams for the demonstration of our contribution. Then practice with a stopwatch to make sure the whole presentation within 10 minutes. Remember to allow time to present key points and leave time for conclusion. Finally, be

confident to present.

Q18
1. How can secure the transfer large amount of client data to new entity.
2. Ensure continuity of business and create positive experiences
3. Test each small parts individually before integrates them
4. Risk base approach: analyze each requirement and give them a risk rating, high risks got the high priority.
5. Test NFR early and not wait until all FR finished.

Continuous testing should be used during system development because it is a large system integration and it may cost more to fix a problem in later stages. It can also reduce the amount of chaos at the end of the project.

According to the V-model, system design is continuously checked including verification and validation. Verification is to compare the component functionality with the system requirement specification and check the conformance and consistency. Validation is to check that the specification is what the user actually wanted. Use component test, integration test and system test during the development process.

After implementation, use performance test to test the system performance under maximum expected load. Then use soak test and stress test to ensure that the system would be stable over extended period. Finally, use acceptance test to compare the system functionality against agreed-on user requirements.

Q19
Ask him to make a detailed estimation of his tasks. There are four approaches to the estimation.

Sum of the parts: to sum up the total time of his tasks.

Expert judgment: need some experts both in software development and application domain to help him.

Estimation by analogy: compare present project to similar projects already undertaken to predict effort.

Algorithmic cost models: Basic effort model: EFFORT = a * (SIZE)^b.

Then he can determine the size of the his tasks, the effort required, the resource needed and calculate the duration and the cost. After the estimation, he would know how much he should do and how long he should work clearly, and try to catch up.

Penalty

Q20 (Software testing)
Some questions should be asked:

What are the three essential attributes of a "good" software?

Correct: produces the right result for any given set of inputs according to the requirements.

Reliable: behaves as expected on every occasion over any period of time.

Robust: behaves in a predictable and controllable fashion.

What are the five quality attributes of a "good" software?

Useful: accomplishes sth the user needs.

Usable: "user friendly" and "ease of use".

Maintainable: easily modified for new requirements.

Efficient: requires minimum time and resource

Scalable: will continue to behave in an acceptable manner as size or volume of input is increased.