Professional Issues in IT

December 2015

Sample Exam Marking Scheme

This marking scheme has been prepared as a **guide only** to markers. This is not a set of model answers, or the exclusive answers to the questions, and there will frequently be alternative responses which will provide a valid answer. Markers are advised that, unless a question specifies that an answer be provided in a particular form, then an answer that is correct (factually or in practical terms) **must** be given the available marks.

If there is doubt as to the correctness of an answer, the relevant NCC Education materials should be the first authority.

Throughout the marking, please credit any valid alternative point.

Where markers award half marks in any part of a question, they should ensure that the total mark recorded for the question is rounded up to a whole mark.

Marks

Question 1

Starspun Jewellery is a web-based business selling genuine gemstone jewellery to online customers. The company claim to sell only the highest grade gemstones at a deep discount. Since the company was established, it has been trading via an online auction site. However, the company want you to now create their own web store and have contacted you about building both an online web store and a mobile app. It requires not only online registration and payments systems, but also pages with photographs of their products and video tutorials that document the history and science behind gemstones.

As a developer, you mainly have experience of developing static websites, but you have no experience of mobile app development or online payment systems.

a) State THREE (3) advantages of accepting the contract.   **3**

   Award 1 mark for each bullet point up to a maximum of 3 marks:

   - *Opportunity to gain experience in new areas.*
   - *Opportunity to enhance reputation.*
   - *Opportunity to increase stakeholder confidence.*
   - *Opportunity to attract new clients.*
   - *Opportunity for increased profits.*

b) Outline TWO (2) disadvantages of accepting the contract.   **2**

   Award 1 mark for each bullet point up to a maximum of 2 marks:

   - *Possibility of being unable to provide the mobile application, leading to reputational damage.*
   - *Possibility of being unable to provide the required secure payment system, leading reputational damage.*
   - *Risk of legal repercussions if project is not successful.*

<u>Question 1 continues on next page</u>

c) After starting work on the website, a former employee contacts you. They tell you that *Starspun Jewellery* lies about the gradings of their diamonds and other gemstones. They use photographs of more expensive, better cut gems on their website and sell lower standard gems to customers. The employee has sent you photographs of actual stock for sale, which show inferior jewellery to the photos you have been given by *Starspun Jewellery* for the website. Finally, they have also sent you invoices for low grade diamonds as proof that the images are misleading. **5**

This former employee wishes to remain anonymous and has not given you permission to mention them to *Starspun Jewellery*.

Identify THREE (3) ethical and legal issues raised by this information **and** make a recommendation about how to proceed with the project.

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *Unethical and possibly illegal for Starspun Jewellery to portray their products as being of a higher quality grade than they are.*
- *Unethical for the developer to use the photographs on the website if they are not accurate depictions of the products.*
- *Unethical to tell Starspun Jewellery the source of your suspicions since they have asked to remain anonymous: you will therefore have to do some of your own investigation in order to broach the topic.*

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Proceed by approaching Starspun Jewellery seeking evidence that their jewellery does use the highest grade gems.*
- *Agree to continue with the project if they can show you invoices, order records and stock which shows that the jewellery is as described and photographed.*
- *Refuse to continue with the project if they cannot provide evidence of their claims, or you identify there is clear deception occurring.*

Total: 10 Marks

Question 2

Dunglen Medical Centre is a doctor's surgery that employs 3 doctors, 5 nurses and 4 administrators. It holds a significant amount of sensitive data concerning its 3,200 registered patients. The surgery has an organisational goal of being a 'green' organisation and reducing their carbon footprint.

a) State TWO (2) advantages and TWO (2) disadvantages of advertising the GP **4**
    surgery as a green organisation.

    Award 1 mark for each bullet point up to a maximum of 4 marks:

    <u>Advantages:</u>
    - *May attract patients to the surgery due to alignment of goals.*
    - *Advertising this goal will make it more likely that the surgery will attain the goal.*

    <u>Disadvantages:</u>
    - *The GP surgery may be subject to more scrutiny of its energy usage.*
    - *Possible reputational damage if it fails to meet this goal.*

b) Green IT involves simple measures which can have a major impact on energy **4**
    usage and waste reduction. Briefly describe FOUR (4) green IT policies that
    could be implemented by Dunglen Medical Centre.

    Award 1 mark for each bullet point up to a maximum of 4 marks:

    - *Move towards a paperless environment.*
    - *Use of network printers rather than individual printers.*
    - *Double sided printing as the default option.*
    - *Recycle print cartridges and other IT waste where appropriate.*
    - *Use scripts to automate shutdown of all surgery PCs at the end of the work day.*
    - *Remove active screen saver.*
    - *Operate data storage redundancy identification.*
    - *Streamline software features.*
    - *Increase virtualisation.*

<u>Question 2 continues on next page</u>

c) *Dunglen Medical Centre* wants to be more environmentally friendly, work without **2** paper records, and share medical records with other service providers. Ideally, it wants all records to be stored in the cloud rather than on local hard drives or in paper format. Outline TWO (2) potential risks related to this strategy.

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Holding sensitive data in the cloud makes it potentially vulnerable to unauthorised access.*
- *Holding sensitive data in the cloud makes it potentially vulnerable to data loss or lack of access if the provider goes out of business or has server problems.*
- *Data may be required urgently at a time when the cloud data provider is unable to provide access.*

Total: 10 Marks

Question 3

a) Good Project Management is necessary for successful IT projects. Provide THREE (3) reasons which explain why project management is necessary for IT projects.

3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *IT projects are becoming increasingly complex.*
- *IT projects are becoming more specialised.*
- *IT projects often have several stakeholders.*
- *IT projects are increasingly distance-based.*
- *IT projects often have tight budgetary demands.*

b) Project Management involves four phases: Initiation, Planning, Execution and Review. Identify the phase of the Project Management life cycle in which the Communications Plan is created. You should also describe the purpose of the plan.

4

Award 1 mark for the correctly identifying the phase:

Phase:
- *The communications plan is created during the Planning phase*

Award 1 mark for each bullet point up to a maximum of 3 marks:

Purpose:
- *Ensure all stakeholders receive clear, up-to-date information at regular intervals*
- *Removes the opportunity for confusion/ excuses*
- *Enables regular feedback*
- *Can extend beyond the project and affect the organisation at a strategic level*
- *Opportunity to continually improve communication*

c) A common IT Project Management strategy is PRINCE2. Briefly explain the PRINCE2 methodology.

3

Award 1 mark for each bullet point up to a maximum of 3 marks:
- *Structured project management methodology with organised and controlled start, middle and end.*
- *Framework based, process driven approach.*
- *Flexible and adaptable.*
- *Based on good practice.*
- *Business case focused – requires justification and rationale throughout project.*
- *Defined roles.*

Total: 10 Marks

Question 4

Fresh Food Express began trading in 2012. The company purchase high quality local fresh produce from farmers and sell the produce to local customers in the form of food boxes delivered weekly to their door. The company began with just two employees, who collected produce from the farms and then prepared and delivered the food boxes to customer's houses. Customers would phone the company's staff to open or cancel orders, and monthly invoices would be typed up in Word and posted to the client.

However, this process is no longer adequate. Currently, *Fresh Food Express* has 20 20 employees and 1000 customers. Recently, the company have had problems with incorrect orders, missing deliveries and tracking how many hours staff has worked. The company does not have a computerised database, but wants to upgrade its processes to address these problems. To save money, it has decided to develop the new system(s) in house, with no external consultancy.

a) State FIVE (5) risks that Fresh Food Express will face with such a project.   **5**

   Award 1 mark for each bullet point up to a maximum of 5 marks:

   - *Lack of expertise: they specialise in food, not software.*
   - *Management not having realistic expectations: they don't have experience of software projects so don't know how much time it takes or what it is likely to cost to develop the software they need*
   - *Fresh Food Express not fully understanding what they require from the project: they don't have the experience to know, whereas a specialist developer might be able to make suitable suggestions.*
   - *Unrealistic timescales due to underestimating the time and effort required due to lack of experience with similar projects.*
   - *High chance of failure of a necessary project, due to lack of experience of the development team.*

b) You have been asked to identify risks based on limited information. Identify FIVE (5) types of missing information that would enable you to create a more in-depth and accurate risk list for the project.   **5**

   Award 1 mark for each bullet point up to a maximum of 5 marks:

   - *Details about clients of Fresh Food Express.*
   - *Details about the services provided by Fresh Food Express.*
   - *Details regarding the current staff of Fresh Food Express and their skillsets.*
   - *Details regarding the budget available for the project.*
   - *Details regarding the planned project approach (e.g. off-the-shelf or bespoke software).*
   - *More specific details regarding how staff are employed and paid.*

   Total: 10 Marks

Question 5

a) Draw a diagram of the Evolution Software Lifecycle for software deployment. **6**

The maximum number of marks awarded for this question is 6. Award 1 mark for each correctly named phase up to a maximum of 5 marks. Award 1 additional mark for listing the phases in the correct order and the arrows moving in the correct direction.

Initial Development
↓
Evolution
↓
Servicing
↓
Phase out
↓
Close down

b) Describe the *phase out* stage of the Evolution Software Lifecycle. **2**

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Phase out occurs when the system is phased out and replaced.*
- *System is beyond continuing maintenance at this point.*
- *Software may continue being utilised but will receive no maintenance support.*

c) Suggest TWO (2) benefits of using an established model such as the IEEE Evolution Software Lifecycle. **2**

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Proven success of standard model.*
- *Benefits of standardisation.*
- *Saves reinventing the wheel – why create a bespoke model when off the shelf ones can be easily applied.*
- *Provides a suitable benchmark.*

Total: 10 Marks

Question 6

Organisations often generate many project ideas. Thus, project selection is required and it is important to select wisely. Project selection is a four-stage process. Describe the following stages of the project selection process:

a) Strategic planning   **3**

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *Documentation of organisation's strategic goals/ objectives.*
- *Projects should align with strategic goals and objectives.*
- *Projects chosen should be based on value.*

b) Business analysis   **2**

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Identifying which business areas support strategic goals.*
- *Undertaking projects that align with business areas.*

c) Project planning   **3**

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *Initial project selection.*
- *Identifying projects that align both in strategy and business.*
- *Preliminary project scope statement produced.*

d) Resource allocation   **2**

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Final project selection based on findings from 3 previous stages*
- *Organisation's willingness to allocate required resources will affect selection*

Total: 10 Marks

Question 7

a) IT Service management is a complex and demanding function. State FIVE (5) **5** objectives of IT Service Management

Award 1 mark for each bullet point up to a maximum of 5 marks:

- *Produce a formal strategic level organisational policy.*
- *Identify service requirements.*
- *Formulate objectives.*
- *Identify service management team – roles and responsibilities.*
- *Confirm suppliers – internal and external.*

b) Briefly explain the purpose of Critical Success Factors (CSFs) **and** identify FOUR **5** (4) CSFs relevant to a software development company negotiating a contract with an outsourcing ITSM provider.

Award 1 mark for the below explanation:

Purpose:
- *CSFs are employed by organisations as a means of identifying key factors necessary for the organisation to achieve its goals.*

Award 1 mark for each bullet point up to a maximum of 4 marks:

Relevant CSFs:
- *Speed of problem resolution.*
- *Improvement of IT and business productivity.*
- *User satisfaction.*
- *Fulfil strategic/ business requirements.*
- *Provide service at acceptable cost.*
- *Manage ITSL quality.*

Total: 10 Marks

Question 8

IT Service Management uses various metrics to track and show performance. Briefly describe the following metrics:

a) Causal mapping **2**

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Causal mapping provides a way to review and overview how different aspects of an organisation fit together.*
- *A series of maps are produced which focus on identifying central issues and their connections with other peripheral issues within the organisation.*

b) Process control mapping **3**

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *Process control mapping is a tool used to monitor both performance levels and quality control.*
- *Enables bottlenecks and problem areas to be identified through the provision of immediate statistical data.*
- *Longer term trend data enables the identification of general patterns of quality control.*

c) Scorecards **3**

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *Scorecards are strategic planning and management techniques to align business activity with organisational strategy.*
- *Scorecards take strategic, non-financing performance measures and combine them with financial metrics.*
- *This combination of metrics enables organisations to gain a rounded perspective of overall performance.*

d) Dashboards **2**

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Dashboards are web style pages that collate raw data into a graphical representation*
- *Dashboards provide a visual representation of data*
- *The visual representation greatly reduces the time required for analysis and interpretation of the data*

Total: 10 Marks

Question 9

a) There are various approaches to IT Quality Management (ITQM). Briefly the philosophy of Total Quality Management (TQM).

4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *To be people oriented.*
- *To provide many tools and techniques to support quality management.*
- *Requires the commitment of the whole organisation.*
- *Prevention of faults and errors is preferable to inspection after they have occurred.*

b) List TWO (2) techniques used in Total Quality Management.

2

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Benchmarking*
- *Quality cost*
- *Cost function deployment*

c) Name and describe TWO (2) tools used in Total Quality Management.

4

The maximum number of marks awarded to this question is 4. Award 1 mark for the name of each appropriately identified tool up to a maximum of 2 marks. Award 1 mark for each description of the relevant tool up to a maximum of 2 marks.

- *Pareto principle: 20% of processes account for 80% of problems. It is important to find and concentrate on this 20%.*
- *Flowcharts: Used to show the path through a process.*
- *Cause and effect: diagram that looks like fish bones. Possible causes of quality issues are identified usually during brainstorming sessions. Useful for seeing the wider picture but can become complex.*
- *Scatter diagram: Plot values for two variables on a graph. Helpful for seeing if there are any correlations between the two variables.*
- *Histogram: Bar chart graphical representation of the data. Estimate of the probability distribution of a variable.*

Total: 10 Marks

Question 10

a) Explain the importance of user training in successfully deploying software. **2**

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *User training is vital for a software system to be accepted by a client's workforce.*
- *User training is vital for a software system to be integrated into a company's business framework.*

b) Briefly explain what is meant by a workplace training strategy. You should list ONE (1) advantage and ONE (1) disadvantage of this strategy. **4**

Award 1 mark for each bullet point up to a maximum of 2 marks:

Description:
- *All employees receive training in their workplace environment*
- *Employees are generally trained in groups rather than individually*
- *Training groups are usually based around teams including line managers*

Award 1 mark for listing a valid advantage and award 1 mark for listing a valid disadvantage up to a maximum of 2 marks.

Advantages:
- *Takes place in the real work environment*
- *Less disruptive than sending employees to an external training course*
- *Employees can ask the trainers questions to help them learn how to use the software*

Disadvantages:
- *Provision must be made to cover a team's duties whilst they are all receiving training and unable to do their regular jobs*
- *Organisations sometimes fail to take into account the reduction in productivity due to attending workplace training, which can result in added stress and reduction in staff morale*
- *Pace of training can be too intense for some, as people learn at different speeds*

Question 10 continues on next page

c) Briefly describe what is meant by a user training strategy. You should list ONE **4** (1) advantage and ONE (1) disadvantage of this strategy.

Award 1 mark for each bullet point up to a maximum of 2 marks:

Description:
- *Employees are given a user manual to work through*
- *Employees receiving user manual training do not receive any face to face training from an expert.*

Award 1 mark for listing a valid advantage and award 1 mark for listing a valid disadvantage up to a maximum of 2 marks.

Advantages:
- *Costs much less than hiring trainers*
- *Enables self-directed learning so employees don't waste time being taught how to use features they don't need for their jobs*
- *Employees can learn at their own speed*

Disadvantages:
- *Little or no control over whether employees undertake the training*
- *Hard to identify whether training has been undertaken*
- *Employees have varying ability to learn in this manner*
- *Missing knowledge – employees can't ask a manual questions if there is information missing*

Total 10 Marks

End of Examination Paper

Learning Outcomes matrix

Question	Learning Outcomes assessed	Marker can differentiate between varying levels of achievement
1	1	Yes
2	1, 4	Yes
3	2	Yes
4	4	Yes
5	3	Yes
6	2	Yes
7	5	Yes
8	5	Yes
9	6	Yes
10	3	Yes

Grade descriptors

Learning Outcome	Pass	Merit	Distinction
Understand the social, ethical and professional issues essential to the IT profession	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand a project management life cycle and associated techniques	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand how to deploy a software application	Demonstrate adequate deployment of an application	Demonstrate sound and appropriate deployment of an application	Demonstrate highly effective deployment of an application
Understand risks and the management of them in software projects	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand the principles and techniques of IT service management	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Be able to design software quality policies and procedures	Demonstrate ability to perform the task	Demonstrate ability to perform the task consistently well	Demonstrate ability to perform the task to the highest standard