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Module 5 – Information Management

This examination is divided into TWO sections.

- Section A (20%). This consists of TWENTY compulsory multiple choice questions. You should allocate approximately 36 minutes in total for Section A.
- Section B (80%). This consists of FIVE compulsory written questions. You should allocate approximately 2 hours and 24 minutes in total for Section B.

Suggested time allocation (by marks):

Marks	Approximate time in minutes
1	2
2	3
3	5
4	7
5	9
6	11
7	12
8	14
9	16
10	18
11	20
12	21
13	23
14	25
15	27
16	29
17	30
18	32
19	34
20	36

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SECTION A – MULTIPLE CHOICE QUESTIONS (Total 20 marks)

Answer **ALL** questions in this section. Choose the best answer for each question. Together they are worth 20% of the total marks for this examination.

Questions 1 to 20 carry 1 mark each. (20 marks – approximately 36 minutes)

1. Identify which of the following is NOT an advantage of using an expert system.
 - A It provides a cost-effective alternative to human experts.
 - B It provides suggestions on how a decision should be made from simple to complex levels.
 - C It improves the performance of an organisation by maintaining information and controls over the firm's knowledge.
 - D It processes every transaction in the same way for the same type of transaction regardless of the user.

2. Identify which of the following matters would be used and assessed by information systems in analysing sales performance.
 - (1) Number of items sold.
 - (2) Name of courier.
 - (3) Customer type.
 - (4) Branch ID.
 - A (1), (2) and (3) only.
 - B (1), (2) and (4) only.
 - C (1), (3) and (4) only.
 - D (2), (3) and (4) only.

3. State a key factor of the ever-increasing dependency of information systems among businesses.
 - A Ease to establish a business.
 - B Reduction of cost to own a new information system.
 - C Globalisation.
 - D Popularity of intranet.

4. Identify which of the following is NOT a possible contribution of information systems to a success implementation strategy for a business.
- A Taking over the managerial functions from humans.
 - B Exploring possible changes in corporate strategies.
 - C Supporting sales processes.
 - D Maintaining advantages over competitions.
5. Identify which of the following are the basic components of a corporate level information system.
- (1) Application software.
 - (2) Database management system.
 - (3) Networking peripherals.
 - (4) Security measures.
- A (1) and (2) only.
 - B (1), (2) and (3) only.
 - C (1), (2) and (4) only.
 - D All of the above.
6. Outline an information needed by a manufacturing and production department.
- A Location of materials and plant assets.
 - B Unit sales price and volume discount.
 - C Similarity of competitors' product.
 - D Satisfaction ratings among our suppliers.

7. Identify which of the following data are usually solely owned and maintained by accountants.
- (1) Sales transactions and forecasts.
 - (2) Cash receipts and cash payments.
 - (3) Budgeted income statement for next financial year.
 - (4) Manufacturing costs.
- A (2) and (3) only.
B (1), (2) and (3) only.
C (2), (3) and (4) only.
D All of the above.
8. State the best term in the following statement to make it correct.
- "_____ is an integrated set of tools, technologies and programme products that are used to collect, integrate, analyse and make data available."
- A Big data system
B Business intelligence system
C Data mining system
D Data warehouse system
9. Identify which of the following is NOT a principle to manage and learn knowledge for a knowledge management system ("KMS").
- A Alignment.
B Communication.
C Diversification.
D Forward thinking.
10. Identify which of the following statements is NOT correct.
- A E-business and e-commerce are sometimes used interchangeably.
B E-commerce handles outward-facing business processes with customers, suppliers and external partners.
C E-business uses electronic data interchange but e-commerce does not.
D E-business normally includes e-commerce but also covers several internal processes.

11. State the best term in the following statement to make it correct.

"_____ is a good example of adopting artificial intelligence technologies."

- A Virtual reality
- B Point-of-sales ("POS") system
- C Transaction processing system
- D Database management system

12. Identify which of the following matters should be considered when selecting an appropriate information system for a company.

- (1) Total hardware cost.
- (2) Number of hours that would be saved in preparing managerial reports.
- (3) Easy to modify the system.
- (4) Acceptance of employees.

- A (1) and (3) only.
- B (2) and (4) only.
- C (2), (3) and (4) only.
- D All of the above.

13. Outline a situation which may cause the top management to reject an IT project.

- A It has a positive net present value.
- B Its internal rate of return is lower than the entity's cost of capital.
- C It has a shorter payback period than some of the other projects with the same investment amount.
- D None of the above.

14. State the best term in the following statement to make it correct.

"Under system development life cycle, a successful completion of a user acceptance test implies that an IT project can proceed to _____."

- A system design stage
- B system analysis stage
- C system operation and maintenance stage
- D system implementation and testing stage

15. When an organisation is going to select a reliable cloud service provider, state what should be considered first.
- A Minimum storage capacity.
 - B Availability level.
 - C The length of contract period.
 - D The name of IT auditor.
16. Identify which of the following procedures should be included in a business continuity plan.
- A Data backup.
 - B File labelling.
 - C Disposing a retired server.
 - D Switching daily computerised operations to manual.
17. Identify which of the following statements is correct.
- A The term "authorisation" and "authentication" can be used interchangeably.
 - B Authentication is the process of verifying the identity of a user while authorisation is the process of restricting access of data and/or function of a system.
 - C Authorisation is the process of verifying the identity of a user while authentication is the process of restricting access of data and/or function of a system.
 - D None of the above.
18. State the best term in the following statement to make it correct.
- "_____ usually encrypts all the files in both local and network drives of the victim's computer and requests a certain amount of Bitcoins for recovery."
- A Ransomware
 - B Trojan Horse
 - C Spyware
 - D Virus

19. Identify the best phrase from the following to complete the statement.

"To prove a file has not been modified by a third party, we can _____."

- A encrypt it with a strong password
- B assign user permission rights
- C change it as a read-only file
- D compare its current digested hash value with the original one

20. Identify the best phrase from the following to complete the statement.

"To maintain non-repudiation on an e-commerce transaction, both offeror and offeree should _____."

- A install the same brand of anti-malware software in their computers
- B upgrade their web browsers to the latest version
- C sign the transaction with their own digital certificate issued by a trusted certification authority
- D save the contract on a brand new USB drive

* * * END OF SECTION A * * *

SECTION B – WRITTEN QUESTIONS (Total 80 marks)

Answer **ALL** questions in this section. Marks are indicated at the end of each question. Together they are worth 80% of the total marks for this examination.

Question 1 (30 marks – approximately 55 minutes)

Imagine that you are a system consultant of an IT solutions provider. One day, you received a phone call from Ricky, who is your secondary school classmate and a manager in a local trading firm. During the conversation, you learnt that his company was considering to acquire an Enterprise Resource Planning ("ERP") system so as to replace its 10-year old canned accounting software and inventory management system.

As Ricky is not good at information systems and computing, he would like to know more about the following.

Required:

- (a) **Justify THREE general objectives of using ERP systems among businesses.**
(6 marks)
- (b) **Apart from considering the ERP system, state any FOUR types of software that could be installed and used in Ricky's company.**
(2 marks)
- (c) **Determine which level of management would benefit most if a company starts using an ERP system. Demonstrate any TWO types of decision that would be made by them.**
(5 marks)
- (d) **Explain the necessity of acquiring implementation services from an ERP system provider or an IT consultancy firm. You should start with describing any TWO common implementation activities delivered by system providers and IT consultancy firms in the system development life cycle ("SDLC").**
(6 marks)
- (e) **At the operational level, could an ERP system be classified as a transaction processing system ("TPS")? Justify your answer with any TWO examples.**
(5 marks)
- (f) **State and explain the type(s) of networks that would be established if Ricky's company encourages its sales representatives and top management to use its ERP system at any time and anywhere they want.**
(6 marks)

Question 2 (12 marks – approximately 21 minutes)

Chan Kee Company, established in 1985, is one of the frozen food retailers in Hong Kong. It currently has five physical shops which are located in Wan Chai, Hung Hom, Tsuen Wan, Tuen Mun and Ma On Shan.

The top management of Chan Kee Company would like to expand its business by selling some luxury goods such as abalone, king crabs, lobsters, M5 beef and Spanish pork chops via a business-to-consumer ("B2C") e-commerce platform.

Required:

(a) **Justify any FOUR features that could be adopted to the B2C platform to make it be more successful. Explain each feature briefly.**

(8 marks)

(b) **Demonstrate any TWO potential risks if Chan Kee Company engages in e-commerce activities.**

(4 marks)

Question 3 (8 marks – approximately 14 minutes)

(a) **Define the concept of "Big Data".**

(2 marks)

(b) **Outline any FOUR sources of "Big Data".**

(2 marks)

(c) **Demonstrate any TWO benefits that can be gained from a telecommunications company if it properly uses its "Big Data".**

(4 marks)

Question 4 (16 marks – approximately 29 minutes)

- (a) Outline the SIX data protection principles under the Personal Data (Privacy) Ordinance. (3 marks)
- (b) Compare and contrast the major similarity and differences of Phishing and Pharming. (5 marks)
- (c) Apply ONE appropriate input control to each of the following situations and interpret how it works.
- (i) An invalid product item was stored in a daily sales file of an internally developed point-of-sales ("POS") system.
 - (ii) In a room booking transaction, the check-in date and the check-out date were swapped.
 - (iii) Some special symbols were stored in the quantity field of the purchases data file.
 - (iv) A billing system crashed as it does not support a mailing address longer than 256 characters.
- (8 marks)

Question 5 (14 marks – approximately 25 minutes)

- (a) Outline any TWO duties of accountants for each of the following system development stages:
- (i) design; and
 - (ii) testing.
- (6 marks)
- (b) Justify the importance of change management when an organisation plans to replace its current system with a new one. (4 marks)
- (c) As a change agent, demonstrate ONE effective measure to solve each of the following problems in a system development project:
- (i) fear of uncertainty among the users; and
 - (ii) lack of top management support.
- (4 marks)

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Module 5

Information Management

Answers

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SECTION A – MULTIPLE CHOICE QUESTIONS (Total: 20 marks)

Questions	Answers	Marks allocation
1.	D	1
2.	C	1
3.	B	1
4.	A	1
5.	D	1
6.	A	1
7.	A	1
8.	B	1
9.	C	1
10.	C	1
11.	A	1
12.	D	1
13.	B	1
14.	C	1
15.	B	1
16.	D	1
17.	B	1
18.	A	1
19.	D	1
20.	C	1

* * * END OF SECTION A * * *

SECTION B – WRITTEN QUESTIONS (Total: 80 marks)

Answer 1(a)

The general objectives of using ERP systems among businesses are:

- Global visibility: ERP systems consolidate all business operations into a uniform and enterprise-wide system environment so as to improve data integrity, make the data available to any authorised user, and reduce production lead time and delivery time;
- Employee empowerment: Global visibility of information improves communication and decision making. Managers may also conduct cross-function analysis easily;
- Cost reductions: a single ERP system eliminates costs associated with maintaining multiple systems and any costs related to poor data integrity;
- Best practices: an organisation may benefit from the implementation of some best practices which had been adopted by successful businesses; and
- Enhance efficiency: ERP systems provide a collaborative environment with customers, suppliers and logistic partners so as to handle the business processes automatically and efficiently.

[Any appropriate answer(s) is / are acceptable.]

Answer 1(b)

Any four types of the following software could be installed and used in Ricky's company:

- operating systems in servers and workstations;
- database management system in the database server;
- anti-malware software in servers and workstations;
- word processing and spreadsheet applications in workstations;
- business intelligence applications in the database server and workstations; and
- other applications such as web browser in servers and workstations.

[Any appropriate answer(s) is / are acceptable.]

Answer 1(c)

The strategic level of management would benefit most from the use of an ERP system (as they could obtain business data and information directly from an ERP system without waiting for monthly reports prepared by the middle management).

They are involved in making any two of the following decisions:

- setting new objectives or initiatives for the organisation;
- planning how these new objectives can be achieved;
- determining the resources required to attain these objectives;
- formulating policies governing the acquisition and deployment of these resources; and
- developing a long-term strategic plan according to the organisation's objectives.

Answer 1(d)

In the system development life cycle, system providers should deliver any two of the following activities to their clients:

- compilation of a complete system implementation and conversion plan;
- installation of hardware, software and / or network;
- training to IT staff (for system configurations and maintenance), key users (advanced system usage) and normal users (daily system usage);
- guidance on a series of system tests; and
- further system editing and modifications.

As the above activities require some experts and professionals in a particular system, hardware, software and network to carry them out, and these experts and professionals are normally not available in a business, it is necessary to acquire implementation services from an ERP system provider or an IT consultancy firm.

Answer 1(e)

At the operational level, an ERP system could be classified as a transaction processing system, as it can perform any two of the following transaction processing functions:

- sales and marketing – records sales transactions, new customer data and pricing information;
- purchasing – records purchase transactions, new supplier and product data and historical purchase prices;
- manufacturing and production – records production plans, consumption of raw materials, number of units of finished goods produced;
- human resources and payroll – records how an employee was selected, interviewed, recruited, paid, promoted and terminated;
- accounts receivable and payable – records the amount due from / to a customer or supplier and how much the company receives or pays; and
- financial accounting – consolidates journal entries generated from the above functions and records adjusting entries for the current financial period.

Answer 1(f)

Both intranet and virtual private network should be established as the company encourages its sales representatives and top management to use its ERP system inside and outside the company's premises at any time.

Sales representatives and top management can use an intranet, a set of secure internal networks protected by firewalls inside an organisation, to access sales data and sales performance respectively in their offices.

If sales representatives and top management work outside of their offices, they can use a virtual private network to prevent confidential data being captured from the unsecured internet, as it provides a secure and encrypted connection between the ERP system and computers / electronics devices of sales representatives and top management.

Answer 2(a)

Any four of the following features could be adopted to the business-to-consumer ("B2C") platform to make it be more successful:

- Efficient performance and service – marketing, ordering and customer service processes should be user-friendly and helpful, as well as quick and easy.
- Security – it is important for the B2C platform to employ security measures and these measures should be audited by an independent IT auditor on a regular basis so as to assure customers that their personal details and transactions are protected.
- Transaction integrity – ensuring the information provided by both buyer and seller is accurate and complete, and no information exchanged has been altered in any way.
- Offering incentives to customers – the B2C platform can offer coupons, discounts and gifts to retain its customers in order to attract them to purchase goods and services once again in the near future.
- User personalisation – a customer is recognised when he / she fills out his / her profile and preferences on his / her first visit. From the second visit and onward, the homepage of the B2C platform shows the news, photos, products, services and other information that he / she is interested in.
- Socialisation – the B2C platform provides a function for the customers to share news, photos, products, services and whatever other information he / she likes in the B2C platform to his / her social networking website(s).
- "Look and feel" of products and services – the B2C platform can show the products with virtual reality technology or videos so as to let the customers experience the usage of the products before purchasing them.

[Any appropriate answer(s) is / are acceptable.]

Answer 2(b)

Any two of the following potential risks may be faced:

- loss of transaction integrity due to the lack of an adequate audit trail in either paper or electronic form;
- e-commerce security risks include malware attacks and computer frauds through unauthorised access by hackers;
- improper revenue recognition policy resulting from whether the entity is acting as principal or agent and whether gross sales or commissions only are to be recognised;
- non-compliance with taxation and other legal and regulatory requirements;
- failure to ensure that contracts evidenced only by electronic means are binding;

- over-reliance on e-commerce when placing significant business systems or other business transactions on the internet; and
- system and infrastructure failure.

[Any appropriate answer(s) is / are acceptable.]

Answer 3(a)

"Big data" describes a very large volume of structured, semi-structured and unstructured data and it can be analysed for insights that lead to better decisions and strategic business moves. It is also characterised by its high velocity and variety.

Answer 3(b)

"Big data" can be generated or contributed by any four of the following sources:

- machine log data;
- business applications;
- public websites;
- social media;
- media;
- internal and external documents;
- knowledge base; and
- mobile devices and sensors.

[Any appropriate answer(s) is / are acceptable.]

Answer 3(c)

A telecommunications company can gain any two of the following benefits from the proper use of its "Big Data":

- Better sales and marketing campaigns could be made as big data can tell about customers' behavior.
- Smarter network operations and better resources allocation could be made by studying the past network and equipment utilisation among the transmitting stations.
- Better repair and maintenance of the equipment and facilities as some symptoms of hardware faults could be easily identified in advance.
- Instant responses and actions could be made as real-time information is usually available.
- An opportunity to gain additional income as it has been reported that some telecommunications providers could sell their data to marketing agents and clients successfully.

[Any appropriate answer(s) is / are acceptable.]

Answer 4(a)

The six data protection principles under the Personal Data Privacy Ordinance are as follows:

- DPP1 – Data Collection Principle – purpose and manner of collection of personal data;
- DPP2 – Accuracy & Retention Principle – accuracy and duration of retention of personal data;
- DPP3 – Data Use Principle – use of personal data;
- DPP4 – Data Security Principle – security of personal data;
- DPP5 – Openness Principle – information to be generally available; and
- DPP6 – Data Access & Correction Principle – access to personal data.

Answer 4(b)

The similarity of Phishing and Pharming is that the hackers induce the victims to visit their bogus / fake websites.

The first difference between Phishing and Pharming is that the hackers send out phishing e-mails which are pretending to be a legitimate company, such as a bank, an insurance company or an investment firm, to the victims and induce them to click on the hyperlink to a bogus / fake phishing website; while in pharming, hackers try to redirect website traffic to a bogus / fake website by establishing some poisoned DNS server or editing victims' DNS entries in their computers.

The second difference is that Phishing aims at collecting victims' personal information and misappropriating their assets with such information, while Pharming aims at redirecting victims to a bogus / fake website and inducing the victims do anything the hackers want.

Answer 4(c)(i)

Validity check – the system checks the product code or barcode to see whether it could be found in the product master file; or

Check digit verification – a check digit is calculated and assigned to each product item, the system has to recalculate the check digit to see whether the product code or barcode is valid or not.

Answer 4(c)(ii)

Reasonableness test – the system performs a logical test between two input values, to make sure the check-in date is earlier than the check-out date.

Answer 4(c)(iii)

Field check – the system determines whether the input value matches the predefined field type, such as integer in this case.

Answer 4(c)(iv)

Size check – the system checks that the data length of the input value is less than or equal to the predefined data length, such as 256 characters in this case.

Answer 5(a)(i)

The duties of accountants in design stage are as follows:

- identifying system inputs and outputs;
- help to map workflow and data flow;
- assuring whether the detailed specification meets user requirements; and
- evaluating appropriate design alternatives.

Answer 5(a)(ii)

The duties of accountants in testing stage are as follows:

- testing features and functionality;
- testing and auditing the automated controls to ensure the accurate and complete processing of data and operations; and
- making sure that real data from all sources has been entered into the system correctly and these data are processed correctly

Answer 5(b)

Whenever a change is anticipated, individuals in an organisation usually react with negative feelings. It cannot be denied that changes often lead to a new distribution of authority and power. Organisations must be sensitive to and consider the feelings and reactions of the persons affected by the change. Successful system building requires careful change management, which is a process of managing changes to the system to make sure changes are authorised, and ensure the system continues to meet business needs.

Answer 5(c)(i)

The organisation should:

- address employees' concerns and provide assurances regarding job security and that no major job losses or responsibility shifts will occur;
- provide training and highlight the benefits of the new system;
- demonstrate early adoption by executives and senior management, to convince late adopters to make the transition; or
- further allay fears by introducing the relocation of employees, and allow attrition and early retirement.

[Any appropriate answer(s) is / are acceptable.]

Answer 5(c)(ii)

Management should:

- revise measurements and rewards to motivate the adoption of the new system;
- reallocate resources to communicate the importance of adopting the new system; or
- ensure that they provide adequate resources for the system and motivate others to assist with system development and its operation.

[Any appropriate answer(s) is / are acceptable.]

* * * END OF EXAMINATION PAPER * * *