Information Technology Questions

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INFORMATION TECHNOLOGY QUESTIONS

Question 1

Explain the difference between data and information.

Question 2

“Information systems” is a widely used term. What does it mean? And how can an organization fully realize the value of its information system?

Question 3

How can an effective information system contribute to an organization’s competitive advantage?

Question 4

What role does an organization’s board of directors play with respect to information systems governance and strategy?

Question 5

ISO 38500 sets out six principles for good corporate governance of IT. Briefly describe each one.

Question 6

Information technology plays an increasingly important role in today’s businesses. What are some of the most common IT decision-making structures?

Question 7

Why is it important to include an organization’s financial manager in the information systems decision-making process?

Question 8

Discuss the potential challenges of putting an information systems plan into practice with respect to strategic alignment.

Question 9

Explain some of the key benefits to strategic information systems planning.

Question 10

Discuss each of the following types of information system development:

a) mandated changes

b) necessary changes

c) efficiency improvements

d) effectiveness improvements

Question 11

For most Canadian public issuers, CFO and CEO certification of disclosure controls and internal controls over financial reporting is now required (see: Ontario Securities Commission's Multilateral Instrument MI 52-109 *Certification of Disclosure of Issuers' Annual and Interim Filings*). Explain the implication that this certification requirement has had for IT governance.

Question 12

Information governance considers the key decisions that must be made in managing and aligning information systems with an organization's objectives, and the different ways in which those decisions can and should be made.

a) Why has IT governance become a key topic in information systems?

b) Identify the similarities between the Control Objectives for Information and Related Technologies (COBIT) and Committee of Sponsoring Organizations of the Treadway Commission (COSO) frameworks.

c) Discuss the difference in the focus of the COBIT and COSO frameworks.

d) Using the five COBIT principles and five COSO components, summarize the differences between the two frameworks using the template below. COBIT principles and COSO components may fit into more than one area of the table. As an example, IT governance is already completed.

	COBIT principles	**COSO components**
IT governance	Guidelines on the integration of IT governance measures with other areas of governance	Information and communications policies developed to ensure governance compliance
Business process		
Control objectives		
Continuous improvement		
Risk management		

Question 13

Porter's Five Forces is a model that identifies and analyzes five competitive forces that shape every industry, and helps determine an industry's weaknesses and strengths. Explain the role that information systems play in each force.

Question 14

There are four attributes that define "data." Identify each of the four Vs of data and explain how they should be considered in developing a firm's IT and information systems strategy.

Question 15

The restaurant industry is highly competitive, with low barriers to entry, and customer service is important. As such, competitors in the restaurant industry have needed to look for ways to take their IT strategy and blend high tech with high levels of customer service. They study customer behaviour and look for trends in the markets they do business in.

Many restaurants are now implementing integrated customer relationship management (CRM) systems to track customer habits, interests, and experiences in detail. To stay competitive, restaurants are using online reservation apps, online ordering / instant messaging, and automatic prompts for reviews to drive traffic. On top of these IT strategies, companies are maintaining customer loyalty programs to ensure repeat visits.

Restaurant-related IT businesses (such as those developing the apps and customer platforms) face a lot of pressure to do more with less and bring things to market faster.

A strong focus on IT governance, strategic planning, investment management, and maintenance of a robust enterprise architecture has helped restaurants embrace business-technology management.

When combined, these IT investments have improved the quality of decision-making and overall financial results.

a) Use Porter's Five Forces model to analyze the restaurant industry and make a recommendation for a company that wants to compete in the industry.

b) How can information systems support the mission of a restaurant chain and help it gain a competitive advantage?

c) Using the Nolan and McFarlan model and the Weill and Ross model of IT decision-making structures, assess which mode of IT governance would most likely apply and which governance style would be the most appropriate for the restaurant chain industry.

Question 16

What are the four characteristics that users should look for in a decision support system (DSS), and why are they important?

Question 17

The value of information is directly related to what decision makers need to help them in the decision-making process.

a) How do information systems support management decisions?

b) What are the three levels of management decision-making, and which types of information systems best address their needs?

Question 18

Explain the differences between DSSs, management information systems (MISs), and transaction processing systems (TPSs).

Question 19

a) Provide four different examples of operational decisions or tasks that employees might make or perform each day. Identify an information system that could be used to facilitate those decisions or tasks.

b) Provide four different examples of decisions or tasks that middle managers might make or perform each day. Identify an information system that could be used to facilitate those decisions or tasks.

c) Provide four different examples of decisions or tasks that executives might make or perform each day. Identify an information system that could be used to facilitate those decisions or tasks.

Question 20

What are the major characteristics of an MIS?

Question 21

Blockchain technology has been garnering significant attention in the media recently, particularly with its use in cryptocurrencies. How does this technology facilitate transactions?

Question 22

The Metropolitan Convention Centre (MCC) is a large complex that includes office space, hotels, restaurants, and several “convertible” spaces that can be used for conventions, galas, and so on. The MCC’s information system has the following features:

1. It produces a report for the restaurants comparing budgeted versus actual costs.
2. It prints a regular daily report showing offices rented and convertible space requiring catering for that day.
3. It identifies the best convertible space configurations based on 500 rules for allocating rooms of various sizes.
4. It produces forecast information that will help plan the office space requirements for MCC tenants over the next three years.
5. It produces information for ordering supplies for the hotels based on an interactive ordering model that management can modify as needed.
6. It creates automated responses to inquiries from the MCC’s website into rates and availability of office space.
7. It provides an interactive spreadsheet model for what-if analysis of maintenance costs at the MCC.
8. It supplies information about projected office space occupancy for the next 15 years to assist in planning another office tower.

Create a table with the following headings, and indicate if each point listed in the question is a characteristic of a DSS. Describe why or why not.

Point #	Meets DSS characteristics? (Yes, No, or Both)	Why or why not?

Question 23

Reinfield College is one of the largest colleges in Canada. The college has 14 departments and teaches over 120,000 students each year. Reinfield is facing several operational and strategic challenges.

Profitability for the college has been trending downward for the last three years, and no one seems to know if the underlying issue is reduced revenue or operating expenses increasing out of control in one or more of the departments. The college is considering whether some departments should be closed to improve profitability. The college recently implemented an integrated enterprise resource planning (ERP) system to help collect information to deal with the issues. The college is also investing in a group decision support system (GDSS) so that all stakeholders can be involved in determining the future of the college.

Recommend key characteristics that should be included in the new GDSS.

Question 24

Brooke Wines Limited (Brooke) has given you an inventory listing of the wines it currently has in stock (see Excel file titled “Question 24 data and solution”). The company has asked you to do some analysis on the listing to answer the following questions.

a) Brooke is thinking of having a sale on the type of wine for which it has the greatest quantity on hand. Using the SUBTOTAL function, determine the type of wine for which Brooke has the highest quantity on hand.

b) Using the Table function, create a table for the wine list.

c) Using the PivotTable function, identify which countries have the highest and lowest average prices for *white* wines.

d) Using the Slicer function, determine what types of wines Brooke carries from the Vineland Estates winery.

Question 25

You have been hired by Vascal Insurance as an independent consultant to study its salary practices. Vascal is a 20-year-old company with a staff of 100 employees. The CFO has asked you to focus on salary ranges at the four offices, because there is some concern about salary discrepancies between the offices. You have been asked to keep your results confidential and not to discuss your project or its results with anyone else in the firm except for the CFO.

An Excel file was sent to you to analyze ("Question 25 data and solution"). In this file, the categories for the Job Status column are FT = full time, PT = part time, and CN = contract. Under the Pay Type column, S = salary and H = hourly.

a) To analyze if there are any differences in salary based on gender, location, years of service or job status, create the following pivot tables. Put each pivot table on a separate sheet or tab:

   i. Determine the number of male versus female employees by location and in total. Calculate and comment on the percentages by location and for the company in total.

      Below the range of data for each pivot table, show the percentage differences between the categories being analyzed.

      Does this analysis assist with determining if there are salary discrepancies between the four offices?

   ii. Determine the average annual salaries of men versus women in dollars, by location, and in total. Comment on the pivot table results.

   iii. Using years of service as a criteria, calculate average salaries of men versus women by location and in total by year of service. Comment on the pivot table results.

   iv. Using job status as a criteria, determine the average salary paid to men versus women.

b) Using your analysis as support, state your conclusion(s) about Vascal Insurance's salary differences. Identify any additional information you require from the company and any further analysis you would like to conduct to support your conclusion.

Question 26

When setting priorities for systems development, senior management will first consider which systems are mission-critical, or key to the organization's operations and success. What are the specific performance and cost objectives that should be defined at the outset?

Question 27

What are the differences between a systems analyst and a business analyst? Why are both needed in a development project?

Question 28

Most systems development methodologies require some form of management approval before development can proceed to the next stage. What are some of the reports that are useful for management's review?

Question 29

The traditional approach to the systems development life cycle (SDLC) is often referred to as the waterfall model. What are the stages of development in this model?

Question 30

What are some alternatives to the waterfall method? Why have these new methods emerged?

Question 31

With any system that you design, there are options to build, buy, or subscribe to the software. What are some of the issues that you must consider in your decision to make or buy?

Question 32

Systems maintenance is the process of fixing errors and adapting the system to changing requirements. What are some of the common reasons for maintenance?

Question 33

Systems development methodologies provide a structured framework for systems analysis, design, implementation, and maintenance. What are some of the advantages and disadvantages of using a systems development methodology?

Question 34

Describe the advantages and disadvantages of using prototyping as a development method.

Question 35

The notion of business process re-engineering refers to the radical reshaping of the processes of an organization to achieve its goals. What are the seven principles of re-engineering?

Question 36

Describe *at least four* of the elements of successful change management.

Question 37

Describe the four approaches to system conversion: parallel, pilot, phased, and direct cutover. Be sure to include the risk profile of each option.

Question 38

Feasibility analysis is concerned with the likelihood that a system will be completed in a way that will be valuable to the firm. Describe the four areas of focus: technical feasibility, organizational feasibility, economic feasibility (or cost-benefit), and schedule feasibility

Question 39

John P. Kotter developed an eight-step model for maximizing the likelihood of a successful change initiative. What are each of the steps, and how do they promote change?

Question 40

Describe the most common forms of resistance to change, and provide one example of how management can address this resistance.

Question 41

What does data integrity mean?

Question 42

To address emerging needs that come with big data, software such as text analytics, email analytics, contract analytics, web scraping, and self-service business intelligence (SSBI) have been developed.

a) What are the two characteristics of SSBI that makes is most relevant to big data analysis?

b) What are some of the features of SSBI software that make it so useful?

Question 43

a) Describe the data process chain.

b) What is difference between unstructured and structured data?

Question 44

a) Describe the data life cycle.

b) What is “dark data?” Why is it not used?

Question 45

What are some solutions, both technological and human, that can help us improve data integrity, security, and integration?

Question 46

a) How does a relational database differ from a data warehouse?

b) What are some advantages of relational databases?

Question 47

Information models are used to take raw data and make it into useful information. There are four types of model-building methodologies, which are all designed to help achieve better business decisions and outcomes. Describe the four methodologies.

Question 48

The design and implementation of Phoenix, the Canadian federal government's multimillion-dollar payroll system, did not go as planned. The national payroll system was expected to save $70 million each year but instead cost more than a billion dollars. Initially, almost half of the federal employees were not paid at all, were paid too much, or were paid too little. The federal government had to correct the payroll errors and ultimately decided to replace the Phoenix system with a new payroll system.

a) Explain the difference between predictive and normative expectations of IT projects. Provide an example of each type of expectation for the Phoenix project.

b) Explain the expectation gap, and describe three problems that arise from the expectation gap in relation to the Phoenix payroll system.

c) What recommendations would you have for the federal government to increase the success of the new replacement payroll system?

Question 49

a) What is XML?

b) Identify the errors in the XML code below:

```
<xml version = "2.0
<book>
<bookname CPA Standards and Guidance Collection </Bookname>
<pages>600<pages>
```

Question 50

a) Describe the differences between artificial intelligence (AI) and machine learning (ML) based on the definition, objective, and focus of each term.

b) Classify the following activities as examples of business intelligence (BI), AI, or ML.

Example	Classification
Amazon predicts what you are interested in purchasing based on past behaviour, web searches, and website interactions.	
The bank uses a system to assess the riskiness of an individual defaulting on a loan by analyzing separate databases on credit scores, spending patterns, and financial data quarterly.	
A website offers a customer recommendations based on previous purchases or website activity.	
You use Google Maps for travel directions and real-time traffic data.	
A social network uses face recognition to identify your friends in other pictures posted on its platform.	
You talk to a smart assistant like Siri or Alexa on your smartphone.	

Question 51

Use the data file titled “Question 51 data” as starting point for this question. It contains the following information:

State and local task rate table

FIELD	DISCUSSION
STATE	Name of the state
STATE TAX RATE	The tax percentage on sales in a specific state
AVERAGE LOCAL TAX RATES	Local tax: tax levied by a local authority (such as county), where applicable Average local tax rate: the average of the tax rates levied by local authorities in a specific state
COMBINED RATE	STATE TAX RATE + AVERAGE LOCAL TAX RATE
CATEGORIZATION	The combined rate as deemed “LOW” or “HIGH”

Using the Power BI file, create a dashboard that shows the following information:

a) A table displaying all of the states with tax rates categorized as LOW.

b) A pie chart that shows the percentage of states with a LOW tax rate and the percentage of states with a HIGH tax rate.

Question 52

Use the file titled “Question 52 data” as starting point for this question. It contains the order history of Peppa’s Bakery.

You will need the following information to complete this problem:

The ORDERDATA table has three rows:

FIELD	DISCUSSION
CUSTOMER	Name of the customer
PRODUCT	Name of the product
QUANTITY ORDERED	Quantity ordered per product per customer

Use the matrix function in Power BI file to create a visualization that displays Peppa’s customers and the products they have ordered. Feel free to play around with colours and fonts.

Using your visualization, answer the following:

a) Which product is most popular?

b) Which customer has the highest volume of purchases?

Question 53

What factors drive the need for technological change in organizations?

Question 54

Who should be involved in information systems planning? How can involvement promote success?

Question 55

What are some of the factors that contribute to successful systems development projects? Describe at least two ways that a project may still fail despite the many project management techniques and controls available to support success.

Question 56

In the past, many software agreements were for indefinite use and often included source code so that customers could modify the software to meet their own needs. Today, many software vendors are moving toward defined licence periods, sometimes known as the software as a service (SaaS) model. What are some of the benefits and limitations of this model?

Question 57

What are the six major hardware components of a typical computer?

Question 58

As data security becomes increasingly important, many companies are offering biometrics as a form of personal identification. What are some common forms of biometric identification?

Question 59

Prepare a Gantt chart for the project described in the below table. You can also use the data file titled “Question 59 question and solution”.

Sample Project Plan			DURATION (days)
START DATE	END DATE	TASK	
2018-09-01	2018-10-15	Initiating	44
2018-09-15	2018-10-31	Planning	46
2018-11-01	2019-02-28	Executing	119
2018-09-15	2019-03-07	Controlling	173
2019-03-15	2019-03-31	Closing	16

Question 60

With respect to the project described in the previous question, answer the following questions:

a) Which is the longest task by duration?

b) How many days in total is the project planned to take?

c) How many tasks are planned to be active in September 2018?

d) On November 15, 2018, which tasks are planned to be under way?

e) How many tasks are planned to take longer than 31 days?

Question 61

Describe some of the benefits of networking.

Question 62

What are the three approaches used to structure the IT and information systems planning process?

Question 63

Describe what “open-source” software is and the impact it is having on IT environments.

Question 64

Independently research five trends or drivers of IT decisions. Explain why these trends or drivers are important and the effect they are having on the technology environment.

Question 65

Outline the key components of the technology infrastructure required for successful e-commerce.

Question 66

The owner of a small business has approached you looking for some IT help. She stores all of the business’s electronic files on a laptop, which she replaces with a newer model every five years. She recently had a scare when she spilled a glass of water on her laptop, and she is now wondering if she should consider having a backup plan and what options are available to her.

Prepare a response.

Question 67

Risks specific to information systems relate to cybersecurity, fraud, system reliability, compliance with regulatory requirements, intellectual property (IP), and the ethical use of information.

What are the most common risk management strategies? Provide an example of each.

Question 68

Explain what enterprise-level controls are and why they are important to the control environment.

Question 69

Explain why segregation of duties is an important control and why it is relevant for IT departments.

Question 70

Explain how fraud can occur through an organization's information system.

Question 71

Describe the most common malware deployment methods, and explain how companies and individuals can protect themselves.

Question 72

The payment card industry (PCI) takes data security very seriously and developed a data security standard to enhance card holder data security and facilitate the adoption of consistent data security measures around the world.

For each of the following information technology security goals, list a control to help achieve the goal and the risk management strategy it relates to, and explain why you chose the control:

- Prevent malware from being installed.
- Prevent data loss due to fire.
- Prevent data loss due to hardware failure.
- Protect cardholder data.
- Prevent unauthorized access to data.
- Recover corrupted files.

Question 73

What is authentication, and what are some of the most common methods that companies use to address user authentication?

Question 74

What is the difference between business continuity planning and disaster planning? Are they mutually exclusive?

Question 75

Reliable systems protect confidential information such as business plans, pricing strategies, client and customer lists, and legal documents from unauthorized disclosure. Describe the four categories of integrity controls that help foster a reliable system.

Question 76

Explain how artificial intelligence (AI) is changing the way businesses operate. What are some of the risks associated with adopting AI?

Question 77

What are the legal obligations of organizations for reporting crimes related to information security? What are the ethical responsibilities?

Question 78

Privacy is defined as “the right not to be interfered with, the control over matters that affect you, and the ownership of things that are yours.” Whenever data is collected, ethical issues concerning privacy are a concern. The issue today is that data is *continuously* being collected, often without an individual’s express consent or even their knowledge.

Given the explosive rise of online social networks and platforms, can anything posted online be considered private? Discuss all aspects of how privacy comes under pressure in the online world.

Question 79

The development and application of controls in a small business can be very different from those developed and implemented by large corporate organizations. Explain what gives rise to the differences and how small businesses can ensure they are protected.