ICT2621

October/November 2016

STRUCTURED SYSTEMS ANALYSIS AND DESIGN

Duration   2 Hours

100 Marks

EXAMINERS
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SECOND   MR KE PHORAH

Closed book examination

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This paper consists of 10 pages

Instructions

1 Answer all the questions

2 Answer **BOTH** sections A and B in the answer book Please **DO NOT** use a mark-reading sheet for any section

3 Make sure you have the correct examination paper

Section A   (Total marks: 40)

This section consists of 40 multiple-choice questions. In your answer book, in each case, write down the question number and next to it the number representing the correct option, for instance 34. 3

1   _____ refers to the combination of hardware, software, and services that people use to manage, communicate, and share information
   1   Information systems
   2   Information technology
   3   Computer systems
   4   Computer technology

2   Over 40 years ago, a concept called Moore's Law accurately predicted that computer processing power would double about every _____
   1. 2 months   3   24 months
   2   12 months   4   48 months

3   For complex operations, analysts apply computer-based modelling tools that use a standard language called _____
   1   electronic data interchange (EDI)
   2. joint application development (JAD)
   3   business process modelling notation (BPMN)
   4   rapid application development (RAD)

4.   A business _____ is an overview that describes a company's overall functions, processes, organization, products, services, customers, suppliers, competitors, constraints, and future direction.
   1   matrix   3   index
   2   profile   4   glossary

5.   Knowledge management systems use a large database called a(n) _____ that allows users to find information by entering keywords or questions in normal English phrases
   1   inference engine   3   knowledge management system
   2   knowledge base   4   inference manager

6   In a typical company organizational model, middle managers _____
   1. develop long-range plans, called strategic plans, which define the company's overall mission and goals
   2   provide direction, necessary resources, and performance feedback to supervisors and team leaders

3 oversee operation employees and carry out day-to-day functions, coordinating operational tasks and people

4 include users who rely on TP systems to enter and receive the data they need to perform their jobs

7 Structured analysis is a traditional systems development technique that uses a series of phases, called the _____, to plan, analyze, design, implement, and support an information system

  1 O-O   3 MSF

  2 SDLC   4. RUP

8 Because it focuses on processes that transform data into useful information, structured analysis is called a(n) _____ technique

  1 iterative   3 inferred

  2 process-centred   4. empowered

9 Agile methods typically use a(n) _____ model, which represents a series of iterations based on user feedback

  1 gradual   3 spiral

  2 extreme   4 evaluative

10 A(n) _____ investigates, analyses, designs, develops, installs, evaluates, and maintains a company's information systems

  1 application developer   3. network administrator

  2 database administrator   4 systems analyst

11 _____ limitations result when a system that was designed for a specific hardware configuration becomes obsolete when new hardware is introduced

  1 Mission   3. Feasibility

  2 Relationship   4. Performance

12 Electronic data interchange (EDI) enables _____ inventory systems, which rely on computer-to-computer data exchange to minimize unnecessary inventory

  1 CRM   3. JIT

  2 TCO   4 RFID

13. When evaluating systems requests, which of the following is an advantage of a systems review committee _____.

  1 action on requests must wait until the committee meets

  2 one person's bias is less likely to affect the decisions

  3. members might favour projects requested by their own departments

  4 internal political differences could delay important decisions

14 A feasibility study includes tests for _____ feasibility, which refers to the practical resources needed to develop, purchase, install, or operate the system

1 operational 3 schedule
2 technical 4 economic

15 An example of a tangible benefit includes a(n) _____

1 user-friendly system that improves employee job satisfaction
2 sales tracking system that supplies better information for marketing decisions
3 new Web site that enhances the company's image
4 online package tracking system that decreases the need for clerical staff

16 When assessing priorities for systems requests, a systems analyst should look for a high score in which of the following _____

1 Will the proposed system diminish customer service?
2 Will the proposed system increase costs?
3 Will the proposed system result in less information for the organization?
4 Will the proposed system increase revenue for the company?

17 _____ is an example of a discretionary project

1 Creating a new report for a user
2 Adding a report required by a new federal law
3 Including annual updates to payroll and tax percentages
4 Including quarterly changes in insurance reporting required by law

18 To avoid the problem of project creep, _____

1 define project scope as vaguely as possible
2 leave project scope undefined
3 define project scope as clearly as possible
4 expand the focus beyond the problem at hand

19 In sequence, the interviewing process involves a series of steps _____, _____, _____, _____, conduct the interview, document the interview, and evaluate the interview

1 determine the people to interview, establish objectives for the interview, develop interview questions, prepare for the interview
2 establish objectives for the interview, develop interview questions, prepare for the interview, determine the people to interview
3 develop interview questions, prepare for the interview, determine the people to interview, establish objectives for the interview
4. prepare for the interview, determine the people to interview, establish objectives for the interview, develop interview questions

20 In the preliminary investigation report, the _____ section contains the results of the preliminary investigation, including a description of the project's scope, constraints, and feasibility

1 appendix   3 case for action
2. introduction   4 findings

21. One of the main activities in the systems analysis phase is _____ modelling, which involves fact-finding to describe the current system and identification requirements for the new system

1 objective   3. goal-based
2 requirements   4 user-based

22 _____ enable a systems analyst to identify a problem, evaluate the key elements, and develop a useful solution

1 Analytical skills   3 Interpersonal skills
2 Artistic skills   4 Confrontational skills

23 The primary advantage of RAD is that _____.

1 systems can be developed more quickly with significant cost savings
2 the company's strategic business needs are emphasized and the mechanics of the system are not stressed
3 the decelerated time cycle allows more time to develop quality, consistency, and design standards
4. systems are developed more slowly with fewer bugs

24 Which of the following is a general category of system requirements?

1 daily reports   3 response time
2. inputs   4 login security

25 _____ is a typical example of a system requirement for the input category

1 As a final step in year-end processing, the payroll system must update employee salaries, bonuses, and benefits
2 Response time must not exceed four seconds
3 The system must provide log-on security at the operating system level and at the application level
4 Student grades must be entered on machine-scannable forms prepared by the instructor

26. _____ is a typical example of a system requirement for the process category.
    1. The Web site must report online volume statistics every four hours and hourly during peak periods
    2 The system must be operated seven days a week, 365 days a year
    3 The equipment rental system must not execute new rental transactions for customers who have overdue tapes
    4 All transactions must have audit trails

27 _____ is a typical example of a system requirement for the performance category
    1 The purchasing system must provide suppliers with up-to-date specifications
    2 Each input form must include date, time, product code, customer number, and quantity
    3 The manager of the sales department must approve orders that exceed a customer's credit limit
    4 The student records system must produce class lists within five hours after the end of registration

28. To evaluate _____ , a systems analyst needs information about projected future volume for all outputs, inputs, and processes
    1 scalability   3 compatibility
    2 reliability   4 applicability

29 In a(n) _____ structure, which usually is based on interpersonal relationships, some people have more influence or knowledge than appears on an organization chart.
    1 spontaneous   3 informal
    2 unstructured   4 open-ended

30 If an interviewee gives only short or incomplete responses to open-ended questions, a systems analyst should do which of the following _____ .
    1. switch to closed-ended questions
    2 give the interviewee easy access to supporting material that might be needed
    3 continue using open-ended questions
    4 rudely conclude the meeting

31 Although the traditional model of software acquisition still accounts for more software acquisition, a new model, called _____ , is changing the picture dramatically
    1 Hardware as a Help   3 Processing as a Product
    2 Software as a Service   4 Storage as a Solution

32 _____ reduces the customer's need for software maintenance, operation, and support

1 Hardware as a Help   3 Processing as a Product
2 Software as a Service   4 Storage as a Solution

33 Building an application in a _____ environment can offer greater benefits, and sometimes greater risks, compared to a traditional environment

1 GUI   3 cloud
2 Web-based   4 multinational

34. Web-based software usually requires additional layers, called _____ to communicate with existing software and legacy systems

1 freeware   3 middleware
2 shareware   4 public domain software

35 _____ is the transfer of information systems development, operation, or maintenance to an outside firm that provides these services, for a fee, on a temporary or long-term basis

1 Outsourcing   3 Subscription
2 Commission   4 External provision

36 Some _____ providers concentrate on specific software applications, others offer resources like order processing and customer billing

1 subscription   3 service
2 software   4. resource

37 The choice between developing versus purchasing software often is called a _____ decision

1 build or make   3 transactional
2 subscription   4. build or buy

38. A software _____ is software that is obtained from a vendor or application service provider

1. package   3 subscription
2 cluster   4 aggregate

39. Some data files should be hidden totally from view, while others should have _____ so users can view, but not change, the data

1 no-access properties   3 full-access properties
2 read-only properties   4 write-only properties

40   A _____ is a document that describes a company, lists the IT services or products needed, and specifies the features required

    1   request for quotation (RFQ)   3   request for proposal (RFP)

    2. net present value (NPV)   4   return on investment (ROI)

Section B: **(Total marks: 60)**

Question 1   **[15 marks]**

Scenario:

The South Africa School Books Supplier (Pty) Ltd sells books to a number of different schools in the country   An order system is used by this company to fulfil part of this process Schools place orders and make payments via this system When they do this, they receive an invoice or an order reject notice   For successful schools, the system forwards a picking list to the deliveries department which generates a completed order notice for the order system The order system also sends a bank deposit to the bank as well as a cash receipts entry to the accounting department Since each order by a school is initiated by a sales representative (rep), the sales rep receives a commission for each successful transaction.

1 1 Draw a context diagram for this order system using only the information provided in the scenario above. All data flow diagrams (DFDs) symbols used should be clearly labelled The label here refers to the name, such as 'Customer', you write inside or along a symbol Remember to use the Gane and Sarson symbols/notation when drawing DFDs.   (9)

1 2 What is the difference between a context diagram and diagram 0?   (2)

1 3 Which symbol is not used in a context diagram?   (1)

1 4 What is the purpose of decision tables?   (2)

1.5 Why would a manager prefer decision tree instead of a decision table?   (1)

Question 2   **[7 marks]**

There are seven habits of successful interface designers proposed by the prescribed text book author, Harry Rosenblatt Although there is no standard approach to interface design, these seven basic principles are very helpful when designing usable interfaces that are acceptable to users Write down these principles You do not have to describe/explain any of them   (7)

Question 3 [11 marks]

Scenario

In any of the finals of the African Cup of Nations soccer tournament, there are a number of countries involved. Each country has a number of players that compete in the tournament The Federation of International Football Association (FIFA) rules stipulate that a person can only play for one country Each player has a number of specialists, such as a manager, doctor, financial adviser, etc to cater for his different needs A speciality may provide his or her service to one or more players

3 1 Draw an entity relationship diagram (ERD) for this scenario. The ERD should not contain any many-to-many relationships. Do not include entities that are not in the scope (scenario) provided above No attributes/fields are required in this section (7)

3 2 Create a relational database schema from the ERD in 3 1 showing all tables in 3NF Each table should include at least three fields Appropriate primary keys should be used Primary keys must be underlined and each foreign key should have the letters FK in brackets after it, for instance xyz (FK) There is no need to show all the steps involved in this process since only the final relational schema will be marked (4)

Question 4 [17 marks]

4 1 What is ISO and why is it important to a system developer? (3)

4 2 What is a prototype? Why is prototyping important for users during system design? (3)

4 3 Describe three main types of testing and the order in which they are performed (3)

4 4 Explain in some details each of the following In each case show how it can be used
   to train users of a software package purchased from a vendor
   4 4 1 Webinar (3)
   4 4.2 Podcast (3)

4 5 What is the difference between an operational environment and a test environment? (2)

Question 5 **[10 marks]**

5 1 Describe any two types of system maintenance (4)

5.2 What is configuration management and why is it important? (2)

5 3 What is risk management? (2)

5 4 What is capacity planning? (2)

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