



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2004/2005 – 1st Year Examination – Semester 1

IT1402: Systems Analysis and Design

27th February, 2005
(TWO HOURS)

Important Instructions :

- The duration of the paper is 2 (two) hours.
- The medium of instruction and questions is English.
- The paper has **50 questions** and **12 pages**.
- All questions are of the MCQ (Multiple Choice Questions) type.
- All questions should be answered.
- Each question will have 5 (five) choices with **one or more** correct answers.
- All questions will carry equal marks.
- There will be a penalty for incorrect responses to discourage guessing.
- The mark given for a question will vary from -1 (*All the incorrect choices are marked & no correct choices are marked*) to +1 (*All the correct choices are marked & no incorrect choices are marked*).
- Answers should be marked on the special answer sheet provided.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**

1) In which of the following system components would information be an example in an information processing system?

- | | | |
|------------|----------------|-------------|
| (a) output | (b) processing | (c) control |
| (d) input | (e) storage | |

2) The type of information system that uses artificial intelligence technology is called a/an

- | | |
|-----------------------------------|------------------------------------|
| (a) office automation system. | (b) expert system. |
| (c) process control system. | (d) integrated information system. |
| (e) information reporting system. | |

3) The willingness and ability of management, employees, customers, suppliers and so-forth of an organisation to operate, use and support a proposed system is known as

- | | | |
|------------------------------|--------------------------------|--------------------------------|
| (a) economic feasibility. | (b) cost/benefit analysis. | (c) technological feasibility. |
| (d) operational feasibility. | (e) specification feasibility. | |

4) The statements given below are associated with building information systems. Identify the correct statement(s) from among them:

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|--|
| (a) The analysis phase focuses on logical models, while the design phase shifts to physical models. |
| (b) The purpose of the design phase is to figure out what is needed by the business. |
| (c) The actual programming / construction of the system is in the design phase. |
| (d) The main aim of a new business system is to improve or replace a current inefficient system, or to introduce a totally new system. |
| (e) The time to analyze, design and implement systems can vary significantly depending on the methodology used. |

5) Each of the blanks labelled **A – E** of the paragraph given below has to be filled so that the paragraph correctly describes PERT charts and Gantt charts. Note that one word or phrase might be used more than once.

PERT charts and Gantt charts are**A**..... which are used to illustrate the**B**.....
.....**C**..... show who is responsible for each activity and when the activity is scheduled to begin and end.**D**..... show the**E**..... between different activities making up a project.

Which of the following phrases labelled (i) – (v) would be most appropriate for this purpose?

- (i) project schedule(s)
- (ii) Gantt chart(s)
- (iii) dependency/dependencies
- (iv) PERT chart(s)
- (v) graphical notation(s)

- | | | | | |
|---------------|------------|-----------|-----------|-----------|
| (a) A – (v), | B – (iii), | C – (ii), | D – (iv), | E – (i) |
| (b) A – (ii), | B – (iii), | C – (v), | D – (iv), | E – (i) |
| (c) A – (v), | B – (i), | C – (iv), | D – (ii), | E – (iii) |
| (d) A – (v), | B – (i), | C – (ii), | D – (iv), | E – (iii) |
| (e) A – (v), | B – (iii), | C – (iv), | D – (ii), | E – (i) |

6) Which of the following factors do/does not necessarily contribute to the failure of particular systems development projects?

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|---|---|
| (a) insufficient testing | (b) a project that spans multiple departments |
| (c) inadequate or improper systems design | (d) a lack of top management support |
| (e) a lack of management and user involvement | |

7) The requirement definition document is intended for

- | | | |
|------------------------|-----------------------|--------------------------|
| (a) system end-users. | (b) client engineers. | (c) software developers. |
| (d) system architects. | (e) client managers. | |

8) Given below are some statements associated with requirement validation. Identify the correct statement(s) from among them.

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|--|
| (a) A requirement may be allowed to conflict with another. |
| (b) The definition need not include all the functions and constraints intended by the user. In other words it need not be complete. |
| (c) Requirement validation is the process of showing that the defined requirements are what the customer wants. |
| (d) Requirements need not be technologically realistic since improvements in technology will automatically cater to such requirements. |
| (e) Prototyping is a technique of requirement validation. |

9) Which of the following are advantages with respect to viewpoint oriented analysis of a system?

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|--|
| (a) It allows the designer to incorporate different user views and requirements into the system. |
| (b) It provides an effective way of structuring non-functional requirements. |
| (c) It helps the analyst to identify conflicts among different view points. |
| (d) It helps to make different viewpoints independent of one another. |
| (e) It allows the analyst to identify the users of the system. |

10) Which of the following statements is/are true with respect to requirement specification?

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|---|
| (a) Structured language can be used instead of natural language to write the requirement specification. |
| (b) Mathematical specifications are not allowed to be used in the requirement specification |
| (c) Using Graphical notations will cause unnecessary ambiguities in the requirement specification. |
| (d) Using natural language is an error free method of presenting the requirements. |
| (e) The requirement specification is a product of the requirement analysis phase. |

11) Which of the following skills should a systems analyst require?

- | | |
|--------------------------|---------------------------------|
| (a) Interpersonal skills | (b) Programming Language skills |
| (c) Business skills | (d) Managerial skills |
| (e) Technical skills | |

12) Identify the correct statement(s) from among those given below which are associated with building information systems.

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|--|
| (a) Technical, economic and organizational feasibility would be carried out in the preliminary investigation phase. |
| (b) Use scenarios, interface structure, interface standards and hardware and software selection would be looked after in the design phase. |
| (c) The work plan would be a deliverable in the preliminary investigation phase. |
| (d) Technical, economic and organizational feasibility would be carried out in the decision analysis phase. |
| (e) Use scenarios, interface structure, interface standards and hardware and software selection would be looked after in the analysis phase. |

- 13) **Column A** contains some key words associated with describing data. A word from **Column A** has to be matched with the most appropriate phrase from **Column B**.

	Column A		Column B
(i)	Entity	A	Something about which the business needs to store data
(ii)	Cardinality	B	A technique used for data modeling
(iii)	Relationship	C	A technique for organizing and documenting data of a system
(iv)	Data Modeling	D	Minimum and maximum number of occurrences of one entity which may be related to a single occurrence of the other entity
(v)	Entity Relationship Diagram	E	Defines a set of associations among two or more entity types.

The correct matching is

(a)	(i) & A,	(ii) & D,	(iii) & B,	(iv) & C,	(v) & E
(b)	(i) & C,	(ii) & A,	(iii) & E,	(iv) & B,	(v) & D
(c)	(i) & A,	(ii) & D,	(iii) & E,	(iv) & C,	(v) & B
(d)	(i) & A,	(ii) & C,	(iii) & D,	(iv) & B,	(v) & E
(e)	(i) & C,	(ii) & D,	(iii) & E,	(iv) & A,	(v) & B

- 14) Identify the correct statement(s) from among those given below which are associated with databases.

(a)	A database management system is a specialized technology used to manage databases.
(b)	A data definition language is used by the database management system to establish record types, fields and structural relationships.
(c)	Relational databases create two-dimensional tables which are related to one another via foreign keys.
(d)	A Data manipulation language is used to create, read, update and delete records in the database and navigate between different records and types of records.
(e)	A Database schema is the logical model for a database.

- 15) Each of the blanks labelled **A – E** of the paragraph given below has to be filled so that the paragraph correctly describes structure charts. Note that one word or phrase might be used more than once.

A function is represented on a structure chart as (a)A..... . The hierarchy is displayed by linkingB..... withC..... . Inputs and outputs are indicated withD..... . User inputs are indicated asE.....

Which of the following phrases labelled (i) – (v) would be most appropriate for this purpose?

- (i). Line(s)
- (ii). Rounded rectangle(s)
- (iii). Rectangle(s)
- (iv). Circle(s)
- (v). Arrow(s)

(a)	A – (ii),	B – (ii),	C – (i),	D – (v),	E – (iii)
(b)	A – (iii),	B – (iii),	C – (v),	D – (i),	E – (ii)
(c)	A – (iv),	B – (iv),	C – (v),	D – (i),	E – (iii)
(d)	A – (iii),	B – (iii),	C – (i),	D – (v),	E – (iv)
(e)	A – (ii),	B – (ii),	C – (i),	D – (v),	E – (ii)

16) Identify the correct statement(s) from among those given below which are associated with requirement discovery methods.

- (a) Observation of the work environment is a relatively inexpensive method compared with other fact-finding methods.
- (b) The three types of questionnaires are Free-format, Fixed-format and Ranking-format.
- (c) Interviewing the user is the best way of fact-finding irrespective of the location of the user.
- (d) Loaded questions should be avoided during an interview.
- (e) Leading questions should be avoided during an interview.

17) Prototyping

- (a) is most practical for large scale projects.
- (b) emphasizes getting the design right the first time.
- (c) is the execution of the standard systems development cycle using CASE tools.
- (d) involves an iterative and interactive development process with extensive end use involvement.
- (e) cannot be used when the requirements are not clear.

18) Identify the correct statement(s) from among those given below which are associated with data flow diagrams.

- (a) All processes in a DFD have to be decomposed.
- (b) Each process in a DFD transforms data from one form to another.
- (c) DFDs are a good way of describing sub-systems with complex interfaces.
- (d) DFDs cannot be used to identify the different sub-systems in a complete system.
- (e) DFDs are used to represent only functional processing, data stores and data movements between functions.

19) Identify the correct statement(s) from among those given below which are associated with data flow diagrams.

- (a) The Unique key field is an element of a DFD.
- (b) The Level 0 diagram of a DFD would show all the first level numbering processes, data stores, external entities and data flows.
- (c) A specific level 1 DFD would show one or more of the processes from the level 0 diagram.
- (d) The Context diagram of a DFD would show just one process with external entities and the data flows to and from the external entities.
- (e) Every process in a DFD connects to two other processes.

20) Identify the correct statement(s) from among those given below which are associated with structure charts.

- (a) In general, the components of a structure chart typically mirror the processes found on data flow diagrams.
- (b) The three building blocks of the structure chart imply sequence, selection and iteration.
- (c) A module has a name and a number. A module of 1.3 would be controlled by the 1.0 higher level module.
- (d) A control couple, which is drawn using arrows with filled-in (black) circles, shows that the data has correctly been passed to the module and drawn from the control module to the subordinate module.
- (e) When one builds structure charts, he should have low cohesion.

21) Identify the correct statement(s) from among those given below which are associated with Boehm Spiral Model.

- (a) Risk management is the key aim of the spiral model.
- (b) Prototyping is a part of the spiral model.
- (c) There are fixed phases in the spiral model.
- (d) The weakness of the spiral model is that it does not allow rapid development of incremental versions.
- (e) The spiral remains operational until the software is retired.

22) Identify the correct statement(s) from among those given below which are associated with entity relationship diagrams.

- (a) There is no need to change logical entity relationship diagrams into physical entity relationship diagrams when the logical ERD has been extended to third normal form.
- (b) A combination of last-name, concatenated with the first initial would be an excellent primary key for a customer table.
- (c) Foreign keys are used to provide a common field between two tables.
- (d) Entities can exist without a primary key in an ERD.
- (e) A relationship can consist of its own set of attributes.

23) Identify the correct statement(s) from among those given below which are associated with entity relationship diagrams.

- (a) The data model shows people, places or things about which information is captured and how they are related to one another.
- (b) An entity relationship diagram is a picture that shows the information that is created, stored and used by a business system.
- (c) In the analysis phase, analysts physically create the data model, generally using one of the common database management systems like Oracle or Access.
- (d) There is rarely a definitive relationship between entities, so that analysts use noun phrases to describe the relationships.
- (e) The basic cardinality for binary relationships is: one-to-one, one-to-many or many-to-many.

24) Identify the correct statement(s) from among those given below which are associated with data base management.

- (a) During the analysis phase the analysts draw a logical data model.
- (b) During the Design phase the analyst draws a physical data model.
- (c) A data dictionary is where the analyst goes to define or look up information about the entities, attributes or relationships on an ERD.
- (d) One of the four basic functions of a software system is “data storage”.
- (e) ERD can be automatically generated by using a CASE tool.

25) Identify the non-functional requirements out of the following:

- (a) System Security
- (b) Verifiability
- (c) Interoperability
- (d) Maintainability
- (e) Ethical requirements

Each blank in each of the sentences in Questions 26 – 30 has to be filled by selecting the most appropriate word/phrase from the list labelled (i) – (v). Note that one word/phrase may be used in more than one instance.

- (i) sponsor(s)
- (ii) facilitator(s)
- (iii) scribe(s)
- (iv) user(s) and manager(s)
- (v) IT staff(s)

26) Joint requirement planning includes a number of who are usually from the project team.

What is the most appropriate word or phrase?

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|----------|----------|-----------|
| (a) (i) | (b) (ii) | (c) (iii) |
| (d) (iv) | (e) (v) | |

27) The is required to serve as the joint requirement planning champion.

What is the most appropriate word or phrase?

- | | | |
|----------|----------|-----------|
| (a) (i) | (b) (ii) | (c) (iii) |
| (d) (iv) | (e) (v) | |

28) The responsibility of the in joint requirement planning is to take down records pertaining to everything discussed at the meeting.

What is the most appropriate word or phrase?

- | | | |
|----------|----------|-----------|
| (a) (i) | (b) (ii) | (c) (iii) |
| (d) (iv) | (e) (v) | |

29) The do/does not report to any of the joint requirement planning session participants.

What is the most appropriate word or phrase?

- | | | |
|----------|----------|-----------|
| (a) (i) | (b) (ii) | (c) (iii) |
| (d) (iv) | (e) (v) | |

30) The play(s) a visible role in a joint requirement planning session by “kicking off” the meeting with introductions of the participants.

What is the most appropriate word or phrase?

- | | | |
|----------|----------|-----------|
| (a) (i) | (b) (ii) | (c) (iii) |
| (d) (iv) | (e) (v) | |

31) Identify the correct statement(s) from among those given below which are associated with client/server architecture.

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|---|
| (a) A database server hosts one or more databases and can execute all database commands and services for information systems. |
| (b) A personal computer, notebook or a workstation can be referred to as a “thin client”. |
| (c) An Application server hosts services which ensure that all database updates for a single business transaction succeed or fail as a whole. |
| (d) A distributed presentation client/server system is a solution in which the presentation and presentation logic layers are shifted from the server of a legacy system to reside in the client. |
| (e) E-mail is hosted on a groupware server. |

32) Select the activities which are most appropriate for batch processing.

- (a) Sending out news letters
- (b) Sending an e-mail
- (c) Printing customer statements at a bank
- (d) Creating a customer booking for an air line flight
- (e) Printing receipts at a supermarket

33) Which of the following represents the correct sequence of testing activities?

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|-----|---------------|----------------------|----------------------|----------------------|--------------------|
| (a) | unit testing, | system testing, | module testing, | integration testing, | Acceptance testing |
| (b) | unit testing, | volume testing, | integration testing, | system testing, | Acceptance testing |
| (c) | unit testing, | integration testing, | system testing, | module testing, | Acceptance testing |
| (d) | unit testing, | module testing, | integration testing, | system testing, | Acceptance testing |
| (e) | unit testing, | system testing, | integration testing, | volume testing, | Acceptance testing |

34) Select the correct statements with reference to the test phase of system development.

- (a) The test plan must be developed at the beginning of the test phase.
- (b) Unit testing verifies that the functionality of the units is correct.
- (c) Integrated testing verifies that the interfaces between the modules are correct.
- (d) Validation of the requirements is done in the test phase.
- (e) The system has to be abandoned if the acceptance test is not passed.

35) Identify the correct statement(s) from among those given below which are associated with the testing phase.

- (a) Testing is only a small part of the construction of a system, and with a strong emphasis on proper analysis and quality design, testing is less important.
- (b) The first step in testing a new system is to develop a test plan.
- (c) Unit tests focus on the entire project as a complete “unit”.
- (d) Systems tests are also called “beta” tests with actual users and actual data as the final testing stage before implementation.
- (e) Tests should utilize invalid data in addition to valid data.

Use the case study given below to answer Questions 36 – 41.

The ABC Company requires an application that will support the operations of a technical library for an R&D organization. This includes the searching for and lending of technical library material, including books, videos and technical journals.

The users are identified by their Company ID. The users are entered into the system by the Librarian who acts as the administrator. The librarian receives the user information from the Personnel Department Executive of the ABC Company whenever a new employee joins the Company. The information is entered and a password is provided to the new user.

Each user will enter his Company ID and password in order to use the system; and they will enter material ID numbers when checking out and returning items.

Continued...

With the exception of company managers, each borrower can be lent up to five items. Company managers are allowed to be lent up to 8 items. Each type of library item can be lent for a different period of time (books 4 weeks, journals 2 weeks, videos 1 week). If returned after their due date, the library users' organization will charge a fine, based on the type of item (books Rs.10/day, journals Rs.30/day, videos Rs.50/day). Materials will be lent to employees with no overdue lendables, fewer than five articles out, and accumulated fines less than Rs.100.

- 36) Considering the given case study, select the set of entities which would be most appropriate in the construction of the Library system.

- | |
|--|
| (a) library, librarian, Personnel Department Executive, user, item, fine, manager |
| (b) librarian, user, item, fine, manager, lendable |
| (c) ABC Company, library, fine |
| (d) librarian, user, item, lendable |
| (e) ABC Company, library, librarian, Personnel Department Executive, user, item, fine, manager, lendable |

- 37) Considering the given case study, select the functions which the library system should provide.

- | | |
|--|--|
| (a) Add new user | (b) Login and Logout |
| (c) Calculate fine | (d) Verify that fewer than five articles out |
| (e) Receive user information from Personnel Department | |

- 38) Considering the given case study, identify the possible data stores from the following:

- | | | |
|---------------|-------------------|---------------------|
| (a) User_file | (b) Loan_file | (c) Manager_details |
| (d) Item_file | (e) Seach_details | |

- 39) Considering the given case study, select the most appropriate Primary keys for the User and Item respectively.

- | | |
|----------------------------------|-------------------------------|
| (a) Employee_Name and Book Title | (b) Company ID and Item_Title |
| (c) Employee_Name and Item_ID | (d) Company_ID and Item_ID |
| (e) Employee_ID and Item_Title | |

- 40) Considering the given case study, select the correct statements.

- | |
|--|
| (a) The Manager and Normal user cannot be sub-classes of the super-class User. |
| (b) The Managers must be able to change data of the Users. |
| (c) Users should be allowed to cancel transactions if not required. |
| (d) A Book, a Journal and a Video may have the same Item ID. |
| (e) The Librarian must be given permission only to create and edit users. |

- 41) Considering the given case study, select the correct statements with reference to the requirement gathering phase.

- | |
|--|
| (a) Personal interviews are most appropriate to gather information since the requirements are clear. |
| (b) Questionnaires are appropriate since information needs to be gathered from a large audience. |
| (c) Information must be obtained from the Personnel Department Executive. |
| (d) Interviews with the librarian and a random sample of employees would be adequate. |
| (e) No requirements need to be gathered as the problem is already clear. |

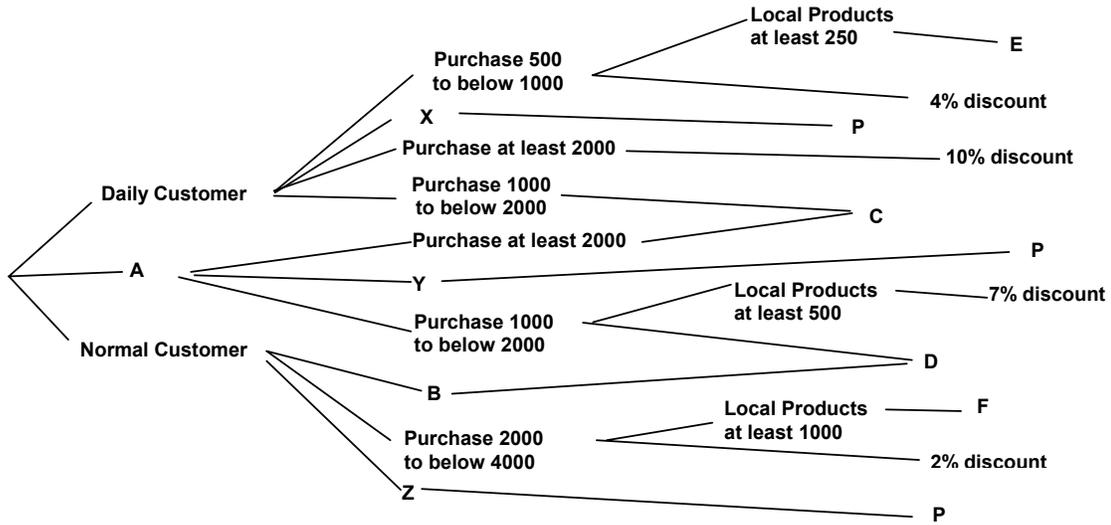
Consider the problem and the decision tree given below to answer the Questions 42 & 43.

A supermarket offers its shoppers discounts on their purchases according to the frequency of visits and their purchase total.

A daily customer whose purchase is at least Rs.2000 receives a 10% discount. If his purchase is at least Rs.1000 but below Rs.2000, he receives an 8% discount. If his purchase is at least Rs.500 but below Rs.1000 he receives a discount of 4% whereas, if he also purchases local products to the value of at least Rs.250, the discount is 6%.

A frequent customer whose purchase is at least Rs.2000 receives an 8% discount. If his purchase is at least Rs.1000 but below Rs.2000, he receives a discount of 5% whereas, if he also purchases local products to the value of at least Rs.500, the discount is 7%.

A normal customer whose purchase is at least Rs.4000 receives a 5% discount. If his purchase is at least Rs.2000 but below Rs.4000, he receives a discount of 2% whereas, if he also purchases local products to the value of at least Rs.1000, the discount is 4%.



42) A match for each of the entries marked A to F of the decision tree has to be found from the following list of words and phrases labelled (i) to (viii). Note that one word or phrase might be used more than once.

- (i) 5% discount
- (ii) Frequent Customer
- (iii) 4% discount
- (iv) Normal Customer
- (v) 6% discount
- (vi) Purchase at least 4000
- (vii) Purchase at least 2000
- (viii) 8% discount

The correct matching is

(a)	A – (ii),	B – (vii),	C – (iii),	D – (v),	E – (i),	F – (viii)
(b)	A – (ii),	B – (vi),	C – (viii),	D – (i),	E – (v),	F – (iii)
(c)	A – (iv),	B – (vii),	C – (viii),	D – (i),	E – (viii),	F – (v)
(d)	A – (ii),	B – (vi),	C – (viii),	D – (v),	E – (i),	F – (iii)
(e)	A – (iv),	B – (vi),	C – (viii),	D – (v),	E – (iii),	F – (viii)

43) Select the most likely entries for X, Y, Z and P respectively:

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|--|
| (a) Purchase at least 500, Purchase at least 1000, Purchase at least 4000, 15% discount |
| (b) Purchase less than 500, Purchase less than 1000, Purchase less than 2000, 1% discount |
| (c) Purchase less than 500, Purchase less than 1000, Purchase less than 2000, no discount |
| (d) Purchase less than 1000, Purchase less than 2000, Purchase less than 4000, no discount |
| (e) Purchase less than 500, Purchase less than 1000, Purchase less than 2000, 1% discount |

44) Documents produced during the system development life cycle fall into the following two categories:

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|-----------------------|-----|--------------------|
| (a) System documents | and | Training documents |
| (b) Design documents | and | User documents |
| (c) Program documents | and | Training documents |
| (d) Design documents | and | Training documents |
| (e) System documents | and | User documents |

45) System documents are important because

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|--|
| (a) they serve as communication tools within the development team. |
| (b) they are the only way of monitoring project progress. |
| (c) they are intended to be used as a help file for the user. |
| (d) they serve as a management tool. |
| (e) they avoid repetition of work when a team member leaves the project. |

46) Identify the correct statement(s) from among those given below which are associated with document flow diagrams.

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|--|
| (a) Document flow diagrams identify the documents within the system. |
| (b) Document flow diagrams depict the flow of documents within the system. |
| (c) Document flow diagrams help understand the work flow of the system. |
| (d) Document flow diagrams are used to define system boundaries. |
| (e) Further analysis of document flow diagrams creates data flow diagrams. |

47) Each of the blanks labelled **A – E** of the paragraph given below has to be filled so that the paragraph correctly describes system testing and documentation. Note that one word or phrase might be used more than once.

.....**A**..... and**B**..... are (an) effective means of communicating information. Communication is needed among members of the development team and also between the development team and**C**..... who will ultimately accept or reject the new system. Without this knowledge,**D**..... and modification is inefficient and sometimes inadequate, and**E**..... are unable to use the system to its maximum potential

Which of the following phrases labelled (i) – (v) would be most appropriate for this purpose?

- (i) user(s)
- (ii) designer(s)
- (iii) testing
- (iv) maintenance
- (v) documentation

- | | | | | |
|----------------|------------|-----------|-----------|----------|
| (a) A – (iii), | B – (v), | C – (ii), | D – (i), | E – (iv) |
| (b) A – (v), | B – (iii), | C – (ii), | D – (i), | E – (iv) |
| (c) A – (iii), | B – (iv), | C – (ii), | D – (v), | E – (i) |
| (d) A – (iii), | B – (v), | C – (i), | D – (iv), | E – (i) |
| (e) A – (v), | B – (iii), | C – (i), | D – (ii), | E – (ii) |

48) Identify the correct statement(s) from among those given below which are associated with Object-oriented analysis and design.

- (a) An object is a process that can be modelled in UML.
- (b) Object-oriented techniques view a system as a collection of self-contained objects which include both data and processes.
- (c) The concept that allows developers to define new classes by reusing existing classes and adding new data and/or methods to them is called “a descendant”.
- (d) Polymorphism means that the same message can be interpreted differently by different classes of objects.
- (e) Encapsulation means to combine process and data into a single object.

49) **Column A** contains some key words associated with Object-oriented analysis. A word from **Column A** has to be matched with the most appropriate phrase from **Column B**.

	Column A		Column B
(i)	Method	A	Allowing developers to define new classes by reusing existing classes and adding new data and/or methods to them
(ii)	Attribute	B	A functionality of an object
(iii)	Inheritance	C	Combine process and data into a single object.
(iv)	Object	D	An instance of a class
(v)	Encapsulation	E	A property of a(n) class/object

The correct matching is

- (a) (i) & B, (ii) & A, (iii) & E, (iv) & D, (v) & C
- (b) (i) & C, (ii) & A, (iii) & E, (iv) & B, (v) & D
- (c) (i) & B, (ii) & D, (iii) & A, (iv) & E, (v) & C
- (d) (i) & A, (ii) & C, (iii) & D, (iv) & B, (v) & E
- (e) (i) & B, (ii) & E, (iii) & A, (iv) & D, (v) & C

50) Identify the correct statement(s) from among those given below which are associated with system architecture.

- (a) The most common architecture today is the server architecture.
- (b) Resources are centralized in the client-server architecture.
- (c) Network-based is a system architectural design.
- (d) Security is easier since there is only one central repository of data and applications in server based architecture.
- (e) Security is stronger since there is only one central computer to protect in the client-server architecture.
