INFORMATION SYSTEMS ANALYSIS AND DESIGN (SEMESTER - 2)

CS/BCA/SEM-2/BCA-202/09

1. ..... *Signature of Invigilator*

2. ..... *Signature of the Officer-in-Charge*

Reg. No. | | | | | | | | | | | | | | |

Roll No. of the Candidate | | | | | | | | | | | | | | |

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CS/BCA/SEM-2/BCA-202/09

ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

INFORMATION SYSTEMS ANALYSIS AND DESIGN (SEMESTER - 2)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No 3.
2. a) In **Group – A**, Questions are of Mul ple Choice type. You have to write the correct choice in the box provided **against each question**.
   b) For **Groups – B** & **C** you ha e to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to w ite the corresponding question numbers while answering.
6. Do not write your nam or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

	Group – A										Group – B			Group – C				
Question Number																	***Total Marks***	***Examiner's Signature***
Marks Obtained																		

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Head-Examiner/Co-Ordinator/Scrutineer

2245 (05/06)

ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

INFORMATION SYSTEMS ANALYSIS AND DESIGN

SEMESTER - 2

Time : 3 Hours] [Full Marks : 70

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

i) What is not software life cycle model ?

a) Waterfall model b) Spiral model

c) COCOMO model) Prototype model. ☐

ii) Feasibility Study means

a) partly computerized pa tly manual

b) conceptual solution of the problem

c) assessment of the validity of the project

d) none of these. ☐

iii) Which of the following are part of the SDLC ?

a) Requirement analysis

b) Program specification

c) Branch making

d) All of these. ☐

iv) Cost benefit analysis

a) compares the cost with the benefits

b) estimates hardware and software cost

c) evaluates the tangible and intangible factors

d) all of these. ☐

v) A zero level DFD describes

a) overview of process, inputs and outputs

b) the fully blown up system design

c) that the system design cannot be split further

d) none of these. ☐

vi) A system that does not interact with external environment is called

a) closed system b) logical system

c) open system d) hierarchical system. ☐

vii) Which of the following is not strategy for design ?

a) Bottom up b) Top down

c) Embedded design d) Hybrid design. ☐

viii) Testing the software is basically

a) verification b) validation

c) both (a) and (b) d) none of these. ☐

ix) System test is performed by

a) end users b) programmers

c) system analyst d) none of them.

x) Documentation is prepared at the time of

a) commencing the study

b) every state

c) completion of the design

d) completion of implementation.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What do you mean by the term 'risk' in respect to software projects ? What do you mean by risk containment ?

3. What do you mean by clean decomposition & neat arrangement in modular design approach ?

4. What are the shortcomings of DFD ?

5. What are the differences between flow chart & structure chart ?

6. What is software documentation ? What are the different types of software documentation ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) What are the disadvantages of Classical waterfall model ?

   b) Discuss about the prototyping model.

   c) Compare & contrast different life cycle models. 3 + 7 + 5

8. a) Write the names of different types of testing with definition.

   b) Discuss different types of unit testing. 5 + 10

9. a) Explain Quality assurance with their Quality fa tor

   b) What are open and close systems ?

10 a) Draw the DFD of a Library system.

   b) Write the different requirements for designing a form. 8 + 7

11. Write short notes on any *three* of the following : 3 × 5 = 15

   a) Black box testing

   b) Maintenances and its different types

   c) Decision analysis

   d) Cyclomatic complexity

   e) CASE tools.

END

Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BCA/SEM-2/BCA-202/2010

2010

INFORMATION SYSTEM ANALYSIS & DESIGN

Time Allotted : 3 Hours | Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

   i) RAD model was proposed by

      a) Lucent Technology b) IBM

      c) Del Corporation d) none of these.

   ii) Which is *not* an S/W life cycle model ?

      a) Waterfall model b) Spiral model

      c) Cocomo model d) Prototyping model.

   iii) SRS stands for

      a) Software Requirement Specification

      b) System Requirement Specification

      c) System Rectification Standard

      d) none of these.

iv) Interview is the part of

a) design b) testing

c) implementation d) all of these.

v) Structure English is a

a) coding technique b) use for testing

c) design tool d) none of these.

vi) Requirement analysis includes

a) fact gathering

b) understanding of requirement

c) requirement documentation

d) all of these.

vii) Waterfall model is *not* suitable for

a) small project

b) complex project

c) accommodating change

d) none of these.

viii) Data dictionary keeps details of the contents of

a) data flows b) data stores

c) both (a) & (b) d) neither (a) nor (b).

ix) Validation testing is called

a) Beta test b) Alpha test

c) Gamma test d) Acceptance test.

x) Alpha test is done by

a) Tester b) Customer

c) Developer d) all of these.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Define system with an example. What is sub-system ?

3. Name the different types of system.

4. Explain DFD and ER-diagram with example.

5. What is system testing and prototyping ?

6. What is meant by user-interface design ?

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Explain DSS.

   b) Compare between SDLC and Waterfall model. 8 + 7

8. a) What are the important elements of a system ?

   b) What is a spiral model ? State its advantages. 7 + 5 + 3

9. a) What is DFD ? Discuss different symbols used in DFD.

   b) Explain generalization and specialization.

c) Draw the E-R diagram showing the cardinality for the following problem :

A store has different counters managed by different employees. A counter has different items but no two counters have common items. Customer buys from different counters. Bills are prepared from bill counter only. 4 + 5 + 6

10. a) What is post-implementation review ? Explain.

b) Why is system training necessary to implement a new system. ?

c) What is the difference between logical and physical designs ? 6 + 5 + 4

11. a) Define Pseudo code with example.

b) State the merits and demerits of decision table.

c) State the general guidelines for writing structure English procedure. 5 + 5 + 5

Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BCA/SEM-2/BCA-202/2011

2011

INFORMATION SYSTEM ANALYSIS & DESIGN

Time Allotted : 3 Hours Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

   i) The scope of a design must be

      a) bounder b) unbounded

      c) not relevant for design d) none of these.

   ii) A zero level DFD describes

      a) overvi w of process, inputs and outputs

      b the fully blown up system design

      c) that the system design can't be split further

      d) none of these.

   iii) Cost benefit analysis

      a) compares the cost with the benefits of introducing a computer based system

      b) estimates the cost of hardware and software

      c) evaluates the tangible and non-tangible factors

      d) all of these.

iv) BCNF is a type of

a) indexing b) DFD

c) normalization d) none of these.

v) Which one is not an software life cycle model ?

a) Waterfall model b) Spiral model

c) COCOMO model d) Prototype model.

vi) What technique is used during Rapid Application Development of facilitate data gathering ?

a) SDLC b) SSM

c) RAD d) none of these.

vii) Which of the following isn't strategy for design ?

a) Bottom up b) Top down

c) Embedded design d) Hybrid design.

viii) Example of proces model is

a) incremental b) decision table

c) spiral d) none of these.

ix) Use case related with

a) prototype

b) RAD

c) requirements determination

d) none of these.

x) Which is not evolutionary ?

a) Incremental b) Prototype

c) Spiral d) None of these.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Explain feasibility study of a project. What is its use ? 2 + 3

3. Write down the major steps of Documentation. 5

4. What do you mean by coupling and cohesion ? 5

5. What do you mean by incremental model ? Give one example. 4 + 1

6. What is black box testing ? How is it different from white box testing ? 2 + 3

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. What is DFD ? What do you mean by physical & logical DFD ? What is context diagram ? Draw a top level DFD of "Purchasing a material from a supplier for college *X* affiliated to university *Y*. 2 + 4 + 2 + 7

8. What are the major esponsibilities of a system analyst ? What is model ? List out the different system develop models. What are the various steps of spiral model ? Why is spiral model called meta model ? 4 + 2 + 2 + 4 + 3

9. What do you mean by process description ? Develop a decision tree and decision table for the following : 3 + 6 + 6

   The gatekeeper of an amusement park is given the following instructions for admitting persons to park :

   i) If the person is under three years of age, there is no admission fee.

   ii) If a person is under 16, half the full admission is charged and this admission is reduced to a quarter of full admission if the person is accompanied by an adult. (The reduction applies only if the person is under 12)

iii) Between 16 to 18, half the full admission fee is charged if the person is a student; otherwise the full admission is charged.

iv) Over 18, the full admission fee is charged.

v) A discount of 10% is allowed for a person over 16 if they are in a group of 10 or more.

vi) There are no student concessions during weekends. On weekdays, under 12s get one free ride.

10. Draw the E-R diagram showing the cardinality for the following problems : 5 × 3

a) A bill is sent to a customer. A customer can receive many bills.

b) A clerk works in a bank. The bank has many clerks.

c) A part is used in many products and a product uses many parts.

d) Students apply for seats in colleges. Each student can almost get one s at. A college has many seats. A student can send many applications.

e) A car is owned by a person. The person can own many cars.

11. Write short notes on any *three* of the following : 3 × 5

a) SRS

b) SDLC

c) Cyclomatic complexity

d) Break even analysis

e) Data dictionary.

Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BCA/SEM-2/BCA-202/2012

2012

INFORMATION SYSTEM ANALYSIS AND DESIGN

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternative for the following : $10 \times 1 = 10$

   i) The major goal of requirement determination phase of information system development is
      a) Determine whether information is needed by an organisation
      b) Determ ne what information is needed by an organisation
      c) Determine how information needed by an organisation can be provided
      d) Determine when information is to be given.

   ii) The role of a system analyst drawing up a requirement specification is similar to
      a) architect designing a building
      b) a structural engineer designing a building
      c) a contractor constructing a building
      d) the workers who construct a building.

iii) A rectangle in a DFD represents

a) a process b) a data store

c) an external entity d) an input unit.

iv) Normalization is a process restructuring a relation to

a) Minimize duplication of data in a database

b) Maximize duplication of data to ensure reliability

c) Make it of uniform size

d) Allow addition of data.

v) Data inputs which require coding are

a) fields which specify prices

b) key fields

c) name fields such as product name

d) fields which are of variable length.

vi) A data dictionary has info mation about

a) Every data element in a dataflow

b) Only key data element in a dataflow

c) Only the important data elements in a dataflow

d) Only the numeric data elements in dataflow.

vii) When a system interfaces with other types of systems then that ime the testing that will be required is

a) v lume testing

b) configuration testing

c) compatibility testing

d) only numeric data elements in a dataflow.

viii) A decision table

a) has a structured English equivalent representation

b) cannot be represented using structured English

c) does not have equivalent algorithmic representation

d) cannot be used to represent processes in a DFD.

ix) Code review for a model is carried out

a) as soon as skeletal code written

b) before the module is successfully compiled

c) after the module is successfully compiled and all the syntax errors are eliminated

d) before the module is successfully compiled and the syntax errors are eliminated.

x) Prototype means

a) a small dummy of the actual system

b) a step in SDLC

c) both of these

d) none of these,

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Sketch a neat diagram of Spiral Model of Software Life Cycle.
3. Define Prototype. Explain Top-down and Bottom-up approaches of Prototype Model.
4. Write the differences between Waterfall Approach and Prototype Approach.
5. Explain the various operations of Feasibility Study Phase and System Design Phase of SDLC.
6. Write the advantages and disadvantages of Prototype Model.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) List out several reasons why Software Project becomes 'failure'.
   b) If any Software Project does not follow the SDLC, then what are the problems will be faced by that Project ?
   8 + 7

8. a) Explain the various types of Design methods ? Write the disadvantages of Software Design Phase of SDLC.
   b) Write various types of "COHESION".
   c) List out the reasons for why Software Project becomes successful. 5 + 5 + 5

9. a) Discuss the selection process parameters for a Life Cycle Model.
   b) Explain "Iterative Model" in detail. 9 + 6

10. a) Define Database, DBMS, En ity, Primary Key, Candidate Key, Alternate Key and Super Key.
    b) Write the advantages of Data Dictionary and types of Data Dictionary.
    c) List out various responsibilities of DBA.
    d) Write vari us properties of Primary key Why do we choose Re ational Model among other Models ?
    6 + 3 + 3 + 3

11. a) Def ne Normalization. Explain 1NF to 3NF through an example.
    b) Define Partial Functional Dependency and Transitive Functional Dependency
    c) What is the difference between the following ?
       (i) Alpha Testing
       (ii) Development and Regression testing
       (iii) Functional and Structural Resting. 7 + 2 + 6

Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BCA/SEM-2/BCA-202/2013

2013

INFORMATION SYSTEM ANALYSIS & DESIGN

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternat ves for the following : $10 \times 1 = 10$

i) SRS stands for

a) Software Requirement Specification

b Software Requirement Solutions

c) System Requirement Specification

d) None of these.

ii) Waterfall Model is not suitable for

a) Small Projects

b) Accomodating Changes

c) Complex projects

d) None of these.

iii) RAD stands for

a) Rapid Application Development

b) Relative Application Development

c) Ready Application Development

d) Repeated Application Development.

iv) If requirements are easily understandable nd defined, which model is to be selected ?

a) Waterfall Model

b) Prototyping Model

c) Spiral Model

d) None of these.

v) If user participation is available, which model is to be chosen ?

a) Waterfall Model

b) Iterative Enhancement Model

c) Spiral Model

d) RAD Model.

vi) Which Model is most popular for student's small projects ?

a) Waterfall Model

b) Spiral Model

c) Quick and fix Model

d) Prototyping Model.

vii) Project Risk Factor is considered in

a) Waterfall Model

b) Spiral Model

c) Quick and fix Model

d) Prototyping Model.

viii) SDLC has

a) 8 phases

b) 9 phases

c) 10 phases

d) none of these.

ix) Which phase is not available in Software Life Cycle ?

a) Coding

b) Testing

c) Maintenance

d) Abstraction.

x) Statistically, the maximum percentage of errors belong which of the following phases of SDLC ?

a) Coding

b) Design

c) Specifications

d) Installation and Maintenance.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What is System Analysis ? What are the roles of the system analyst ? 2 + 3

3. Write the advantages and disadvantages of prototype model.

4. What do you mean by clean decomposition & neat arrangement in modular design approach ?

5. What is black box testing ? How does it differ from white box testing ? 3 + 2

6. What is normalization ? Why do we need it ? 2 + 3

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) What is DFD ? Discuss different symbols used in DFD.

   b) Differentiate between Logical DFD & Physical DFD.

   c) Draw the E-R diagram showing the cardinality for the following problem :

   A store has different counters managed by different employees. A counter has different items but no two counters have common items. Customer buys from different counters. Bills are prepared from bill counter only.

   d) Explain deneralizati n and Specialization.

   3 + 2 + 6 + 4

8. a) Draw and explain waterfall model.

   b) How is risk handled in spiral model ?

   c) Explain COCOMO.

   d) Assume that the size of an organic type software product has been estimated to 40,000 lines of source code. Determine effort and time of development of the product. 5 + 2 + 4 + 4

9. a) Explain Risk management.

   b) Write a short note on data dictionary.

   c) Differentiate between white box and black box testing.

   d) Justify the importance of debugging. 5 + 3 + 4 + 3

10. a) Distinguish between Software verification and Software validation.

   b) The discount policy has following conditions for the customers. If orders for 6 or more copies per book title.

   If customer is from 'Libraries and individual' :

   5% allowed on order of 6 - 19 copies per book title

   10% on orders for 20 copies per book title and

   15% on orders for 50 copies per book title.

   Develop a process description in —

   i) Structured English

   ii) Decision Table

   iii) Decision Tree. 6 + (3 + 3 + 3)

11. Write short note on any *three* of the following : 3 × 5

a) WBS

b) System testing

c) Decision table & decision tree

d) UML diagram

e) Cohesion and coupling.

CS/BCA(H)/Even/2nd Sem/BCA-202/2014

2014

Information System Analysis & Design

Time Alloted : 3 Hours *Full Marks : 70*

The figure in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following: 10x1=10

i) RAD model was proposed by

a) Lucent technology b) IBM
c) DEL corporation d) None of these

ii) Which is not s/w life cycle model?

a) Waterfall model b)Prototype model
c)COCOMO model d)Spiral model

iii) SRS stands for

a)Software Requirement Specification
b) System Requirement Specification
c) Software Retirement Specification
d) None of these

iv) Interview is a part of

a) Design b) Testing
c) Implementation d) All of these

v) Structure English is a

a) Coding technique b) Use for testing
c) Design Tool d) None of these

vi) Which of the following is a part of SDLC

a) Requirement analysis b) Program specification
c) Branch making d) all of these

vii) The system that does not interact with the external environment is

a) closed system b) open system
c) logical system d) None of these

viii) which of the following is not strategy for design

a) Bottom up b) Top down
c) Embedded design d) Hybrid design

ix) Testing the software basically

a) Verification b) validation
c) both (a) & (b) d) None of these

x) System testing is performed by

a) End user b)Programmer
c) System analyst d)All of these

xi) Documentation is performed by the following step

a) commencing the study
b) Every Step
c) completion of design
d) completion of implementation

xii) waterfall model is not suitable for

a) complex project b) small project
c) Accommodating change d) All of these

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. 3x5=15

2. What is the difference between physical and logical DFD's?
3. What is an SRS? What role does an SRS play in the preliminary stages of system development?

[2+ 3]

4. What is Data Dictionary? What is the use of Data Dictionary?

[2+3]

5. What are software reliability and usability? Explain what do you mean by risk analysis?

[3+2]

6. What is Normalization? Why do we need it?

[2+3]

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. 3x15=45

7. (a) What is a Spiral Model? State its advantages.

   (b) Define Cohesion and Coupling. What are the different types of cohesion and coupling?

[5+ 2+8]

8. (a) What are the differences between flow chart and structure chart?

   (b) What do you mean by Cost- Benefits Analysis?

   (c) Prepare the E-R Diagram for the following problem --------

   A university has several departments. Each department has many teachers and students. One of the teachers is head of the department. A teacher or student belongs to only one department. Each department offers several courses. Only one teacher teaches a course. Each course has examinations

(minimum one). Students register for different courses offered by the department to which he belongs. Student is given a grade in the courses he has registered.

[4+3+8]

9. (a) What do you mean by the term 'risk' in respect to software projects? What do you mean by risk containment?

   (b) What are super key and candidate key?

   (c) A marketing company wishes to construct a decision table to decide table to decide how to treat clients according to three characteristics: Gender, City Dweller and Age Group: A(under 30), .B(between 30 and 60), C(over 60). The company has four products (W, X, Y and Z) to test market. Product W will appeal to female, city dwellers. Product X will appeal to young females. Product Y will appeal to male middle aged shoppers who do not live in cities. Product Z will appeal to all but older females.

   Make a decision table for taking the above decision.

[5+4+6]

10. Differentiate between ALPHA & BETA testing. What is data dictionary? Write the stages of SDLC and describe it fully. What are open and close systems?

3+4+6+2

WEST BENGAL UNIVERSITY OF TECHNOLOGY

BCA-202

INFORMATION SYSTEMS ANALYSIS & DESIGN

Time Allotted: 3 Hours | Full Marks: 70

The questions are of equal value.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.

GROUP A
(Multiple Choice Type Questions)

1. Answer *all* questions. $10 \times 1 = 10$

(i) Requirement analysis includes

(A) Fact gathering (B) Understanding of requirement
(C) Requirement documentation (D) All of these

(ii) Data dictionary keeps details of the contents of

(A) data flows (B) data stores
(C) both (A) and (B) (D) neither (A) nor (B)

(iii) Use case is related with

(A) Prototype (B) RAD
(C) Requirements determination (D) None of these

(iv) Which is not an Evolutionary model?

(A) Incremental (B) Prototype
(C) Spiral (D) None of these

(v) A zero level DFD describes

(A) overview of process, inputs and outputs
(B) the fully blown up system design
(C) that the system design can't be split further
(D) none of these

(vi) The first step in the Systems Development Life Cycle (SDLC) is

(A) Analysis
(B) Design
(C) Problem/Opportunity Identification
(D) Development and Documentation

(vii) BCNF is a type of

(A) Indexing (B) DFD
(C) Normalization (D) None of these

(viii) Normalization is a process of restructuring a relation to

(A) minimize duplication of data in a database
(B) maximize duplication of data to ensure reliability
(C) make it of uniform size
(D) allow addition of data

(ix) By 'metadata' we mean

(A) very large data (B) data about data
(C) data dictionary (D) meaningful data

(x) An entity is

(A) a collection of items in an application
(B) a distinct real world item in an application
(C) an inanimate object in an application
(D) a data structure

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. 3×5 = 15

2. Explain DFD and ER diagrams with example.

3. What is a relationship? In what way is it different from an entity?

4. Is random selection of test cases effective? Justify your answer.

5. Discuss the role of system analyst. Why are they known as "agent of change"?

6. Distinguish between function-oriented and object-oriented design. Give examples.

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. 3×15 = 45

7. Write down major differences between functional testing and structural testing. What are driver and stub modules in the context of integration testing of a software product? 4+4+7

8. Distinguish between the static and dynamic analysis of a program. What are the different types of integration testing strategies? 6+9

9. (a) Draw ERD for the following: 10+5
A college has many departments. A Department offers many courses. Students apply for a course which is taught by teachers in a department. Each department is headed by one Head of the department. At a time a student can apply for one course only. Class schedule are generated by department and given to students.
(b) Discuss specialization and generalization with proper example.

10.(a) What do you mean by Normalisation? 5+5+5
(b) Differentiate between functional and transitive dependency.
(c) Discuss BCNF. Compare it with 3NF.

11. Let a database contain the following: Teacher code, Teacher's name, Teacher's address, rank, department, courses taught by the teacher, course name, credits for course, no of students in the class, course taught in semester no., student no., name, dept, year and courses taken in semester no. The following information is given on dependencies: 15
(i) A teacher may teach more than one course in a semester.
(ii) A teacher is affiliated to only one department.
(iii) A student may take many courses in a semester.
(iv) The same course may have more than one section and different sections will be taught by different teachers.
(v) A course may be taught in more than one semester.
Draw the E-R Diagram for the above.

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCA-202

INFORMATION SYSTEM ANALYSIS & DESIGN

Time Allotted : 3 Hours | *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

   i) RAD stands for
      a) Rapid Application Development
      b) Relative Application Development
      c) Ready Application Development
      d) Repeated Application Development.

   ii) Which Model is most popular for student's small projects ?
      a) Waterfall Model b) Spiral Model
      c) Quick and Fix Model d) Prototyping Model.

iii) Beta testing is done by
  a) the development team
  b) a friendly set of customers
  c) the customer himself
  d) none of these.

iv) Which is not a step of SDLC ?
  a) Testing b) Maintenance
  c) Transformation d) Feasibility study.

v) Testing process only reveals
  a) failures b) errors in logic
  c) errors in code d) none of these.

vi) Example of process model is
  a) incremental b) decision table
  c) spiral d) none of these.

vii) A prototype refers to
  a) a working model of a proposed system
  b) the set of activities in a system
  c) the typical activities in a system
  d) all of these.

viii) A decision table is
  a) a truth table
  b) a table which facilities taking decisions
  c) a table in a decision support system
  d) a table listing conditions and actions to be taken based on the testing of conditions.

ix) Which one is a non-functional requirement ?
  a) Efficiency b) Product features
  c) Reliability d) Stability.

x) If the no. of conditions in a decision table is n, the no. of maximum no. of rules (columns) possible is
  a) n b) $2n$
  c) 2^n d) Log n.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What is the difference between Cohesion and Coupling ? With proper example explain why a good system requires high cohesion low coupling. 3 + 2

3. Explain 1NF, 2NF and 3NF with example.

4. What is COCOMO ? A project was estimated to be 500 KLOC. Calculate the efforts and development time, for the organic model. 2 + 3

5. Explain the importance of CSSE tools with example.

6. Compare hardware and software reliability.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is DFD ? Discuss different symbols used in DFD.

   b) Differentiate between Logical DFD and Physical DFD.

   c) Draw the E.R. diagram showing the cardinality for the following problem :

   A store has different counters managed by different employees. A counter has different items but no two counters have common items. Customers buy from different counters. Bills are prepared from bill counter only.

   d) Explain generalization and specialization. What is aggregation ? 3 + 2 + 6 + 4

8. a) What is reliability ? Define ROCOF, POFOD, MTTR and MTTF.

   b) What is the extra parameter incorporated by feature point metric ?

   c) Draw a CFG and independent paths and evaluate the cyclomatic complexity of the following :

```
intgcd ( int x, int y )
    {
    While ( x ! = y )
{ if ( x > y )
    x = x – y;
    Else
    y = y – x;
return x;
    }}
```

2 + 8 + 1 + 4

9. a) What is software failure ?

   b) How is it related with a fault ?

   c) Explain the significance of bath tub curve of reliability with the help of a diagram.

   d) What do you mean by software quality standard ?

2 + 3 + 5 + 5

10. a) Describe waterfall model.

    b) What are the advantages and disadvantages of waterfall model ?

    c) Compare ITV with RAD model. 7 + 4 + 4

11. Write short notes on any *three* of the following : 3 × 5

    a) Spiral model

    b) Feasibility study

    c) System testing

    d) Data dictionary

    e) Six sigma qualities.

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCA-202

INFORMATION SYSTEM ANALYSIS AND DESIGN

Time Allotted: 3 Hours | *Full Marks*: 70

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Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for *any ten* of the following: 1×10=10

(i) The two basic driving factors of software are _____ and _____.
- (a) flowcharting, coding
- (b) quality, cost
- (c) algorithms, programs
- (d) quality, quantity

(ii) Cost benefit analysis
- (a) compares the cost with the benefits of introducing a computer based systems.
- (b) estimates hardware and software costs.
- (c) evaluates the tangible and intangible factors.
- (d) All of the above

(iii) CASE tools means
- (a) Computer Aided System Engineering
- (b) Corporate Aided Symbolic Engineering
- (c) Computer Aided Software Engineering
- (d) Corporate Automated System Engineering

(iv) A state diagram
- (a) does not have a node.
- (b) is a graph having the arcs and transactions.
- (c) is not related to object modelling technology.
- (d) None of these

(v) Entities, Attributes and Relationship are associated with
(a) logical concepts of data
(b) physical concepts of data
(c) persons of an organization
(d) None of these

(vi) Prototype is a
(a) mini model of the existing system
(b) mini model of the proposed system
(c) working model of the existing system
(d) None of these

(vii) White box testing is also known as
(a) Procedure testing
(b) Performance testing
(c) Structural testing
(d) All of these

(viii) The first step in the SDLC is
(a) Preliminary investigation and analysis
(b) System design
(c) Database design
(d) None of these

(ix) Validation testing is called
(a) Beta testing
(b) Alpha testing
(c) Gamma testing
(d) Acceptance testing

(x) Open system interacts with the
(a) boundary
(b) environment
(c) control
(d) closed systems

(xi) Structured English is
(a) Coding technique
(b) Designing tool
(c) Used for testing
(d) None of these

Group – B

(Short Answer Type Questions)

Answer *any three* of the following: 5×3=15

2. What is a relationship? Describe different types of relationship with examples. 1+4=5

3. What is a flowchart? What are the advantages and limitation of flowchart? 2+3=5

4. What is System Analysis? What are the roles of a System Analyst? 2+3=5

5. Write the advantages and disadvantages of incremental model. 5

6. What is data dictionary? What are the use of data dictionary? 2+3=5

Group – C

(Long Answer Type Questions)

Answer *any three* of the followings: 15×3=45

scribe different types of feasibility study.

scribe different types of risks related to a system.

is Structured English? 7+5+3=15

has the following policy on deposits:

of ₹ 5,000 and above for three years or above the interest rate is 12%. On the same deposit loss than 3 years it is 10%. On deposits below ₹ 5,000 the interest rate is 8% regardless of the

above information in:

7½+7½=15

describe it fully.

(1+3)+5=15

coupling.

(4×4+4)+3=15

5×3=15

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCAN-202(N)

SOFTWARE ENGINEERING

Time Allotted : 3 Hours *Full Marks* : 70

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GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i) SRS stand for

      a) Software Requirement Specification

      b) Software Requirement Solutions

      c) System Requirement Specification

      d) None of these.

ii) Waterfall model is not suitable for

a) small projects

b) accommodating changes

c) complex project

d) none of these.

iii) The nature of tasks of DSS is

a) highly structured b) semi-structured

c) unstructured d) both (b) and (c).

iv) Which phase is not available is Software life cycle ?

a) Coding b) Testing

c) Maintenance d) Abstraction.

v) MIS considers

a) only qualitative factors

b) only quantitative factors

c) both (a) and (b)

d) none of these.

vi) Regression testing is a major part of which of the following life cycle ?

a) Waterfall model b) V model

c) Iterative model d) All of these.

vii) Operational Feasibility examines

a) cost related with the software development

b) whether the proposed method can fit in with existing operations

c) risk assessment

d) none of these.

viii) Which level of DFD is also known as Context Level Diagram ?

a) 1-level b) 0-level

c) 2-level d) None of these.

ix) Cost benefit analysis is also known as

a) Social feasibility

b) Technical feasibility

c) Economical feasibility

d) None of these.

x) A decision table is

a) a truth table

b) a table that facilitates taking decisions

c) a table listing conditions and actions to be taken based on the testing of conditions

d) a table in a decision support system.

xi) A system that does not interact with external environment is called

a) closed system b) logical system

c) open system d) hierarchical system.

xii) Functional testing is also known as

a) white box testing b) black box testing

c) regression testing d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Write the advantages and disadvantages of prototype model.

3. What is black box testing ? How does it differ from white box testing ? 3 + 2

4. What are the different levels of CMM ?

5. Define decision table. Write down the steps to built-up decision table. 2 + 3

6. Explain the importance of CASE tools with example.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is DFD ? Discuss different symbols used in DFD.

   b) Differentiate between Logical DFD and Physical DFD.

   c) Draw the E-R diagram showing the cardinality for the following problem :

   A store has different counters managed by different employees. A counter has different items but no two counters have common items. Customer buys from different counters. Bills are prepared from bill counter only.

   d) Explain generalization and specialization.

   $3 + 2 + 6 + 4$

8. a) Distinguish between software verification and software validation.

   b) The discount policy has following conditions for the customers. If orders for 6 or more copies per book tile.

If customer is from 'Libraries and individual' :

5% allowed on order of 6-19 copies per book title 10% on orders for 20 copies per book title and 15% on order for 50 copies per book title. Develop a process description in $\tilde{N}$:

i) Structured English

ii) Decision Table

iii) Decision Tree.

9. a) What are the functions of Quality Assurance Group (QAG) ?

b) List five salient features for awarding the ISO 9001 certificate to a software development organization.

c) Differentiate between ISO 9001 and CMM.

10. a) What is SRS and what should be the contents of SRS ?

b) Explain Work Breakdown Structure with suitable diagram.

c) What is activity network ? Explain with suitable diagram.

11. Write short notes on any *three* of the following : 3 × 5

a) ERP

b) System testing

c) Decision table and decision tree

d) CRM

e) E-Business.