**West Bengal University of technology (WBUT), WEST BENGAL**

Year: 2008

BCA 4th Semester Examination

DATABASE MANAGEMENT SYSTEM

PAPER CODE-BCA 401

Time: Three hours Max. Marks-70

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(Multiple choice questions)

1.Choose the correct alternatives for the following: 10x1=10

1. Association among several entities is known as

a)attribute b)relationship

c)field d)none of these.

1. In ER model ellipse symbol is used for

a)attribute b)entity

c)relation d)none of these

iii) Relational algebra is a

a)procedural language b)non-procedural language

c)object oriented language d)all of these

iv) SQL stands for

a)Select Query Language

b)Structured Query Language

c)Both (a) and (b)

d)none of these.

v) BCNF is a type of

a)indexing b)DFD

c)normalization d)none of these

vi) Which of the following is not one of of the four categories described in the data dictionary?

a) Data structure b) Data store

c) Process d) Data flow

vii) An index on the search key is called a

a) Primary index b) secondary index

c) Multilevel index d) all of these

viii) A person who has central control over the system is called a

a) Data analyst b) Data selector

c) Database administrator d) none of these

ix) Any relation that is not part of the logical model, but is made visible

to a user as a virtual relation, is called as

a) relation b) view

c) tuple d) none of these

x) In a relation algebra pi symbol is used for  
 a) selection b) union

c) Intersection d) projection

**GROUP-B**

**(SHORT ANSWER QUESTIONS)**

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

2. Explain hierarchical data model with suitable examples.

3. State the properties of relational model.

4. Describe the three-level architecture of DBMS.

5.”All primary keys are the super key but the converse is not true”. Clarify. Define

Candidate key and alternate key with example.

6. Describe briefly the role of DBA in the base design. What is the Data dictionary?

**GROUP-C**

**(LONG ANSWER QUESTIONS)**

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

7. a) What is multi relationship?

b) What is attribute inheritance?

c) With an example, describe specialization and generalization.

d) Draw ER diagram showing the cardinality for the following problem:

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

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

iii) Students appear for seats in colleges. Each student can get almost one seat. A college

has many seats. A student can sent many applications.

2+2+4+2+2+3

8. a) State Armstrong’s axioms.

b) What is functional dependency? Explain with example.

c) Explain the difference between external, internal and conceptual schemas.

5+5+5

9. a) Distinguish between logical and physical data dependency.

b) Explain the database languages with SQL command.

c) Define 2nd NF, 3rd NF and BCNF with example.

10. Consider the following two schemas:

EMP (EMP#, ENAME, JOB, HIREDATE, MANAGER#, SALARY, COMM, DEPT#)

DEPT (DEPT#, DNAME, LOCATION)

Perform the following queries on the tables (write appropriate SQL statement):

i) List the name, salary and PF amounts of all employees (PF is calculated as 10% of the basic)

ii) List the number of employees and average salary in DEPT# 20

iii) List the department number and total salary payable in each department

iv) List the names of the employees who are more than twenty years old in the company

v) List the names of the employees whose name either start or end with S.

11. Write short notes on any three of the following:

i) Data Dictionary

ii) Data abstraction

Iii) Query optimization technique

IV) ACID property

v) Functional dependency

OBJECT ORIENTED PROGRAMMING WITH C++

Time: Three hours PAPER CODE-BCA 402 Max. Marks:70

GROUP A

(Multiple choice questions)

1. Choose the correct alternatives for the following: 10x1=10

1. Reus age of a function is called

a) Method overriding b) Function overriding

c) Function overloading d) none of these.

1. The argument of a copy constructor is passed by

a) Value b) Reference

c) Pointer d) both (a) and (c)

iii) A template provides a convenient way to make a family of

a) Variables b) function

c) Classes d) programs

iv) Static members are initialized to

a)0 b)1

c)Garbage d)none of these.

v) We can overload a destructor- it is

a)true b)false

c)can’t say d)none of these

vi) Which of the following operators can be overloaded?

a).(dot **) b)::**

**c)%** d)?:

vii) Tellp() tells the position of

a)file b)Getpointer

c)Putpointer d)Constructor

viii) C++ is programming language of type

a)Structured b)Non-structured

c)Procedural d)Module based

ix) A friend function can be called

a)directly b)like a general function

c)by using the object of the classes d)should not be called

x) In a abstract class we can create object  
 a)True b)False

c)Can’t say d)non of these

**GROUP-B**

**(SHORT ANSWER QUESTIONS)**

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

2. Can we overload a destructor? Explain.

3.What is dynamic binding? When do we use it? Explain with example.

4.What are the differences between a structure in C and a class in C++.

5.What is a constructor? Explain copy constructor with an example.

6.What is function overloading?Explain with a simple example.

**GROUP-C**

**(LONG ANSWER QUESTIONS)**

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

7. What do you mean by Object-Oriented Programming? Discuss the different properties

of an Object-Oriented Programming.

8. What is template? Why it is used? Describe different templates.

9. Construct a stack data structures by using a template class. Explain containership

With suitable examples. What is the difference between static polymorphism and

dynamic polymorphism?

10. Write a C++ program to implement a class called ‘String’ for string manipulation. Overload

+=,+ and = operator,for string append, concatenation and assignment respectively.

11. Write short notes on any three:

a) Multiple Inheritance

b) Exception handling

c) Operator overloading

d) Pure virtual function

e) Stream.

SOFTWARE PROJECT MANAGEMENT AND QUALITY ASSURANCE

Time: Three hours PAPER CODE-BCA 403 Max. Marks:70

GROUP A

(Multiple choice questions)

1.Choose the correct alternatives for the following: 10x1=10

1. Estimation of development effort for organic is

a)2.4(KLOC)^1.05pm b)3.0(KLOC)^1.12 pm

c)3.6(KLOC)^1.20 pm d)none of these.

1. COCOMO is an

a)empirical estimation technique b)heuristic technique

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

1. To allocate resource to activities we use

a) Gantt Chart b)PERT Chart

c)CPM d)none of these

iv) Different phases of risk management are

a)risk identification

b)rish analysis

c)risk monitoring

d)all of these.

v) Type(s) of Project plans is (are)

a)configuration management plan b)testing plan

c)staff development plan d)all of these

vi) Project size estimation metric is

a)LOC b)function point

c)feature point d)all of these

vii) Contigency plan is a risk …………………………….. strategy.

a)planning b)monitoring

c)analysis d)none of these

viii) Delphi cost estimation is a type of

a)heuristic technique b) analytical estimation technique

c) empirical estimation technique d)all of these

ix) Alpha testing is done by

a)Customer b)Tester

c)Developer d)all of these

x) 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

**GROUP-B**

**(SHORT ANSWER QUESTIONS)**

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

2. What are the important activities that are carried out during Feasibility study?

3.State the advantages and disadvantages of LOC.

4.What is SPMP? Why is it essential in s/w engineering? What do you mean by projrct planning?

5. Compare spiral and waterfall models.

6. What are McCall’s quality factors? Distinguish between verification and validation.

**GROUP-C**

**(LONG ANSWER QUESTIONS)**

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

7. a) What is SDLC model?

b) What is called meta model and why? Describe the different activities involved in this model.

c) State the advantages and disadvantages of evolutionary model. Why is it called incremental

model?

d) What is phase containment of errors?

1+(1+1+5)+(3+2)+2

8. Suppose you are project manager of a software project that consists of the following activities:

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity no.** | **Activity name** | **Duration(days)** | **Immediate predecessor** |
| 1. | Specification | 15 | - |
| 2. | Design database part | 45 | 1 |
| 3. | Design GUI part | 30 | 1 |
| 4. | Code database part | 105 | 2 |
| 5. | Code GUI part | 45 | 3 |
| 6. | Integrate and Test | 120 | 4,5 |
| 7. | Write User Manual | 60 | 1 |

Draw the Activity Network Representation of the Project and Gantt Chart representation of the project.

9. a) What is COCOMO model?

b) What are the different categories in which a product can be classified based on its

development complexity?

c) Assume that the size of an organic software product has been estimated to be 32,000

lines of source code. Assume that the average salary of each of software engineers is

Rs. 15000 per month. Determine the effort required to develop the software product

And the nominal development line.

d) Explain when to use PERT chart and when to use Gantt chart.

1+7+4+3

10. a) What are software reliability metrices?

b) Compare between ISO 9000 certification and SEI/CMM.

11+4

11. a) What are the functions of quality assurance group(QAG)?

b) What are External Quality Assurance (EQA) and Final Inspection(FI)?

c) Distinguish between Quality control and Quality assurance.

4+(3+3)+5