P983

[4768]-3001

S.Y. B.C.A.

301 : RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)

(Semester-III) (2013 Pattern)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*

Q1) Attempt all: **[16]**

   a) What is RDBMS? List any two features of RDBMS.

   b) What is difference between % type and %row type?

   c) What is serializability? List the types of serializability.

   d) Define: i) commit   ii) rouback

   e) What is checkpoint?

   f) Define Recoverable schedule.

   g) Define   i)   upgrading   ii)   downgrading

   h) Write syntax of for loop in PL/SQL with example.

Q2) Attempt Any Four: **[16]**

   a) Explain any two popular products of RDBMs.

   b) What is cursor? Explain different attributes used in it.

   c) What is transaction? Explain ACID properties of transaction.

   d) What is PL/SQL? Explain block of PL/SQL.

   e) What is deadlock? Explain how deadlock in recovered.

Q3) Attempt Any Four: **[16]**

   a) Explain various types of failures that may occur in system.

   b) What is trigger? Explain trigger with proper syntax and example.

   c) What are the various problems that occur in concurrent transaction?

   d) Explain Timestamp ordering protocol.

   e) Explain deferred database modification technique with example.

Q4) Attempt Any Four: **[16]**

    a) Consider the following relational database.

        Employee (empno, empname, city, deptname)

        Project (projno, proj name, status)

        Emp-proj (empno, proj no, number-of-days)

        Write a function which will return total number of employees working on any project for more than 60 days.

    b) Consider the following relational database.

        Politician (pno, pname, description, partycode)

        Party (partycode, partyname)

        Write a clusor to display partywise details of politicians.

    c) Consider the following relational database.

        Department (deptno, deptname, location)

        Employee (empno, empname, salary, commission, designation, deptno)

        Write a trigger for an employee table that restricts insertion or updation or deletion of data on 'sunday'.

    d) Consider the following relational database

        Book (bno, bname, pubname, price, dno)

        Department (dno, dname)

        Write a procedure which will display total expenditure on books by a given department.

    e) Write a package which consist of one procedure and one function, consider relation student.

        Student (Roll-no, stud-name, class, stud-addr, percentage) procedure of a package will display details of given student. Function of a package will count total number of students having percentage greater than 80 and class 'TYBCA'.

Q5) Attempt Any Four: **[16]**

a) Consider the following transactions. Give two non-serial schedules that are serializable.

T_1	T_2
Read (A)	Read (A)
A = A + 1000	A = A − 1000
Write (A)	Write (A)
Read (BC)	Read (B)
C = C − 1000	B = B − 1000
Write (C)	Write (B)
Read (B)	
B = B + 1000	
Write (B)	

b) Consider the following transactions. Give two non-serial schedules that are serializable.

T_1	T_2	T_3
Read (A)	Read (C)	Read (B)
A = A + 100	Read (B)	B = B + 200
Write (A)	B = B + C	Write (B)
Read (B)	Write (B)	Read (C)
B = B + 100	Read (A)	C = C + 200
Write (B)	A = A − C	Write (C)
	Write (A)	

c) Following is II list of events in an interleaved execution of set of transactions T_1, T_2, T_3 and T_4 with two phase locking protocol.

Time	Transaction	Code
t_1	T_1	Lock (B, S)
t_2	T_2	Lock (A, X)
t_3	T_3	Lock (C, S)
t_4	T_4	Lock (B, S)
t_5	T_1	Lock (A, S)
t_6	T_2	Lock (C, X)
t_7	T_3	Lock (A, X)
t_8	T_4	Lock (C, S)

Construct a wait for graph according to above request. Is there deadlock at any instance? Justify.

d) Following is a list of events in an interleaved execution of set of transactions T_1, T_2, T_3 and T_4 with two phase locking protocol.

Time	Transaction	Code
t_1	T_1	Lock (A, X)
t_2	T_2	Lock (B, S)
t_3	T_3	Lock (A, S)
t_4	T_4	Lock (C, S)
t_5	T_1	Lock (B, X)
t_6	T_2	Lock (C, X)
t_7	T_3	Lock (D, S)
t_8	T_4	Lock (D, X)

Construct a wait for graph according to above requests. Is there deadlock at any instance? Justify.

e) Following are the log entries at the time of system crash.

[start - transaction, T_1]

[write - item, T_1, A, 100]

[commit . T_1]

[start - transaction, T_3]

[write - item, T_3, B, 200]

[checkpoint]

[commit, T_3]

[start - transaction, T_2]

[write - item, T_2, B, 300]

[start - transaction, T_4]

[write - item, T_4, D, 200]

[write - item, T_2, C, 300] ← System crash

If deferred update technique with checkpoint is used, what will be the recovery procedure?

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[4768] - 3002

B.C.A.

DATA STRUCTURE USING C++

(2013 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

1) All questions are compulsory.

2) All Questions carry equal marks.

3) Assume suitable data, if necessary.

Q1) Attempt any eight of the following :   **[8×2 = 16]**

a) What is linked list structure?

b) Compare the efficiency of Bubble Sort with Insertion Sort?

c) How to calculate count of Best, Worst and Average case?

d) What is Ancestor of Node?

e) What are the different types of data structures?

f) What are the applications of queue?

g) What is use of tree? How it is differ from linked list?

h) What is difference between structure and polynomial?

i) State the types of graph.

j) What is use of (&) address operator and dereferencing (*) operator?

Q2) Attempt any four of the following :   **[4×4 =16]**

a) Write an algorithm to convert given infix expression to prefix expression.

b) What is height-balanced tree? Explain LL and RR rotations.

c) Explain BFS with an example.

d) Write a function to remove last node of singly linked list and add it at the beginning.

e) Write a function to display mirror image of given tree.

P.T.O.

Q3) Attempt any four of the following : **[4×4 = 16]**

   a)   Explain Quick sort technique with an example.

   b)   Write a function which compares the contents of two queues and display message accordingly.

   c)   What is doubly circular linked list? Explain its node structure.

   d)   Write a function to merge given two singly linked lists.

   e)   Explain different types of asymptotic notations in details.

Q4) Attempt any four of the following : **[4×4 = 16]**

   a)   Explain different types of dynamic memory allocation functions.

   b)   Sort following data by using Insertion sort techniques:

        12,5,122,9,7,54,4,23,88,60.

   c)   Write a function to display circular linked list in reverse order.

   d)   Write a function to remove given node from singly linked list and add it at the end of list.

   e)   What is graph? Explain its representation techniques in details.

Q5) Attempt any four of the following : **[4×4 = 16]**

   a)   Write a "C" program for addition of two polynomials.

   b)   What is an algorithm? How to measure its performance?

   c)   Write a function to count the number of leaf nodes in a tree.

   d)   Write a recursive function for erasing linked list.

   e)   What are the drawbacks of sequential storage?

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[4768] - 3003

B.C.A.

303: INTRODUCTION TO OPERATING SYSTEM

(2013 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

    1)   *All questions are compulsory.*

    2)   *Neat diagrams must be drawn wherever necessary.*

Q1) Attempt any eight of the following :   **[8×2 = 16]**

    a)   Round Robin algorithm is non-preemptive comment & Justify.

    b)   What is semophores.

    c)   What is process.

    d)   What is External fragmentation.

    e)   Define system program.

    f)   List Basic operations on file.

    g)   What is the purpose of command inter preter.

    h)   Define Burst Time.

    i)   Define Swap time.

    j)   What is Deadlock.

Q2) Attempt any four of the following: **[4×4 =16]**

    a)   Explain multilevel feedback queue Algorithm.

    b)   What is page fault. Explain the different steps in handling a page fault.

c) Explain different methods for recovery from a deadlock.

d) Differentiate between MVT and MFT job scheduler.

e) Consider the following set of processes with the length of CPU Burst time and arrival time.

Process	Burst time	Arrival time
P_1	5	1
P_2	3	0
P_3	2	2
P_4	4	3
P_5	2	13

Calculate Turn around time waiting time Average waiting time and Average turn around time using Round Robin Algorithm with time quantum = 2.

Q3) Attempt any four of the following: [4×4 = 16]

a) Explain medium term scheduler.

b) List and explain system calls related to file management.

c) Explain Direct Access method with advantages & disadvantages.

d) Explain operations on process in detail.

e) Consider the following page reference string.

7,5,4,9,4,7,8,5,2,3,4,7,9,7,4.

Find the number of page fault for the following algorithm with 3 frames.

i) LFV

ii) FIFO.

Q4) Attempt any four of the following: **[4×4 = 16]**

a) Write a note on memory compaction.

b) In normal mode of operation. List and explain the sequence of utilization of resources by process.

c) Explain PC bus structure with diagram.

d) Explain the Reader's writer's problem which is a classic problem of synchronization.

e) Consider the following job queue.

Job	Memory	Time
1	80K	9
2	110K	4
3	20K	18
4	60K	5
5	40K	10

Show the memory map of various stages by using MVT scheduling.

Assumption total memory is of 400K & monitor of 100K and all jobs are arrived at same time.

Q5) Attempt any four of the following: **[4×4 = 16]**

a) Explain overlay's in detail with diagram.

b) Explain -Resource-Allocation graph in detail.

c) Explain the overlapped swapping in detail.

d) The request queue is as follows,

87,148,92,171,96,131,103,71

Number of tracks = 0 to 199.

Starting position or current head position = 125

Find total head movement by Applying SSTF (Shortest seek time first) disk scheduling Algorithm.

e) Consider the fine processes P_0, P_1, P_2, P_3, P_4 and three resources R_1, R_2, R_3 resources type R_1 has 10 instances, R_2 has 5, instances and R_3 has 7 instances. Allocation and max matrix is given below.

	Allocation			MAX		
	R_1	R_2	R_3	R_1	R_2	R_3
P_0	0	1	0	7	5	3
P_1	2	0	0	3	2	2
P_2	3	0	2	9	0	2
P_3	2	1	1	2	2	2
P_4	0	0	2	4	3	3

Answer the following questions using Banker's Algorithm.

i) What is the content of Need Matrix.

ii) Is the system in a safe sequence? If yes, give the safe sequence.

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B.C.A.

304: BUSINESS MATHEMATICS

(New 2013 Pattern) (Semester - III) (Theory)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

1) *All questions are compulsory.*

2) *Figures to the right indicate full marks.*

3) *Use of non-programmable pocket calculator is allowed.*

Q1) a) Attempt any ONE of the following: **[1×6 = 6]**

     i) In 2011 population of a city was 80,000. There was rise of 10% for each next year. Find the population at the year 2014.

     ii) Find two numbers which are in the ratio 2:3 such that, if 5 deducted from first number and 5 added to the second, the new ratio is 1:2.

   b) Attempt any TWO of the following: **[2×5 = 10]**

     i) A television when sold ₹ 23,660 resulted in a loss of 9%. What was the cost price of the television?

     ii) If $a+b$: $a-b$ = 7:3, find the value of a:b.

     iii) Explain the terms

        1) Inverse proportion

        2) Market price.

Q2) a) Attempt any ONE of the following: **[1×6 =6]**

     i) Harshvardhan sold a new kind of battery at a profit of 20%. If the cost price and selling price are both reduced by ₹ 100 the profit on the new cost price is 25%. Find the original cost price.

P.T.O.

ii) Find the amount of ₹ 6000 at 12% p.a. in 3 years compounded quarterly.

b) Attempt any TWO of the following: **[2×5 = 10]**

i) If x varies directly as y and inversely as z and $x = 13$ when $y = 8$ and $z = 16$, find y when $x = 9$ and $z = 12$.

ii) Prasanna borrowed ₹ 7000 for 5 years at the rate of 9% p.a. simple interest. Find the amount that would have to pay at the end of five years.

iii) The rate of commission is increased from 5% to 9%, still the income of an agent remains the same. Find the percentage change in his sales.

Q3) a) Attempt any ONE of the following: **[1×6 = 6]**

i) Find the inverse of the following matrix by adjoint method.

$$A = \begin{bmatrix} 4 & 2 & 3 \\ 4 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$

ii) Solve the following system of linear equations by matrix inversion method.

$3x + y = 6$

$2x - y = 2$

b) Attempt any TWO of the following: **[2×5 = 10]**

i) If $A = \begin{bmatrix} 2 & 2 \\ 7 & 3 \end{bmatrix}$, find a matrix X such that $A + X = I_2$.

ii) Solve the following linear programming problem by graphically.

Maximize $Z = 20x + 17y$

Subject to $2x + 2y \leq 22$

$$12x + 10y \leq 120$$

$$x, y \geq 0$$

iii) Find the value of the determinant, where $\begin{vmatrix} 2 & 3 & 4 \\ 3 & 2 & 1 \\ 7 & 9 & 2 \end{vmatrix}$.

Q4) a) Attempt any ONE of the following: **[1×6 = 6]**

i) Obtain the initial basic solution of the following transportation problem by using Vogel's approximation method.

		Destinations				Supply
		D_1	D_2	D_3	D_4	
	F_1	50	150	70	60	90
Factory	F_2	80	70	90	10	60
	F_3	15	90	80	80	50
	Demand	30	70	60	40	200

ii) A manufacturer produces two items A and B. Item A needs 2 hours on machine G and 2 hours on machine H. Item B needs 3 hours on machine G and 1 hour on machine H. If machine G can run for a maximum of 12 hours per day and machine H for 8 hours per day and profit from item A and B are ₹ 4 and ₹ 5 per item respectively. Formulate linear programming problem.

b)   Attempt any TWO of the following: **[2×5 = 10]**

i)   A car was bought for ₹ 86,000 and sold for ₹ 92,000 through a broker who charges commission of 2% on purchase and 3% on sales. Find the total gain on the transaction.

ii)   Find the simple interest on ₹ 2,000 at 6% p.a. for 6 months.

iii) Obtain initial basic solution to the following transportation problem by north west corner method.

Sources ↓	Destination				Supply
	D_1	D_2	D_3	D_4	
1	2	6	3	10	200
2	4	3	1	9	150
3	5	3	2	4	150
Demand	100	200	100	100	

Q5) a)   Attempt any ONE of the following: **[1×6 = 6]**

i)   Rohit purchase a flut of cash price ₹ 4,80,000. Rohit paid 25% of this in cash and borrowed 75% from HDFC at 15% p.a. repayable in monthly equal installments spread over 15 years. Find the EMI.

ii)   Explain the terms:

   1)   Simple Interest

   2)   Solution of linear programming problem.

   3)   Cash discount.

b) Attempt any TWO of the following: **[2×5 = 10]**

    i)   What is transportation problem? How to find solution of it by matrix minima method?

    ii)   Compute the value of

$$\left\{4\begin{bmatrix} 1 & 2 & -3 \\ 4 & 5 & 6 \end{bmatrix} + \begin{bmatrix} -1 & -2 & 6 \\ 0 & 2 & 9 \end{bmatrix}\right\}\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$

    iii) If $8:x::x:2$, find x.

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S.Y.B.C.A.

SOFTWARE ENGINEERING

(2013 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

    1)   **All questions are compulsory.**

    2)   **All questions carry equal marks.**

Q1) Attempt the following : (Any eight)   **[8×2 = 16]**

    a)   Define Interfaces.

    b)   Explain any 2 skills of System Analyst.

    c)   Define software.

    d)   State the qualities of good design.

    e)   Define the term Data Dictionary.

    f)   What is an Entity?

    g)   State any two advantages of RAD model.

    h)   Define the term Module.

    i)   State all the symbols of DFD.

    j)   Define S/W Testing.

Q2) Answer the following: (Any four)   **[4×4 =16]**

    a)   Explain Prototyping model in detail.

    b)   State difference between verification and validation testing.

    c)   Explain system concepts in detail.

d) Explain Role of System Analyst as an architect and as a salesperson.

e) Explain Mc Call's Quality factors in detail.

f) Explain structure chart in detail.

Q3) a) Design a Prototype Report for Electric Bill generation for Electric company. **[8]**

b) Sales tax is to paid by customers based on following conditions.

   i) If customer is from Maharashtra and has sales tax exemption certificate the no sales tax is to be paid by customer.

   ii) If customer is from Maharashtra but does not have sales tax exemption certificate the 8% sales tax is to be paid.

   iii) If customer is out of Maharashtra 4% central sales tax is to be paid. Draw decision tree and decision table for above case. **[8]**

Q4) Write short notes on: (Any four) **[4×4 = 16]**

   a) Integration testing.

   b) Software characteristics.

   c) SRS documentation.

   d) Types of Module.

   e) Feasibility study.

Q5) Consider a "Employee Payroll System". **[16]**

   a) Identity all the Entities.

   b) Draw a context level DFD.

   c) Draw a 1st level DFD
      for the above case.

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S.Y. B.C.A

321: NUMERICAL METHODS

(2008 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

   1)   *All questions are compulsory.*

   2)   *Figures to the right indicate full marks.*

   3)   *Use of calculator is allowed.*

   4)   *Neat diagrams must be drawn whenever necessary.*

Q1) a)   Attempt any <u>ONE</u> of the following: **[6]**

       i)   Use Newton-Raphson method to obtain a root in $(-3,-2)$ of the equation $x^3 + 3x^2 - 3 = 0$ correct to three decimal places.

       ii)   Obtain a root of equation $x^3 - 4x - 9 = 0$ correct to two decimal places by using bisection method.

   b)   Attempt any TWO of the following: **[10]**

       i)   Differentiate $y = \left(x^2 + 2\right)^5 + \left(3x^4 - 5\right)^4 - \left(3x^5 - 6x^2 + 9\right)$

       ii)   Evaluate $\int \left(x^2 + 2x\right)^2 (x+1)^3 \, dx$.

       iii) Evaluate $\lim\limits_{x \to 1} \dfrac{x^3 - 1}{x - 1}$.

Q2) a) Attempt Any _ONE_ of the following: [6]

   i) Use Lagrange's inter polation formula to find $\sqrt{155}$ by using
       following table:

x	150	152	154	156
$y = \sqrt{x}$	12.247	12.329	12.410	12.490

   ii) Show that $E \equiv 1 + \Delta$ and $E^{-1} \equiv 1 - \nabla$.

 b) Attempt any TWO of the following: [10]

   i) The table below gives the values of tan$x$. Find tan (0.26).

x	0.10	0.15	0.20	0.25	0.30
tan$x$	0.1003	0.1511	0.2027	0.2553	0.3093

   ii) Using Lagrange's interpolation formula, find the form of the function
        $f(x)$ from the following data:

x	0	1	3	4
$f(x)$	-12	0	12	24

   iii) Use Newton's forward difference formula to find the sum

        S_n = 1+2+3+....+n.

Q3) a) Attempt any ONE of the following: [6]

   i) Find the values of a and b so that $y = a + bx$ fits the data in the
       following table:

x	0	1	2	3	4
y	1.0	2.9	4.8	6.7	8.6

ii) Find the values of a, b and c so that $y = a + bx + cx^2$ is the best fit to the data:

x	0	1	2	3	4
y	1	0	3	10	21

b) Attempt any <u>TWO</u> of the following: **[10]**

i) Use Euler's method to solve differential equation $y' = -y$ with initial condition $y(0) = 1$ at $x = 0.02, 0.04$ by taking $h = 0.02$.

ii) Use Picard's method to find two approximations of solving equation $\frac{dy}{dx} = x + y^2$, subject to conditions $y = 1$ when $x = 0$.

iii) If $f(0) = 0, f(1) = 0, f(2) = 6, f(3) = 24, f(4) = 60$. By using Newtons forward interpolation formula find value of $f(1.5)$.

Q4) a) Attempt any ONE of the following: **[6]**

i) Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ of the data function at $x = 3$.

x	1	2	3	4	5
y	4	9	16	25	36

ii) Use Runge-Kutta second order formula to approximate y when $x = 0.1$ and $x = 0.2$. Given that $x = 0$ when $y = 1$, for $\frac{dy}{dx} = x+y$.

b) Attempt any TWO of the following. **[10]**

i) Find $\int_{1}^{6} f(x) \, dx$ by Simpson's 1/3 rule for the function.

x	0	1	2	3	4	5	6
y	5	6	9	14	21	30	32

ii) Evaluate $\int_{0}^{6} (x^2 + 2) \, dx$ by trapezoidal rule take $h = 0.5$.

iii) Determine the value of y when $x = 0.1$ by Euler's modified method.

Given $y(0) = 1$ for $\dfrac{dy}{dx} = x^2 + y$. Take $h = 0.1$.

Q5) a) Attempt any one of the following: **[6]**

i) Explain terms.

1) Feasible region.

2) Optimum solution.

ii) Solve following Linear programming problem by graphical method.

minimize $z = 5x + 8y$

subjected to $x + y \geq 5$

$$x \leq 4$$

$$y \geq 2$$

$$x, y \geq 0.$$

b) Attempt any two of the following. **[10]**

i) A manufacture produces bicycles and scooters, processed through two machines A and B. Availability of A and B and the time required to manufacture 1 bicycle and 1 scooter on machines A and B is given below.

Machine	A	B	Profit per unit
Bicycle	6	3	45
Scooter	4	10	55
availability	120	180	

Formulate this problem as linear programming problem to maximize the profit.

ii) Obtain the initial basic feasible solution to the following transportation problem by using vogels approximation method.

	Q_1	Q_2	Q_3	Supply
P_1	10	6	3	9
P_2	4	7	8	28
P_3	9	8	6	20
P_4	5	7	9	18
	25	25	25	

iii) Determine the schedule of assignment of task to machine so that the total machine hours required to complete the task is the least.

Machine task	Q_1	Q_2	Q_3	Q_4
P_1	51	77	49	55
P_2	32	34	59	68
P_3	37	44	70	54
P_4	55	55	58	55

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B.C.A

322: DATA STRUCTURE USING C

(2008 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

   1)   *All questions are compulsory.*

   2)   *All questions carry equal marks.*

Q1) Attempt Any Eight of the following: **[8×2 = 16]**

   a)   What is Composite Data?

   b)   Why stack is called LIFO structure?

   c)   What is Complete Binary tree?

   d)   What are the different types of Queue?

   e)   What is difference between structure and Polynomial?

   f)   What is balance factor? How it is calculated?

   g)   List the advantages of Dynamic Memory Allocation.

   h)   What is efficiency of Linear Search Method?

   i)   What is Graph? How it is represented?

   j)   How to calculate indegree and outdegree of a node in graph?

Q2) Attempt Any Four of the following: [4×4 = 16]

a) Write an algorithm for evaluation of Postfix expression.

b) Explain different types of tree traevering techniques.

c) Explain BFS with an example.

d) Write a function to remove given node of singly linked list and add it at the beginning.

e) Write a function to display odd positions nodes from singly linked list.

Q3) Attempt Any Four of the following: [4×4 = 16]

a) Explain Merge sort technique with an example.

b) Write a function which compares the contents of two queues and display message accordingly.

c) What is singly circular linked list? Explain its node structure.

d) Write a function for intersection of two singly linked lists.

e) Explain different types of asymptotic notations in details.

Q4) Attempt any four of the following: [4×4 = 16]

a) Explain different types of dynamic memory allocation functions.

b) Sort following data by using Selection sort techniques:

45,78,2,89,9,33,66,11,8

c) Write a function for concatanation of two singly linked list.

d) Compare Stack with Queue.

e) Explain Binary Search Method with an example.

Q5) Attempt any four of the following: [4×4 = 16]

a) Write a "C" program for evaluation of two polynomials.

b) Write a C program to accept the details of student (rno sname, per) and display it. (use Dynamic memory allocation).

c) Explain DFS with an example.

d) Construct Binary Search tree for Following Data:

Jan, Oct, Dec, Nov, Feb, Mar, Apr, Sept, May, Jul, Jun, Aug.

e) What is an algorithm? Explain its characteristics in details.

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S.Y.B.C.A

SOFTWARE ENGINEERING

(2008 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

1) *All questions are compulsory.*
2) *All questions carry equal marks.*

Q1) Attempt the following: (Any eight)   **[16]**

   a)   Define the elements of a system.

   b)   State any two advantages of data dictionary.

   c)   Define Module.

   d)   What is stress testing?

   e)   Define coupling.

   f)   What do you mean by a Questionnaire?

   g)   State the Mc Call's quality factors (any 2).

   h)   Define the term Entity.

   i)   Give all the symbols used in DFD.

   j)   What is S/W Testing?

Q2) Answer the following: (Any Four) [16]

a) Explain the prototype model in detail.

b) Explain any two roles of system analyst in detail.

c) Explain Test characteristics in detail.

d) Explain the concept of feasibility in detail.

e) Explain S/W characteristics in detail.

f) Give the drawbacks of waterfall model.

Q3) a) Design an I/P screen layout for Employees salary slip. [8]

b) Sales tax is levied to customers based on the following conditions: [8]

i) If customer is from Maharashtra and has sales tax exemption certificate then no sales tax is levied.

ii) If the customer is from Maharashtra but does not have sales tax exemption certificate then 8% sales tax is levied.

iii) If customer is out of Maharashtra 4% central sales tax is levied. Draw a Decision tree and Decision table for the above case.

Q4) Write short notes: (Any four) [16]

a) White Box testing.

b) SRS documentation.

c) Types of Modules.

d) Software verification and validation.

e) Types of system.

Q5) Consider a system for "Gym management" applicants fill form containing details like name, DOB, category (Regular, sports, special). I card is issued to all the gym members. Batches and trainers are alloted to the members according to availability. **[16]**

    a)   Identify all Entities.

    b)   Draw context level DFD.

    c)   Draw 1st level DFD.

✿   ✿   ✿

[4768] - 304

B.C.A

324: MANAGEMENT ACCOUNTING

(2008 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Use of calculator is allowed.*

Q1) Define the term 'Management Accounting'. State its objectives and functions. **[16]**

OR

Q1) Explain the concept of 'Working Capital'. State the causes of changes in working capital. Also state the various sources of working capital. **[16]**

Q2) Write notes on: **[16]**

a) Trend Analysis.

b) Common size statement.

OR

Q2) You have been furnished with the financial information of AB Ltd. For the year 2013-14.

Statement of profit for the year ended 31st March, 2014

	₹
Sales	8,00,000
Less: Cost of Goods sold	6,08,000
Gross profit	1,92,000
Less: Operating Exps.	1,00,000
Net profit	92,000
Less: Taxes	22,000
Net profit after Taxes	70,000

Balance sheet as on 31st March, 2014

Liabilities	₹	Assets	₹
Equity share capital		Fixed Assets	2,00,000
(₹ .100 each)	2,00,000	Cash	22,000
Retained Earnings	36,000	Sundry Debtors	24,000
Sundry creditors	31,000	Stock	48,000
Bills payable	18,000	Prepaid Insurance	2,000
Other current Liabilities	32,000	Other current Asset	21,000
	3,17,000		3,17,000

Calculate the following ratios:

a) Current Ratio.

b) Acid Test Ratio.

c) Gross profit Ratio

d) Net profit Ratio.   [16]

Q3) From the following data provided by M/s Alpha Ltd. estimate working capital requirements. **[16]**

    a)   Estimated activity/operations for the year, 2,60,000 units. (52 weeks)

    b)   Raw material remains in stock for 2 weeks and production cycle takes 2 weeks.

    c)   Finished Goods remaining in stock for 2 weeks.

    d)   2 weeks credit is allowed by suppliers.

    e)   4 weeks credit is allowed to Debtors.

    f)   Time lag in payment of Wages and overheads is 2 weeks each.

    g)   Cash and Bank Balance to be maintained ₹ 25,000.

    h)   Selling price per unit is as follows:

        i)   Raw material $33\frac{1}{3}\%$ of sales.

        ii)   Labour and overheads in the ratio of 6:4 per unit.

        iii)   Profit is at ₹ .5 per unit.

Assume that operations are evenly spread throughout the year. Wages and overheads accrue similarly. Manufacturing process requires feeding of material fully at the beginning. Degree of work-in-process is 50%. Debtors are to be estimated at selling price.

<p align="center">OR</p>

Q3) Define 'Budget' and 'Budgetary control'. State its objectives and explain in brief the steps to be taken to introduce budgetary control system in business organisation. **[16]**

Q4) The following information is obtained from Akshay Ltd. **[16]**

Particulars	₹
Sales (1,00,000 units)	1,00,000
Variable cost	60,000
Fixed cost	30,000

Calculate:

a) P/V Ratio.

b) Break Point at sales value.

c) Profit when sales amounted to ₹ .1,40,000.

d) Margin of safety.

<div align="center">OR</div>

Q4) What is 'Fund Flow Statement'? Give the proforma of 'Fund Flow Statement' and 'Adjusted profit and loss A/c.' **[16]**

Q5) Write notes on: (Any Two) **[16]**

a) Types of Budget.

b) Break Even Analysis.

c) Cash flow statement.

d) Scope of Management Accounting.

<div align="center">✧ ✧ ✧</div>

[4768] - 305

S.Y.B.C.A

325: RELATIONAL DATABASE MANAGEMENT SYSTEM

(2008 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*

Q1) Attempt all. **[16]**

   a) Give any two characteristics of RDBMS.

   b) What is cursor? Which are the various attributes of cursor?

   c) Give modes of trigger.

   d) List states of transaction.

   e) List types of serializability?

   f) What is deadlock?

   g) Define shrinking phase.

   h) Define:

       i)   redo

       ii) undo

Q2) Attempt Any Four . **[16]**

   a) Explain any two popular products of RDBMS.

   b) Write a note on explicit cursor.

c) Explain concurrent execution of transaction with the help of example.

d) Explain validation based protocol.

e) Explain log-based recovery.

Q3) Attempt Any Four. **[16]**

a) Explain procedure in PL/SQL.

b) Explain while loop used in PL/SQL with proper example.

c) What is schedule? Explain types of schedule.

d) Explain different storage types.

e) Explain checkpoint with the help of suitable example.

Q4) Attempt any four . **[16]**

a) Consider the following relational database:

Dept (dept _no, dept _ name)

Emp (emp_no, emp_name, designation, salary, dept_no)

Write a script using cursor to give raise in salary by 15% for all the employees earning less than 15000 and 19% for all employees earning more than or equal to 15000.

b) Consider the following relational database:

Item (itemno, itemname, qty)

Supplier (supplierno, suppliername, address, city, phno)

i_s (itemno, supplierno, rate, discount)

Define a trigger before updation on discount field, if the difference in the old discount and new discount is greater than 15% raise appropriate message.

c) Consider the following relational database:

Company (c_no, c_name, c_addr, c_city, c_share_value)

Person (p_no, p_name, p_addr, p_city, p_phone_no)

c_p (c_no, p_no, no_of_shares)

Write a function, which will take company name as parameter and will return count of persons who are shareholders of that company.

d) Consider the following relational database:

Publisher (p_no, p_name, p_addr)

Book(book_no, book_name, price, p_no)

Write a procedure which will take publisher number as a parameter and display count of books published by that publisher.

e) Write a package, which consists of one procedure and one function. Pass a number to procedure and print whether a number is positive or negative. Pass roll number of student to function and print percentage of that student. For this consider the following relation. Student (Roll_No, Name, Addr, Total, Per).

Q5) Attempt any four . [16]

a) Consider the following transactions. Give two non serial schedules that are serializable.

T_0	T_1
Read (X)	Read (Y)
X= X-70	Y=Y+10
Write (X)	Write (Y)
Read (Y)	Read (Z)
Y=Y+70	Z=Z-5
Write (Y)	Read (X)
	Write (Z)
	X=X-15
	Write (X)

b) Consider the following transactions. Find out two non-serial schedules which is serializable.

T_1	T_2	T_3
Read (X)	Read (Z)	Read (X)
Read (Z)	Z=Z+10	Read (Y)
X=X+Z	Write (Z)	Y=Y-X
Write (X)	Read (Y)	Write (Y)
	Y=Y+20	
	Write (Y)	

c) Following is the list of events in an interleaved execution of transaction T_1, T_2, T_3 and T_4 assuming two phase locking protocol. Is there a deadlock? If yes which transactions are involve in deadlock.

Time	Transaction	Code
t_1	T_1	Lock(A,X)
t_2	T_2	Lock(C,S)
t_3	T_3	Lock(A,S)
t_4	T_4	Lock(C,S)
t_5	T_1	Lock(B,X)
t_6	T_2	Lock(C,X)
t_7	T_3	Lock(D,X)
t_8	T_4	Lock(D,S)

d) The following is the list of events in an interleaved execution if transaction T_0, T_1, T_2 with two-phase locking protocol.

Time	Transaction	Code
t_1	T_0	Lock(A,X)
t_2	T_1	Lock(B,S)
t_3	T_0	Lock(A,S)
t_4	T_1	Lock(C,X)
t_5	T_2	Lock(D,X)
t_6	T_0	Lock(D,S)
t_7	T_1	Lock(C,S)
t_8	T_2	Lock(B,S)

Construct a wait for graph according to above request. Is there deadlock at any instance? Justify.

e) Following are the log entries at the time of system crash?

[start-transaction, T_1]

[write-item, T_1, B, 20,40]

[commit, T_1]

[checkpoint]

[start-transaction, T_3]

[write-item, T_3, A, 15,20]

[start-transaction, T_2]

[write-item, T_2, D, 20,30]

[commit, T_3]

[write-item, T_2, C, 25,20] ← system crash.

If immediate update with checkpoint is used, what will be the recovery procedure?

✿   ✿   ✿

[4768] - 4001
S.Y.B.C.A. (Semester - IV)
OBJECT ORIENTED PROGRAMMING USING C ++
(2013 Pattern)

Time : 3 Hours]   *[Maximum Marks : 80*

Instructions to the candidates:

   1)   All questions are compulsory.

   2)   All questions carry equal marks.

   3)   Assume suitable data, if necessary.

   4)   Figures to the right indicate full marks.

Q1) Attempt any eight of the following :   [8 × 2 = 16]

   a)   List any four features of OOP's.

   b)   What is function over loading?

   c)   What is the difference between constructor and destructor.

   d)   Define pure virtual function?

   e)   What is cascading of I/O operator?

   f)   Write the syntax to define a derived class from Base class?

   g)   What is function template?

   h)   What task is performed by self ( ) and precision ( )?

   i)   List the ways to define a constant?

   j)   Write what action is carried by following function call -

       i)   fin. seekg (0, ios : : beg)

       ii)   fin. seekg (– m, ios : : end)

P.T.O.

Q2) Attempt any four of the following :   **[4 × 4 = 16]**

   a)   What is friend function? Write characteristics of friend function.

   b)   When do we make a class virtual base class? Explain it with suitable example.

   c)   What is exception? Explain, how exception is handled in C++?

   d)   Write a C++ program to create a class product which contains data members as P - Name, P - Price, quantity. Write member functions to accept quantity for each product and accordingly generate & display bill.

   e)   Write a C++ program to read contents of a text file and count number of characters, words and lines in a file.

Q3) Attempt any four of the following :   **[4 × 4 = 16]**

   a)   Describe various uses of scope resolution operator.

   b)   Explain various stream classes used to perform console input/output (I/O) operations

   c)   When do we need to use default arguments in a function? Explain with example.

   d)   Write a C ++ program to calculate square and cube of a integer number by using inline function.

   e)   Write a C++ program to calculate sum of Integer & float array elements of size five (5) by using function template.

Q4) Attempt any four of the following :   **[4 × 4 = 16]**

   a)   Explain various error handling functions used during file operations.

   b)   Define polymorphism? Explain its types.

   c)   Write a C++ program to create a class 'space' that contains *x, y, z,* as integer data members. Write necessary definition to use copy constructor to copy one object to another (Use Default and parameterised constructor to initialize the appropriate objects).

   d)   Design two base classes personnel (Name, Address, Email - id, Birthdate) and Academic (Marks - in - tenth, marks - in - Twelth, class - obtained) Derive a class Biodata from both these classes write a C++ program to prepare a biodata of a student having personnel and Academic information.

e) Trace output of following program and explain it. Assume there is no syntax error.

```
# include <iostream.h>
class number
{
public :
        int a, b;
        static int cnt;
        number (int x, int y)
        {
                cout << "\n constructor called";
                a = x;
                b = y;
                cnt ++;
        }
        void display ( )
        {
                cout << "\n a = " <<a << " \n b = " <<b;
        }
};
int number : : cnt;
int main ( )
{
    Number N₁ (4, 6), N₂(2, 8);
    Cout < < "\n total objects created : "<< Number : : cnt;
    return 0;
}
```

Q5) Attempt any four of the following :   [4 × 4 = 16]

a) Explain parameterised and Dynamic constructor with suitable example.

b) Create a class time which contains data members as Hours, minutes, seconds. write a C++ program using operator overloading for the following :

   i)   == to check whether two times same or not

   ii)   >> to accept time.

   iii) << To display time.

c) What is operator overloading? List the operators that cannot be overloaded in C++? Why is it necessary to overload an operator?

d) Create a C++ class Maximum to perform following functions as :-
    i)   int max (int, int) ⇒ Returns maximum of two integer numbers.
    ii) int max (int [], int) ⇒ Returns largest number from an integer array
         of size *n*.
e) Trace output of following program & explain it. Assume there is no
    syntax error.

```cpp
# include <iostream. h>
class base
{
    public :
    void display ( )
    {
        cout <<" \n display base";
    }
        virtual void print ( )
    {
        cout <<" \n print base";
    }
};
class derived : public base
{
    public :
        void display ( )
        {
        cout << "\n display derived";
        }
        void print ( )
        {
        cout <<" \n print derived";
        }
};
int main ( )
{
    Base * Bptr;
    Base B;
    Derived D;
    Bptr = & D;
    Bptr → display ( );
    Bptr → print ( );
    return   0;
}
```

♦♦♦♦

[4768] - 4002

S.Y.B.C.A.

PROGRAMMING IN VISUAL BASIC

(2013 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

1)   *All questions are compulsory.*

2)   *Figures to the right indicate full marks.*

3)   *Give illustrate wherever necessary.*

Q1) Explain the following property setting (Any 8)   **[16]**

   a)   Property used to hide a control at runtime.

   b)   Property used to create a vertical scroll bar.

   c)   Property used to set special Password character.

   d)   Property used to count number of items selected from the list box control.

   e)   Property used to move the text in the control towards left.

   f)   Property used to sort items in combo box.

   g)   Property used to resize the picture to fit in the image control.

   h)   Property used to change the name of the form.

   i)   Property used to set current path of folder of director list box.

   j)   Property used to specify text when the mouse is paused over the control.

Q2) Answer the following (Any 4):   **[16]**

   a)   Explain briefly MDI Form. How it differs from Simple Form.

   b)   Explain any two built in date function with Syntax and examples.

c) What do you mean by Variable? Explain Scope of Variables.

d) Differentiate between MSGBOX and InputBox.

e) Explain If-then-else statement with syntax and example.

Q3) Attempt the following (Any 4): **[16]**

a) Write a VB program for subtraction of two matrices.

b) Write a VB program to display string in reverse order using built in function.

c) Write a VB program to calculate $x \wedge y$ without using built-in function.

d) Write a VB program to check whether a year is leap year or not.

e) Write a VB program to find even and odd numbers from given array.

Q4) Attempt the following (Any 2) **[16]**

a) What is Menu Editor? Explain Steps to Create Menu Editor.

b) Explain procedures and functions in Visual Basic with syntax and suitable example.

c) Write a program to accept the details of Student from user and store that details into the database (Don't use standard control). Student having fields RollNo, name, Class , Percentage.

Q5) Short notes (Any 4) **[16]**

a) Progress Bar.

b) Common Dialog Box.

c) Events Driven Programming.

d) Data Types.

e) Control array.

✧ ✧ ✧

[4768] - 4003

S.Y.B.C.A.

403: COMPUTER NETWORKING

(2013 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

　1)　*All questions are compulsory.*

　2)　*Neat diagrams must be drawn wherever necessary.*

Q1) Attempt any three of the following: **[3×5 = 15]**

　a)　Define Network Topology list Different types of Topologies. Explain any one in detail.

　b)　What is co - axial cable? Explain its physical structure with its applications.

　c)　Define the Bridge? Explain types of Bridges.

　d)　What is NIC? List types of NIC and explain any one in detail.

Q2) Attempt any three of the following: **[3×5 =15]**

　a)　Describe the IEEE 802.11 architecture.

　b)　Explain fire wall and its security features.

　c)　Compare connection oriented and connectionless Network Models.

　d)　Different types of address.

Q3) Attempt any three of the following :   **[3×5 = 15]**

　a)　Describe the frame format and physical layer of Ethernet.

　b)　Explain Server based and peer to peer LAN'S.

　c)　Compare ISO/OSI reference model and TCP/IP.

　d)　What are repeaters? Define different types of repeaters.

Q4) Attempt any three of the following: [3×5 = 15]

a) Explain WWW Architecture.

b) Explain in detail 'Line - of Sight'.

c) Explain Asynchronous communication in detail.

d) Write note on protocols and standards.

Q5) Write notes (Any 4) [4×5 = 20]

a) Unguided media.

b) Bluetooth.

c) Modes of communication.

d) Search Engines.

e) Hub.

✧   ✧   ✧

[4768] - 4004

S.Y.B.C.A.

404: ENTERPRISE RESOURCE PLANNING AND MANAGEMENT

(2013 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Neat diagrams must be drawn wherever necessary.*

Q1) Answer in short.   **[8×2 = 16]**

     a)   Define IDOC Application.

     b)   Define ALE Integration.

     c)   Define OCR Integration.

     d)   What is a Data Warehouse?

     e)   Define Data mining.

     f)   List the types of Business Models.

     g)   What is E-commerce?

     h)   List the role of Enterprise.

Q2) Answer the following: (Any four)   **[4×4 =16]**

     a)   What is ERP? Explain problem areas in ERP implementation.

     b)   Explain CRM (Customer Relationship Management) in detail.

     c)   Explain in brief ERP implementation Life Cycle.

     d)   Explain the components of EDI.

     e)   Discuss the SAP Architecture with its layers.

Q3) Answer the following: (Any four). [4×4 = 16]

   a)   Explain Data Warehousing & structure of Data ware house.

   b)   Explain the working of EIA.

   c)   Explain Business Modeling & Integrated data model.

   d)   Explain any one Implementation Methodology.

   e)   Explain EDI Administration in brief.

Q4) Answer the following: (Any four) [4×4 = 16]

   a)   What is the relation between ERP & Internet?

   b)   Explain Stevan's Model in detail.

   c)   Explain Generic Model of ERP system.

   d)   Differentiate between performance & scalability.

   e)   What is IDOC? Explain its benefits.

Q5) Write short notes on (Any four) [4×4 = 16]

   a)   Evaluation of ERP.

   b)   OCR Integration.

   c)   Oracle ERP.

   d)   Scope of Enterprise system.

   e)   Limitations of ERP.

✧   ✧   ✧

[4768] - 4005
B.C.A.
HUMAN RESOURCE MANAGEMENT
(New 2013 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

   1)   Question No. 6 is compulsory.

   2)   Answer any four from the remaining.

   3)   Figures to the right indicate full marks.

   4)   Draw figures wherever necessary.

Q1) Define the term 'Human Resource Management (HRM). Explain in detail the Activities and functions of HRM.   **[15]**

Q2) What is 'Selection'? Explain in detail the selection procedure of candidates.
                                                                              [15]

Q3) What is 'performance Appraisal'? Explain in detail the various methods of 'performance Appraisal'.   **[15]**

Q4) Give the meaning of Employee Remuneration. State the factors determining the level of Remuneration.   **[15]**

Q5) Define the term 'Discipline'. Explain the objectives & principles of Discipline.
                                                                              [15]

Q6) Write Short notes (Any four)   [20]

      a)   Need & Requisites for E-Learning.

      b)   Nature and Merits, Demerits of E-HRM.

      c)   Methods of Training.

      d)   Wage and salary Administration.

      e)   Nature & Procedure of Grievance.

      f)   Challenges before Human Resource Development (HRD).

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[4768] - 401

S.Y.B.C.A

NETWORKING

(2008 Pattern) (Semester - IV)

Time : 3 Hours]   [*Max. Marks : 80*

Instructions to the candidates:

    1)   *All questions are compulsory.*

    2)   *Draw neat diagram whenever necessary.*

Q1) Solve any 3 of the following: **[3×5 = 15]**

    a)   Explain synchronous communication with diagram.

    b)   What is Bridges? Explain its working.

    c)   Explain OSI reference model with diagram.

    d)   Define protocol. Explain its standards.

Q2) Solve any 3 of the following: **[3×5 = 15]**

    a)   Explain sky-wave propagation.

    b)   What is Web-Server? Explain it.

    c)   Define Ethernet. Explain its types.

    d)   Explain working of co-axial cable.

Q3) Solve any 3 of the following: **[3×5 = 15]**

    a)   Explain types of Networks in detail.

b) Describe Benefits of Intranet.

c) What are the functions of Network Interface Card (NIC)? Explain it?

d) Explain connectionless services.

Q4) Solve any 3 of the following: [3×5 = 15]

a) Explain proxy server with its types.

b) What is wireless fidelity. Explain it.

c) Describe star & mesh topology in detail.

d) Explain modes of communication.

Q5) Write short note on the following (any 4).   [4×5 = 20]

a) Internet Information Server (IIS).

b) Peer-to-peer network.

c) Token Bus (IEEE 802.4).

d) Applications of Network.

e) Infrared waves.

✧ ✧ ✧

[4768] - 402

S.Y.B.C.A.

VISUAL BASIC

(2008 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

    1)   *All questions are compulsory.*

    2)   *Figures to the right indicate full marks.*

    3)   *Give illustration wherever necessary.*

    4)   *Design proper GUI.*

Q1) Explain the following property settings: (Any Eight).   **[8×2 = 16]**

    a)   Property used to set background image to form.

    b)   Property used to set length of text box.

    c)   Property used to set timer control.

    d)   Property used to disable text box.

    e)   Property used to add items in list box.

    f)   Property used to set value of check box.

    g)   Property used to set current path of folder of directory list box.

    h)   Property used to draw rectangle from shape control.

    i)   Property used to change size of image at run time.

    j)   Property used to disable radio button.

Q2) Answer the following: (Any four). **[4×4 = 16]**

a) Explain MDI and SDI briefly.

b) Differentiate between combo box and list box.

c) Explain integrated development environment (IDE).

d) What are prefixes. Explain any 3 with example.

e) What is implicit and explicit declaration. Explain with example.

Q3) Answer the following:(Any four) **[4×4 = 16]**

a) Write a program to check that given number is Armstrong number or not.

b) Find even and odd numbers from given array.

c) Write a program for substration of 2 matrices.

d) Write a VB program to display string operation like concatenation, upper case, lower case, trim.

e) Write a menu driven program:

   i) To display Area of Triangle

   ii) To display Area of Square.

Q4) Answer in brief. (Any Two) **[2×8 = 16]**

a) Explain do-untill and untill-do looping structures used in VB with syntax and example.

b) Write a VB program to accept the details of universities, like name, city, no_of_colleges, year_of_establishment and store that details into database. (Don't use standard control).

c)   What is event driven programming in VB. Explain one event of each from the following with example:

   i)   Form

   ii) Mouse

   iii) Keyboard

   iv) Button

Q5) Write short notes : (Any four).   **[4×4 = 16]**

   a)   Data Report.

   b)   Features of VB 6.0.

   c)   Radio button.

   d)   Drivelist Box.

   e)   Explain steps to create msgbox with it's parameters.

✿ ✿ ✿

Total No. of Questions : 5]

P962

SEAT No. :

[Total No. of Pages : 2

[4768] - 403

S.Y.B.C.A.

INVENTORY MANAGEMENT (SAD)

(2008 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

    1)   *All questions are compulsory.*

    2)   *Figures to the right indicate full marks.*

Q1) Attempt any eight of the following: **[8×2 = 16]**

    a)   What is an ordering cost?

    b)   Define types of inventory.

    c)   State various types of Incited emergencies.

    d)   What is collusion theft?

    e)   What is flow chart?

    f)   Define reengineering.

    g)   What is Business process?

    h)   What is minimum level of stock?

    i)   Define SKU.

    j)   What is bar code symbologies?

Q2) Attempt any four of the following:　　　　　　　　　　　　　**[4×4 = 16]**

 a) With suitable diagram explain business continuity plan.

 b) Explain taxonomy of CASE tools.

 c) Explain reverse engineering to understand processing.

 d) Discuss objectives of inventory management system.

 e) Explain elements of bar code.

Q3) Attempt any two of the following.　　　　　　　　　　　　　**[2×8 = 16]**

 a) Explain software reengineering process model with suitable diagram.

 b) Why inventory system fail? How to fix them.

 c) What is software maintenance? Explain it's types.

Q4) Attempt any four of the following.　　　　　　　　　　　　　**[4×4 = 16]**

 a) A company uses annually 12,000 units of raw material costing Rs. 1.25 per unit. Placing each order cost Rs. 15 & the carrying cost 15% per year unit of the average inventory.

  Find out

  i) EOQ

  ii) No. of orders

 b) Explain Last In First Out method for pricing raw material with advantages & disadvantages.

 c) Explain BPR model with suitable diagram.

 d) How to monitor & control inventories?

 e) State drawback of CASE Tool.

Q5) Write short notes : (Any four)　　　　　　　　　　　　　**[4×4 = 16]**

 a) Theft.

 b) Assessment.

 c) Legal duties & responsibility of store keeper.

 d) Selective Inventory control.

 e) JIT.

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B.C.A.

HUMAN RESOURCE MANAGEMENT

(2008 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

    1)   *Question No. 6 is compulsory.*

    2)   *Answer any four from the remaining.*

    3)   *Figures to the right indicate full marks.*

    4)   *Draw figures wherever necessary.*

Q1) What is HRM & Personnel Management? Differentiate between HRM & PM.

                                                                            [15]

Q2) What is 'Recruitment'? Explain in detail the sources of Recruitment.   **[15]**

Q3) Define the term 'Performance Appraisal'. Explain the objectives & methods of 'Performance Appraisal'.   **[15]**

Q4) Write note on following.   **[15]**

    a)   Employee Training.

    b)   Management Development Programme.

Q5) What is 'Organisational Behaviour'? Explain the Approaches & Models of Organisational Behaviour.   **[15]**

Q6) Write short notes (Any Four).   **[20]**

    a)   Challenges before HRM.

    b)   Objectives of Human Resource Planning.

    c)   Limitations of Performance Appraisal.

    d)   Wage and Salary Administration.

    e)   Profit sharing.

    f)   Piece Rate system of wage payment.

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S.Y.B.C.A.

OBJECT ORIENTED PROGRAMMING USING C++

(Semester-IV) (2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:
  1) *All questions are compulsory.*
  2) *Figures to the right indicate full marks.*
  3) *All questions carry equal marks.*
  4) *Assume suitable data, if necessary.*

Q1) Attempt any eight of the following: **[8×2=16]**

  a) Define: i) Data abstraction

             ii) Data encapsulation.

  b) List any four new keywords added by 'C++' over 'C' language.

  c) What does this pointer point to?

  d) What are the applications of object oriented programming?

  e) What is virtual base class?

  f) What is difference between cin and getline?

  g) What is default constructor?

  h) What is difference between ios:: ate and ios:: app file mode parameters?

  i) What is friend function?

  j) List the visibility modifiers provided by C++.

Q2) Attempt any four of the following: [4×4=16]

a) Explain function overloading with the help of suitable example.

b) Explain memory allocation for objects in C++ with the help of suitable example.

c) Explain rules of overloading operators in C++.

d) Consider the following C++ class.
   Class Employee
   {   int Empid;
          char name [20];
          float salary;
          float bonus;
          public://member function
   };
   Calculate bonus by checking salary of employee
    if salary >= 10000 bonus=20% of salary
    if salary < 10000 bonus =10% of salary

e) Write a C++ program to calculate area of rectangle. Use parameterized constructor to initialize values. Include necessary member functions.

Q3) Attempt any four of the following: [4×4=16]

a) Write a C++ class Department (dept_no, dept_name, dept_location, dept_ city). Write member function to accept and display details of departments. (Use array of object).

b) Write a C++ program to create base class student (roll_no, stud_name, class). Derive a class exam from student which includes marks of three subjects and then derive a class result from exam to calculate percentage. Write appropriate function for each class to generate result of student.

c) Explain how exceptions are handled in C++.

d) Explain different errors encountered during file handling in C++. Explain four functions used to handle errors, during file handling.

e) Trace the output of the following program and explain it. Assume there is no syntax error.

```cpp
# include <iostream.h>
int main( )
{    int x=100;
     int & y=x;
     x=200;
     y=500;
     x=300;
     Cout <<x<<"  " <<y--;
     return 0;
}
```

Q4) Attempt any four of the following: **[4×4=16]**

a) Write a C++ program to calculate square and cube of a given number using inline function.

b) What is destructor? Explain destructor with the help of suitable example.

c) Define a C++ class string.overload '==' operator to compare two string objects.

d) Explain multiple inheritance with the help of suitable example.

e) Explain pure virtual function with the help of suitable example.

Q5) Attempt any four of the following: **[4×4=16]**

a) Write a C++ program using class with two data members x&y. Write member functions to accept and display these two integers. Write a function to calculate who is largest integer from both.(Use nesting of member functions).

b) Explain use of user defined manipulators with the help of suitable example.

c) Write a note on function template.

d) Write a C++ program which will accept n integers from user. Create two files called Positive. dat and Negative. dat, Program should store positive and negative integers in respective files.

e) Trace the output of the following program and explain it. Assume there is no syntax error.

```
# include < iostream.h>
class base
{    public:
     virtual void basefun ( )
     {
          Cout <<"from base";
     }
};
class deri: public base
{    public:
     void basefun( )
     {
          Cout<<" from derived";
     }
};
void somefun (base * obj)
{         obj → basefun ( );
}
int main( )
{    base  baseobject;
     somefun (& baseobject);
     deri deriobjcet;
     somefun (& deriobject);
     return(0);
}
```