MCA / Sem-I (CBSGS) / Object Oriented Programming / Nov-16

QP CODE : 513801

Max Time: 3 hours **Max Marks: 80**

N.B.: (1) Question No 1 is compulsory

(2) Answer any four questions from Q.2 to 7

(3) All questions carry equal marks

Q1 a)	Explain Object Oriented Programming principles.	10
b)	Write a program to demonstrate use of constructor and destructor function for Employee class assume appropriate member variables and other member functions.	10
Q2 a)	Explain the difference between 1) new and delete 2) Runtime and Compile time polymorphism	8
Q2 b)	Create a class Vehicle with v_id and name as mamber variables. Create an array of vehicle objects.	7
Q3 a)	Write a program to convert liter to kilogram and kilogram to liter using object to object conversion overloading	8
Q3 b)	What is parameterized constructor? Write a program to demonstrate it.	7
Q4 a)	What is STL? Explain different components of STL in detail	8
Q4 b)	Explain use of Virtual Functions with a suitable example	7
Q5 a)	Explain stream classes in C++ for file handling.	8
Q5 b)	Explain use of try, catch and throw keyword with a suitable example.	7
Q6	Write Notes on a) Constant functions b) manipulators c) Function templates	15
Q7 a)	Create a function called swap_values() that interchanges the values of the two arguments sent to it. (pass these arguments by reference.)	8
Q7 b)	Explain the concept of protected inheritance with suitable example.	7

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MCA | Sem - I (IBSGS) / Computer Organisation & Architecture /

QP CODE : 514000 Nov-16

[Total Marks : 80

(3 Hours)

N.B. :
1) Question No.1 is **compulsory.**
2) Attempt any **four** from the remaining **six** questions.
3) Answer to sub-questions should be grouped together.

Q1. (a) Explain the construction and working of a DRAM with its circuit diagram. (07)

(b) Simplify the circuit represented by the given expression using a Karnaugh Map. Draw the original and the simplified circuit (07)

$$F(W,X,Y,Z)= \sum(0,1,2,4,5,6,8, 13) + d(12,13,15)$$

(c) Differentiate between RISC and CISC Processors. (06)

Q2. (a) What are Buses? Explain various methods for bus arbitration. (07)

(b) What is a De-Multiplexer? Construct a 1:8 De-Multiplexer using Logic Gates along with its truth table. Explain its working (08)

Q3. (a) Discuss various RAID levels in detail with suitable diagrams. (07)

(b) What is Cache memory? Explain various Cache mapping mechanisms. (08)

Q4. (a) Explain the concept of Six stage instruction pipelining? State its effect on conditional branching. (07)

(b) What are addressing modes? Explain different addressing modes with examples of each. (08)

Q5. (a) Explain the role of various General purpose registers and Control & Status registers in the CPU. (07)

(b) Discuss the functions of an I/O module. Explain Programmed I/O and Interrupt Driven I/O techniques. (08)

Q6. (a) Explain the construction and working of a Half adder with its truth table using logic gates. (07)

(b) Discuss various Instruction issue policies in Superscalar computers. (08)

Q7. Write Short Notes on **any three** :- (15)

a) NUMA
b) Instruction Cycle
c) DMA
d) D-Flip Flop
e) Interleaved Memory.

M.C.A. / SEM I (CBSGS) NOV '16

SOFTWARE ENGG

Q.P. Code : 513900

(3 Hours) **Total Marks : 80**

Note :(1) Question No. 1 is Compulsory.
(2) Attempt any **FOUR** question from 2 to 7

1.	(A)	Explain any five fact finding techniques in detail?	**10**
	(B)	Explain RAD model and its advantages	**10**
2.	(A)	Explain Formal Technical Review in detail.	**8**
	(B)	Explain Mc Call's software quality model in detail.	**7**
3.	(A)	Explain SDLC model in detail.	**8**
	(B)	Explain various team structures in software engineering.	**7**
4.	(A)	Discuss Software Requirement Specification (SRS).	**8**
	(B)	Explain different types of Software Maintenance in detail.	**7**
5.	(A)	An application has the following: 10 low external inputs, 12 high external outputs 20 low internal logical files, 15 high external interface files, 12 average external inquiries. And a value of complexity adjustment factor of 1.10 What are the unadjusted and adjusted function point counts?	**8**
	B)	Explain in detail Structured walkthroughs.	**7**
6.	(A)	A project is estimated to be 400 KLOC. Calculate the effort and development time for each of the three modes. Given: organic (a1=2.4,a2=1.05,b1=2.5,b2=0.38), semidetached (a1=3.0,a2=1.12,b1=2.5 ,b2=0 .35), Embedded{a 1=3 .6,a2=1.20 ,b 1=2.5, b2=0.32)	**8**
	(B)	Explain Software Reliability metrics in detail	**7**

7. Write short notes on : (**any three**, 5 marks each) **15**
   a. Waterfall model
   b. HIPO chart
   c. Data Flow Diagram
   d. CASE tools

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CA / Sem- I (CBSGS) / Discrete Mathematics / Nov-16

QP CODE : 514103

(3 Hours) [Total marks: 80]

Note (1) Q1. is compulsory, attempt any four questions out of remaining six questions.
(2) Assume any necessary data but justify the same.
(3) Figures to the right indicate full marks.
(4) Answer to sub-questions should be grouped together.

Q1. (a) Determine whether the relation R on set A is reflective, irreflective, symmetric, asymmetric, antisymmetric or transitive. 10
A= set of all positive integers, aRb iff GCD(a, b)=1

(b) State the "Tower of Hanoi" problem and obtain the corresponding recurrence relation indicating the suitable initial conditions(s). Solve the recurrence relation obtained. 10

Q2. (a) Determine whether the following set together with the binary operation is a semigroup, a monoid or neither. If it is a monoid, specify the identity. If it is a semigroup of a monoid determine whether it is commutative. 8
Set S = {1,2,3,6,9,18} where a*b=LCM. (a,b).

(b) Use generating function method to solve recurrence relation 7
$a_n = 3a_{n-1} + 2$, $a_0 = 2$

Q3. (a) Obtain the PDNF and PCNF of the following: 8
$(P \wedge Q) \vee (\sim P \wedge Q \wedge R)$

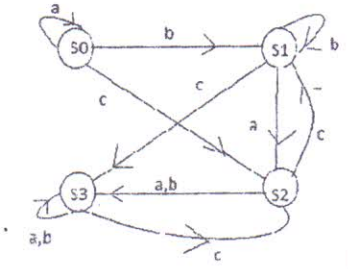
(b) Determine the validity of the following argument:- 7
If I go to my class tomorrow then I must get up early, and if I go to dance tonight I will stay up late. If I stay up late and get up early, then I will be forced to exist on only five hours of sleep. I simply cannot exist on only five hours of sleep. So I must either miss my class tomorrow or not go to the dance.

Q4. (a) Let A= {1,2,3,4,12} Consider the partial order relation R of divisibility on A. i.e. if a, b $\in$ A , aRb if and only if a|b. Draw the hasse diagram 8

(b) Show that a group G is abelian if and only if $(a\,b)^2=a^2\,b^2$ the elements a & b are in G 7

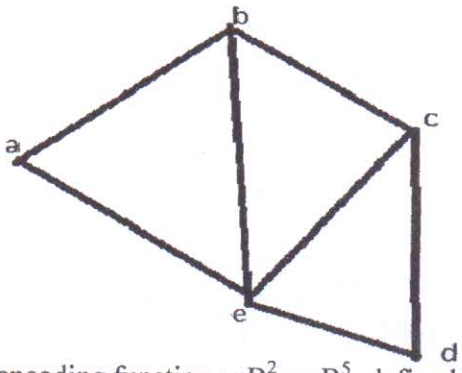
Q5. (a) Find particular solution of the recurrence relation $a_n = 7a_{n-1} - 10a_{n-2}$, with initial condition $a_0=1$, $a_1=8$ 8

(b) Construct a transition table for a finite state machine whose diagraph is shown below. 7



[TURN OVER]

Q6. (a) Find the adjacency list and adjacency matrix for the following graph 8



(b) Show that the (2,5) encoding function e: $B^2 \rightarrow B^5$ defined by 7

e(00)=00000 e(10)=10101
e(01)=01110 e(11)=11011

is a group code

Q7. (a) Consider the group code defined by e: $B^2 \rightarrow B^5$ such that 8

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Decode the following words relative to maximum likelihood decoding function (i) 11001 (ii) 10001

(b) Let R be an equivalence relation on the set A={1,2,3,4,5} defined by R={(1,1),(2,2),(3,3),(4,4),(5,5),(1,4),(4,1), (2,4),(4,2),(1,2),(2,1)}. Determine its equivalence classes of R & find A/R. 7

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CA / Sem- I (CBSGS) / Discrete Mathematics / Nov-16

QP CODE : 514103

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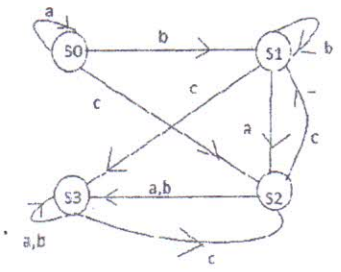

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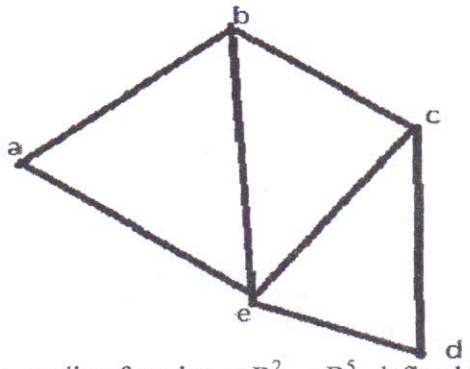

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CA / Sem- I (CBSGS) / Discrete Mathematics / Nov-16

QP CODE : 514103

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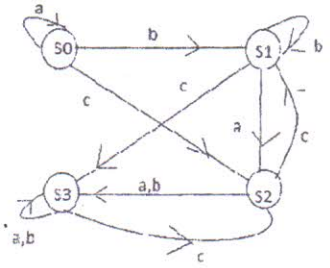

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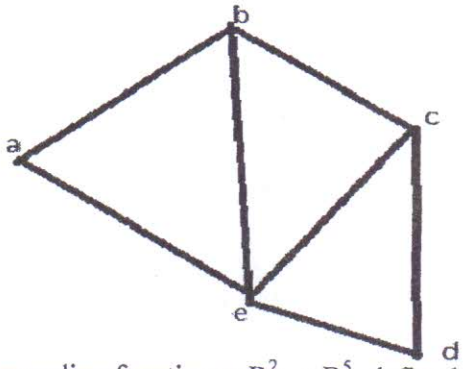

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M-C-A. / SEM I (CBSGS) NOV/DEC '16

PRINCIPLES & PERSPECTIVE OF MGMT.

Q.P. Code : 514201

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question number **1** is **compulsory**
(2) Attempt any **four** from the remaining **six** questions.

1. (a) Explain in detail Herzberg's and McGregor's theory of motivation. **10**
(b) What is management? Explain the importance and functions of management in details. **10**

2. (a) Discuss F W Taylor's scheme of scientific management in details? **8**
(b) Define Planning and what are the types of planning? Explain the steps for making planning more effective **7**

3. (a) Explain Decision making process in detail. **8**
(b) Distinguish between "delegation of authority and decentralization". What should be done to ensure effective delegation of authority in a business enterprise? **7**

4. (a) Explain the following :- **8**
(i) Span of management/Control
(ii) Budgeting and Variance Analysis.
(b) Theory X and Theory Y is concerned with the nature of people." How does the job situation effect the application of this theory? **7**

5. (a) How will you define leadership as a process of influence? What are its features? **8**
(b) What is staffing? Explain the scope of staffing function. **7**

6. (a) Define and explain the terms: **8**
(i) Marketing mix
(ii) Product Life Cycle
(b) Define the term Training and development. Explain the various methods of training and development. **7**

7. Write short notes on: (any **three**) **15**
(a) Marketing research
(b) Performance Appraisal
(c) Controlling
(d) Budgeting
(e) Channels of distribution
