



M 23311

Reg. No. :

Name :

**VI Semester B.Tech. Degree (Reg./Sup./Imp. – Including Part Time)
Examination, May 2013
(2007 Admn. Onwards)
PT 2K6/2K6 EC/CS/IT/AEI 601 : ENVIRONMENTAL ENGINEERING AND
DISASTER MANAGEMENT**

Time: 3 Hours

Max. Marks : 100

Instruction : Answer all questions.

- I. a) Explain the multidisciplinary nature of environmental studies.
b) What is the role of an engineer in the conservation of natural resources.
c) Describe the role of fertilizer and pesticide in food chain.
d) Mention the hot spots of biodiversity in India.
e) What are the sources of noise pollution ?
f) Explain the role of voluntary agencies and community participation at disaster management.
g) Briefly describe the role of information technology in human health.
h) Write a short note on global warming. (8×5=40)

- II. a) Explain the environmental effects of deforestation.

OR

- b) List the mineral resources in India. Discuss about the social damages of mining. 15

- III. a) Explain the types and structure of aquatic ecosystems. What are the environmental factors affecting the aquatic ecosystem performance ?

OR

- b) Explain the social aesthetic and option value of biodiversity. 15

P.T.O.



IV. a) Explain the cause, effects and control measures of Air pollution.

OR

b) What is the role of public awareness in the conservation of nature ? What are the issues involved in the enforcement of environmental legislation ? **15**

V. a) Explain the role of rain water harvesting and watershed management in the conservation of water.

OR

b) Explain the role of value education. What is the social concern about HIV/AIDS ? **15**

GEC WAYANAD



M 23319

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**VI Semester B.Tech. Degree (Reg./Sup./Imp. – Including Part Time)
Examination, May 2013
(2007 Admn. Onwards)**

2K6 CS/IT 602 : GRAPH THEORY AND COMBINATORICS

Time: 3 Hours

Max. Marks : 100

- I. a) Write short notes on multi graph, closed graph and loop free graph.
b) Prove that, for any undirected graph or multi graph G , the number of vertices of odd degree must be even.
c) Prove that if $G = (V, E)$ is an undirected graph, then G is connected if and only if G has a spanning tree.
d) Write short notes on prefix code, full binary tree and complete binary tree. Give suitable examples for each.
e) Write notes on the rules of sum and product. Give examples for the same.
f) Define Binomial theorem.
g) Define generating functions. Give suitable examples.
h) Write short notes on non-homogeneous recurrence relations. **(8×5=40)**
- II. a) Explain in detail with suitable examples, isomorphic graphs and complete graphs. **10**
b) Write notes on sub graph, spanning sub graph and induced sub graph. **5**
- OR
- c) Define Euler circuit an Euler trail. Prove that for an undirected graph or multi graph $G = (V, E)$ with no isolated vertices, then G has a Euler circuit if and only if G is connected and every vertex of G has even degree. **11**
d) Define Planar Graphs. Give examples. **4**

P.T.O.



III. a) Explain in detail with suitable examples, the Dijkstra's shortest path Algorithm. 15

OR

b) Write short notes on Prim's algorithm. Also prove the following : Let $G = (V, E)$ be a loop-free weighted connected undirected graph. Any spanning tree for G that is obtained by Prim's algorithm is optimal. 15

IV. a) Write short notes on permutations and combinations. Give examples for both. 10

b) Find out the number of possible 15 letter sequence allowed in the word 'ALGORITHM', if the repetitions of letters are allowed. 5

OR

c) Explain in detail the principles of Inclusion and Exclusion. 8

d) In how many ways in which we can arrange 40 boys and 20 girls in 5 groups of 12 members each, so that each group contains at least one girl. 7

V. a) Write short notes on the exponential generating function. 5

b) A ship carries 48 flags, 12 each of colours red, white, blue and black. 12 of these poles are placed on a vertical pole in order to communicate with other ships.

i) How many of these signals use an even number of blue flags and odd number of black flags ?

ii) How many of these signals have at least three white flags or no white flags ? 10

OR

c) Explain in detail with suitable examples the first order linear recurrence relations and the second order linear homogeneous recurrence relations with constant coefficients. 9

d) Explain in detail the method of generating functions with suitable example. 6



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**VI Semester B.Tech. Degree (Reg./Sup./Imp. – Including Part Time)
Examination, May 2013
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2K6 CS 603 : DATABASE MANAGEMENT SYSTEMS**

Time : 3 Hours

Max. Marks : 100

Instruction : Answer *all* questions.

1. a) Briefly explain the role of any five actors on scene. **5 each**
 - b) Explain client server architecture of DBMS.
 - c) What is referential integrity ? How it is implemented using SQL ?
 - d) Explain full functional dependancy and 2nd normal form.
 - e) Write a note on magnetic storage devices.
 - f) Differentiate between fixed length and variable length records. Give illustrations.
 - g) Explain basic time stamp ordering method.
 - h) Explain the procedure of recovery based on immediate update in a single use environment.
2. a) Draw an E-R diagram for a hospital management system. Assume suitable entity and relations. **10**
 - b) Explain recursive relation with an example. **5**

OR

3. a) With example for each, explain
 - 1) entity
 - 2) attribute
 - 3) instance
 - 4) metadata
 - 5) schema**(2×5=10)**
- b) Explain 3-schema architecture of DBMS. **5**

P.T.O.



4. a) State 1NF, 2NF, 3NF. Convert the following table to 1, 2, 3 normal forms. Assume and mention the functional dependency. 10

Student-No	Student-Name	Course-Code	Course-Length(yrs)	Unit-Code	Unit-Name	Lecturer Name
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- b) What is correlated nested query ? Explain with an example. 5

OR

5. a) Consider the following relations. Write relational algebra statements for the following : 10

Student (ssn, name, address, major) Course(code, title) Registered(ssn, code)

- i) List the codes of courses for which no student is registered.
- ii) Names of students and the titles of courses they registered to.
- iii) The titles of courses for which no student is registered.
- iv) SSNs of students who are registered for 'Database Systems' or 'Analysis of Algorithms'.
- v) Number of students registered for a course.

- b) What are views ? Show how views are created and used ? 5

6. a) Explain any five operation on files. 10

- b) Write a note on RAID organization levels. 5

OR

7. a) Write a note on :

- i) Internal hashing
- ii) Collision resolution. 10

- b) Explain the structure of B⁺ trees. 5

8. a) What is the need of concurrency control ? Illustrate the problem with suitable example. 10

- b) Explain 2 phase commit protocol. 5

OR

9. a) Explain deadlock problem. How wait for graph is used in deadlock ? Explain any one solution approach. 10

- b) How do you find whether the given schedule is conflict serializable ? Explain the steps. 5



M 23321

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Examination, May 2013
(2007 Admn. Onwards)
2K6 CS 604 : COMPILER DESIGN

Time : 3 Hours

Max. Marks : 100

Instruction : Answer all questions.

- I. a) What are the different compiler construction tools.
b) What is LEX ? Explain the structure of LEX program with an example.
c) What is the use of handle in bottom up parsing ?
d) Explain the concept of a grammar.
e) Explain the system directed definition.
f) What is heap allocation ?
g) What is a data flow equation ? Explain with examples.
h) Write a note on global optimization. **(5×8=40)**
- II. a) What do you mean by input buffering ? What is the use of sentinels in input buffering ?
- OR
- b) What is an compiler ? Explain the different phases of compiler by considering the following statement as input position = initial + rate × 60.

P.T.O.



III. a) What is the role of syntax analyzer ? Explain the design of syntax analyzer using YACC.

OR

b) Write short notes on :

- 1) Parse tree
- 2) Grammar Symbol.

IV. a) Briefly describe the issues of source languages.

OR

b) Briefly explain different memory allocation strategies.

V. a) Explain machine dependent and machine independent optimizations.

OR

b) What are the different types of errors ? Explain the process of error handling.

(15×4=60)

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**VI Semester B.Tech. Degree (Reg./Sup./Imp. – Including Part Time)
Examination, May 2013
(2007 Admn. Onwards)**

2K6 CS 605 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 Hours

Max. Marks : 100

Instruction : Answer all.

- I. a) Explain the different types of data flow possible between two devices.
b) Define MODEM. List out some of the popular MODEM standards.
c) Write note on Parity checks.
d) Explain the fields of a PPP data frame.
e) With figure differentiate the virtual circuit and data gram service models.
f) Explain JCOMP.
g) What are the approaches adopted to handle error recovery in pipelined data transfer ? Explain.
h) Illustrate the transport layer multiplexing and demultiplexing. **(8×5=40)**
- II. a) Describe the functions of each layer in the OSI model. **15**
OR
b) What are the different types of line coding schemes ? Explain its characteristics. **15**
- III. a) Explain in detail the multiple access protocols. **15**
OR
b) Illustrate the following in detail : **(5×3=15)**
i) IEEE 802.3 **5**
ii) IEEE 802.4 **5**
iii) IEEE 802.5. **5**

P.T.O.



IV. a) With example explain the distance vector algorithm. 15

OR

b) Explain how multicast routing is implemented in a network. 15

V. a) Explain in detail the domain name system. 15

OR

b) Explain the following : (5×3=15)

i) HTTP 5

ii) FTP 5

iii) E-mail. 5

(15×4=60)

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M 23323

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**VI Semester B.Tech. Degree (Reg./Sup./Imp. – Including Part Time)
Examination, May 2013
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2K6 CS 606(A) : DISTRIBUTED COMPUTING**

Time : 3 Hours

Max. Marks : 100

Instruction : Answer all questions.

1. a) Explain token based algorithm for mutual exclusion. **(5×8=40)**
b) What is heterogeneity ? Explain.
c) Explain centralized dead lock detection.
d) What is path pushing algorithm ? Why it is used ?
e) What is lock ? What is the role of lock in nested transactions ?
f) Explain time stamp ordering.
g) What is distributed shared memory ?
h) What is CORBA ? What is the application of CORBA ?
2. A) i) Discuss distributed mutual exclusion. **10**
ii) Write a note on web browser and web server. **5**
OR
B) i) Explain any 5 challenges of distributed system. **10**
ii) Write a note on software and hardware service layers in distributed systems. **5**
3. A) i) What do you mean by distributed deadlock ? How it can be detected ?
Explain pathpushing and edge chasing algorithm. **15**
OR
B) i) Explain deadlock prevention and avoidance with neat block diagram. **10**
ii) Write a note on Phantom deadlock. **5**

P.T.O.



4. A) i) Discuss ACID properties of transactions. **10**
ii) Write a note on Java RMI. **5**

OR

- B) i) What is Remote Procedure Call ? Explain the need of marshalling.
What is stub procedure ? **10**
ii) Write a note on optimistic concurrency control. **5**

5. A) i) Differentiate between flat and nested transactions. Explain with example. **8**
ii) Write a note on CORBA services. **7**

OR

- B) i) Write a note on atomic commit protocols. **7**
ii) What is the need of concurrency control in distributed transactions ?
Explain with example. **8**

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Examination, May 2013
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2K6 CS606 (F) : ADVANCED MATHEMATICS

Time: 3 Hours

Max. Marks : 100

Instruction : Answer all questions.

- I. a) A company sells two different products X and Y. The profit per unit for X and Y are Rs. 40 and Rs. 30 resp. From market survey, it is informed that a max. of 8000 unit of X and 12000 unit of Y can be sold per month. Both products are produced in a common system where 3 hrs. required for X and 1 hr. for Y. A total of 30,000 man has available per month. Formulate L.P.P.
- b) What are the applications of Linear Programming on Financial Management ?
- c) Explain how degeneracy is handled in L.P.P.
- d) Explain how a maximisation problem is solved in Hungarian method.
- e) Explain concave and convex function.
- f) $f(x) = 10 - x^2$; Find whether function is concave or convex.
- g) What do you mean by two person zero sum game ?
- h) State and explain Bellman's principle. **(8×5=40)**

- II. a) Use the two-phase simplex method to maximize $Z = 5x_1 - 4x_2 + 3x_3$ subject to $2x_1 + x_2 - 6x_3 = 20$; $6x_1 + 5x_2 + 10x_3 \leq 76$; $8x_1 - 3x_2 + 6x_3 \leq 50$; $x_1, x_2, x_3 \geq 0$.

OR

- b) Use Charne's m method to solve
- Maximize $Z = 3x_1 - x_2$ Subject to
- $2x_1 + x_2 \leq 2$; $x_1 + 3x_2 \geq 3$; $x_2 \leq 4$
- $x_1, x_2 \geq 0$.

15

P.T.O.



- III. a) A company has factories at four different places, which supply warehouses ABCDE. Monthly factory capacities are 200, 175, 150 and 325 units and monthly warehouse requirements are 110, 90, 120, 230 and 160 units resp. Unit shipping cost in Rs. is given below. Shipment is not possible in blank cells. Solve :

	A	B	C	D	E
1	13	–	31	8	20
2	14	9	17	6	10
3	25	11	12	17	15
4	10	21	13	–	17

OR

- b) Four different jobs can be done on four different machines. Matrix given below gives the cost in rupees of producing job i on machine j. Assign jobs to machines.

	M ₁	M ₂	M ₃	M ₄
J ₁	5	7	11	6
J ₂	8	5	9	6
J ₃	4	7	10	7
J ₄	10	4	8	3

15

- IV. a) Solve the NLPP

$$\text{Max } Z = 4x_1 - x_1^2 + 8x_2 - x_2^2 \text{ Subject to}$$

$$x_1 + x_2 = 2 ; x_1, x_2 \geq 0 .$$

OR

- b) Use Kuhn – Tucker conditions to

$$\text{Maximize } Z = 2x_1^2 - 7x_2^2 + 12x_1x_2 \text{ subject to } 2x_1 + 5x_2 \leq 98 ; x_1, x_2 \geq 0 .$$

15



V. a) Solve the following $2 \times n$ game by the method of subgames :

		Player B		
		B_1	B_2	B_3
Player A	A_1	1	3	11
	A_2	8	5	2
		OR		

b) Solve :

Maximize $Z = u_1^2 + u_2^2 + u_3^2$

Subject to $u_1, u_2, u_3 = 6$

u_1, u_2, u_3 all positive integers.

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