

Sixth Semester B.E. Degree Examination, December 2011
Management and Entrepreneurship

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Explain the management process which stresses on the basic management functions. (08 Marks)
- b. What kinds of skills are required for manager to become successful? How do you associate different levels in an organization? (06 Marks)
- c. Explain the modern management approach briefly. (06 Marks)
- 2 a. Explain the vital reasons, which suggest the importance of planning. (06 Marks)
- b. What is planning? Differentiate between strategic planning and tactical planning. (04 Marks)
- c. Illustrate with example, decision tree technique to analyze a decision. Differentiate between procedure and policy. (10 Marks)
- 3 a. What is appropriate span of control? Brief out factors which affect span of management. (10 Marks)
- b. What is departmentation? Mention types and explain the departmentation, by geographic area giving its advantages. (06 Marks)
- c. Explain the role of staffing in an organization. (04 Marks)
- 4 a. Using Maslow's theory of motivation, explain the hierarchy of needs. (06 Marks)
- b. Explain the important essentials of sound control system. (06 Marks)
- c. Give the importance of communication. Highlight different ways to achieve co-ordination. (08 Marks)

PART – B

- 5 a. What are the measures taken in India to develop entrepreneurship? (06 Marks)
- b. Differentiate between entrepreneur and Intrapreneur. (06 Marks)
- c. What keeps today's youth away from entrepreneurship? (08 Marks)
- 6 a. What are the characteristics of small enterprises? (06 Marks)
- b. Discuss the effect of agreement under W.T.O. What is the impact of liberalization, privatization and globalization on small enterprise? (10 Marks)
- c. What are the objectives of KCTU? What are its major activities? (04 Marks)
- 7 a. Explain the role of TECSOK in promotion of small enterprise in Karnataka. (08 Marks)
- b. Explain the important activities in establishing small enterprise, with the help of KSSIDC. (06 Marks)
- c. Explain the role of KSFC in promotion of small enterprise. (06 Marks)
- 8 a. What is a project? Explain the required criteria in selecting a project. (06 Marks)
- b. Differentiate between PERT and CPM. (06 Marks)
- c. Explain the steps followed in project appraisal. (08 Marks)

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Sixth Semester B.E. Degree Examination, December 2011
UNIX System Programming

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Bringout the major differences between ANSIC and K and R C. Explain each with example. (07 Marks)
- b. Write a C/ C++ program that prints the POSIX defined configuration options supported on any given system using feature test macros. (08 Marks)
- c. Write a C /C++ program to check following limits :
 - i) Clock ticks
 - ii) Maximum number of child process
 - iii) Maximum path length
 - iv) Maximum file name
 - v) Maximum number of files can be opened. (05 Marks)
- 2 a. Explain the different file types available in UNIX or POSIX. Also write the commands to create all the files. (06 Marks)
- b. What are inodes in UNIX system? Differentiate between hard link and symbolic link. (04 Marks)
- c. With a neat diagram, explain the UNIX Kernel support for files. (05 Marks)
- d. Explain the following APIs, with prototype :
 - i) umask
 - ii) stat
 - iii) fstat
 - iv) chown
 - v) link. (05 Marks)
- 3 a. Write a C or C++ program to illustrate the use of fcntl API for file locking. (08 Marks)
- b. Explain the file APIs : READ, WRITE and OPEN, with prototypes and arguments. (06 Marks)
- c. Write a C or C++ program to emulate UNIX `ls -l` command. (06 Marks)
- 4 a. With a neat diagram, explain how a C – program is initiated and various ways it can be terminated. (05 Marks)
- b. Write a C or C++ program to illustrate use of `setjmp` and `longjmp` functions. (05 Marks)
- c. Describe the UNIX Kernel support for a process. Show the related data structure. (05 Marks)
- d. Explain in detail, the memory layout of a C – program. (05 Marks)

PART – B

- 5 a. List and explain the family of `exec` functions with their prototypes. How do they differ from each other? Also give one program example using any one of the `exec` functions. (06 Marks)
- b. What is a race condition? Write the program for generating race condition and to avoid the race condition. (07 Marks)
- c. What is a job control? With a neat diagram, explain the job control features. (07 Marks)

- 6 a. What are signals? Explain the prototype of sigaction function. Also write a C or C++ program to setup signal handler using sigaction function. (06 Marks)
- b. What is a signalmask of a process? Write a program to demonstrate use of sigprocmask function. Also write the prototype of all functions that are used to manipulate the signal sets. (07 Marks)
- c. What are daemons? Explain the coding rules of the daemon process. Write a C or C++ program to initialize the uses defined daemon process. (07 Marks)
- 7 a. What are pipes? Write a C or C++ program to create pipe from the parent to the child and send the data down the pipe. (07 Marks)
- b. What are FIFOs? With a neat diagram, explain the client–server communication using FIFOs. (07 Marks)
- c. What are message queues? Write the structure of the message queue and explain each member, in detail. (06 Marks)
- 8 a. What are sockets? Explain the sequence of calling socket APIs for both server and client process. Briefly explain the prototype of each socket API. (10 Marks)
- b. Write short notes on :
- i) Controlling terminal
 - ii) Sigsetjmp and siglongjmp
 - iii) Interpreter files
 - iv) Out – of – band data. (10 Marks)

c. For the SDD shown below :

Production	Semantic rules
$L \rightarrow E_n$	$L.val = E.val$
$E \rightarrow E_1 + T$	$E.val = E_1.val + T.val$
$E \rightarrow T$	$E.val = T.val$
$T \rightarrow T_1 * F$	$T.val = T_1.val * F.val$
$T \rightarrow F$	$T.val = F.val$
$F \rightarrow (E)$	$F.val = E.val$
$F \rightarrow \text{digit}$	$F.val = \text{digit.lexval}$

construct the annotated parse tree for $3 * 5 + 4n$.

(04 Marks)

6 a. Explain the following, with an example :

- i) Quadraples
- ii) Triples
- iii) Indirect triples.

(09 Marks)

b. Write an algorithm for the unification of a pair of nodes in a type graph.

(06 Marks)

c. Explain syntax directed translation of switch statements.

(05 Marks)

7 a. What is an activation record? Explain its possible structure.

(08 Marks)

b. Explain the design goals for garbage collector.

(06 Marks)

c. Explain the desirable properties of memory manager.

(06 Marks)

8 a. What is next use information? Write an algorithm to determine the liveness and next use info for each statement in a basic block. Apply the same for the following basic block :

3. $T1 = \text{Add}(A) - 4$

4. $T2 = 4 * i$

5. $T3 = T1 [T2]$

6. $\text{Sum} = \text{Sum} + T3$

7. $I = I + 1$

8. If $I \leq 20$ go to 3

(12 Marks)

b. Generate the intermediate code for the statement: $\text{sum} = A [i, j] + B [i, j]$. Construct DAG and simplify the code.

(08 Marks)

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Sixth Semester B.E. Degree Examination, December 2011
Computer Networks – II

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Differentiate between connection oriented and connectionless services. (04 Marks)
b. Compare the datagram packet switching and virtual circuit packet switching. (06 Marks)
c. Define routing algorithm. Explain the Bellman – Ford algorithm, with an example.(10 Marks)
- 2 a. Differentiate between the leaky bucket and token bucket algorithms for congestion control. (08 Marks)
b. What are all the possible subnet masks for the class C address space? List all the subnet masks on dotted – decimal notation, and determine the number of hosts per subnet supported for each subnet mask. (06 Marks)
c. With an example, explain the classless interdomain routing. (06 Marks)
- 3 a. Define tunneling. Briefly explain the changes from IPv4 to IPv6. (08 Marks)
b. Explain the three – way handshake for establishing a TCP connection. (08 Marks)
c. Write a short note on routing information protocol. (04 Marks)
- 4 a. Explain any five QoS parameters of ATM networks. (10 Marks)
b. Briefly explain ATM addressing with ATM formats. (05 Marks)
c. Write a note on classical IP over ATM. (05 Marks)

PART – B

- 5 a. Define the network management. Explain the SNMP with SNMP messages. (08 Marks)
b. Explain the routing table poisoning and denial – of – service attacks. (08 Marks)
c. For an RSA encryption of a 4 – bit message 1001 with $a = 3$ and $b = 11$, find the public and private keys. (04 Marks)
- 6 a. With a neat diagram, explain the differentiated services QoS. (08 Marks)
b. Explain the various types of resource allocation schemes. (06 Marks)
c. Define VPN. Discuss the concept of tunneling and point – to – point protocol in VPN. (06 Marks)
- 7 a. Briefly explain the MPEG standards and frame types for compression. (06 Marks)
b. Explain the Huffman encoding, with an example. (06 Marks)
c. With a neat diagram, explain the H.323 components and list the steps in signaling. (08 Marks)
- 8 a. Explain the wireless routing protocol for AD – Hoc networks. (05 Marks)
b. Briefly explain the direct and multihop routing of intracaluster routing protocol, with the help of relevant diagrams. (06 Marks)
c. Write short notes on :
i) Clustering in sensor networks
ii) Security vulnerabilities of AD – Hoc networks. (09 Marks)

Sixty Semester B.E. Degree Examination, December 2011
Computer Graphics and Visualization

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. With a neat diagram, explain the components of a graphics system. (06 Marks)
b. With a neat diagram, explain the human visual system. (06 Marks)
c. In an API, a block box, explain the major groups of functions. (08 Marks)
- 2 a. With a neat diagram, discuss the color formation. Explain the additive and subtractive colors, indexed color and color solid concept. (12 Marks)
b. What are the control functions? Explain with examples. (08 Marks)
- 3 a. Which are the six classes of logical input devices? Explain. (06 Marks)
b. Discuss the request mode, sample mode and event modes, with the figures wherever required. (08 Marks)
c. Write a program, to draw a rotating square. (06 Marks)
- 4 a. Explain the translation, rotation and scaling with the suitable figures. (10 Marks)
b. Discuss the frames in open GL. (10 Marks)

PART – B

- 5 a. How do you achieve affine transformations by concatenation? Discuss. (10 Marks)
b. What are quaternions? With an example, explain its mathematical representations. (10 Marks)
- 6 a. With suitable sketches, explain the various kinds of views in computer graphics system. (10 Marks)
b. Discuss the polygonal shading and its types. (10 Marks)
- 7 a. Explain the phong lighting model. (10 Marks)
b. How is approximation of a sphere done by recursive subdivision? (10 Marks)
- 8 a. Explain the Cohen – Sutherland clipping. (10 Marks)
b. Explain the Anti – aliasing, with its types. (10 Marks)

Sixth Semester B.E. Degree Examination, December 2011
Operations Research

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. What is operations research? Explain the impact of OR. (06 Marks)
- b. A farmer has 100 acre farm. He can sell all tomatoes, lettuce, or radishes he can raise. The price he can obtain is ₹1.00 per kg for tomatoes, ₹0.75 a head for lettuce and ₹2.00 per kg for radishes. The average yield per acre is 2000kg of tomatoes, 3000 heads of lettuce and 1000kg of radishes. Fertilizer is available at ₹0.50 per kg and the amount required per acre is 100kg each for tomatoes and lettuce and 50kg for radishes. Labour required for sowing, cultivating and harvesting per acre is 5 man-days for tomatoes and radishes and 6 man-days for lettuce. A total of 400 man-days of labour are available at ₹20.0 per man-day. Formulate this problem as a linear programming model to maximize the farmer's total profit. (06 Marks)
- c. Old hens can be bought at ₹2 each and young ones at ₹5 each. The old hens lay 3 eggs per week and the young ones lay 5 eggs per week, each egg being worth 30 paise. A hen (young or old) costs ₹1 per week to feed. You have only ₹80 to spend for buying hens. How many of each kind should you buy to give a profit of more than ₹6 per week assuming that you cannot house more than 20 hens. Formulate the problem as an LPP and solve graphically. (08 Marks)
- 2 a. TOYCO assembles three types of toys – trains, trucks and cars, using three operations. The daily limits on the available times for the three operations are 430, 460 and 420 minutes respectively, and the revenues per unit of toy train, truck and car are \$3, \$2 and \$5 respectively. The assembly times per train at the three operations are 1, 3 and 1 minutes respectively. The corresponding times per truck and per car are (2, 0, 4) and (1, 2, 0) minutes (a zero time indicate that the operation is not used). Formulate the problem as LPP and solve using the simplex method. (10 Marks)
- b. Explain the special cases that arise in the use of simplex method. (10 Marks)
- 3 a. Solve the problem, using the Big-M method.
Maximize $Z = 6x_1 + 4x_2$
Subject to constraints, $2x_1 + 3x_2 \leq 30$; $3x_1 + 2x_2 \leq 24$; $x_1 + x_2 \geq 3$; $x_1 \geq 0$; $x_2 \geq 0$
Find at least two solutions. (10 Marks)
- b. Food X contains 6 units of vitamin A per gram and 7 units of vitamin B per gram and costs 12 paise per gram. Food Y contains 8 units of vitamin A per gram and 12 units of vitamin B per gram and costs 20 paise per gram. The daily minimum requirements of vitamin A and vitamin B are 100 units and 120 units respectively. Find the minimum cost of the product mix. Formulate the problem and solve using the two phase method. (10 Marks)
- 4 a. Use the revised simplex method to solve the following LPP:
Maximize $Z = 6x_1 - 2x_2 - 3x_3$
Subject to constraints, $2x_1 - x_2 + 2x_3 \leq 2$; $x_1 + 4x_3 \leq 4$; $x_1, x_2, x_3 \geq 0$. (10 Marks)
- b. Obtain the dual solution directly, using the inverse from solution of the primal.
Maximize $Z = 5x_1 + 2x_2 + 3x_3$
Subject to constraints, $x_1 + 5x_2 + 2x_3 = 30$; $x_1 - 5x_2 - 6x_3 \leq 40$; $x_1, x_2, x_3 \geq 0$. (10 Marks)

PART – B

- 5 a. Explain the parametric analysis with respect to change in c_j and b_j parameters. (08 Marks)
- b. Obtain the optimal solution, using the dual simplex method for the dual problem of the following:
Maximize $Z = 3x_1 + 5x_2$
Subject to constraints, $x_1 \leq 4$; $2x_2 \leq 12$; $3x_1 + 2x_2 \leq 18$; $x_1 \geq 0, x_2 \geq 0$. (12 Marks)

- 6 a. A department has five employees with five jobs to be performed. The time (in hours) each men will take to perform each job is given in the effectiveness matrix.

		Employees				
		I	II	III	IV	V
Jobs	A	10	5	13	15	16
	B	3	9	18	13	6
	C	10	7	2	2	2
	D	7	11	9	7	12
	E	7	9	10	4	12

How should the jobs be allocated? One per employee, so as to minimize the total man hours. Use the Hungarian method. (10 Marks)

- b. The following table shows all the necessary information on the availability of supply to each warehouse, the requirement of each market and unit transportation cost (in ₹) from each warehouse to each market.

		Market				Supply
		P	Q	R	S	
Warehouse	A	6	3	5	4	22
	B	5	9	2	7	15
	C	5	7	8	6	8
Demand		7	12	17	9	45

The shipping clerk has worked out the following schedule from experience. 12 units from A to Q, 1 unit from A to R, 8 units from A to S, 15 units from B to R, 7 units from C to P and 1 unit from C to R.

- Check and see if the clerk has the optimal schedule.
- Find the optimal schedule and minimum total transport cost. (10 Marks)

- 7 a. Solve the game whose pay-off matrix to the player A is given in the table. (10 Marks)

		B		
		I	II	III
A	I	1	7	2
	II	6	2	7
	III	5	2	6

- b. What is a decision tree? How a decision tree is constructed? Raman Industries Ltd. has a new product which they expect has great potential. At the moment they have two courses of action open to them. $S_1 =$ To test the market and $S_2 =$ To drop the product. If they test it, it will cost ₹50,000 and the response could be positive or negative with probabilities of 0.70 and 0.30 respectively. If it is positive, they could either market it with full scale or drop the product. If they market with full scale, then the result might be low, medium or high demand and the respective net pay-offs would be ₹100000, ₹100000 or ₹500000. These outcomes have probabilities of 0.25, 0.55 and 0.20 respectively. If the result of the test marketing is negative, they have decided to drop the product. If at any point, they drop the product, there is a net gain of ₹25,000 from the sale of scrap. All financial values have been discounted to the present. Draw a decision tree for the problem and indicate the most preferred decision. (10 Marks)

- 8 a. Consider the following Fig.Q8(a), where the dashed lines represent the potential links that could be inserted into the network and the number next to each dashed line represents the cost associated with inserting that particular link.

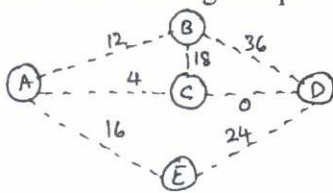


Fig.Q8(a)

Constraint 1 : No more than one of the three links AB, BC and AE can be included

Constraint 2 : Link AB can be included only if link BD also included.

Starting with the initial solution where the inserted links are AB, AC, AE and CD, apply the basic Tabu search algorithm to find the best solution. (10 Marks)

- b. Write short notes on: i) Simulated annealing technique ii) Genetic algorithm. (10 Marks)

- 6 a. Find the frequency response and impulse response of the system described by the differentiate equation. $\frac{d^2y(t)}{dt^2} + 3\frac{dy(t)}{dt} + 2y(t) = 2\frac{dx(t)}{dt} + x(t)$. (08 Marks)
- b. State and explain the Nyquist sampling theorem, with the relevant figures. Give the significance of this theorem. (07 Marks)
- c. Obtain an expression for the Fourier transform in terms of DTFT. (05 Marks)
- 7 a. Define the Z – transform. What is region of convergence (RoC)? Explain the RoC properties of the Z – transform. (04 Marks)
- b. Find the Z – transform of the following and indicate the region of convergence.
 i) $x[n] = a^n \cos \Omega n u[n]$ ii) $x[n] = n(n+1) a^n u[n]$. (08 Marks)
- c. Find the inverse Z transform of the following.
 i) $x(z) = \frac{z^4 + z^2}{z^2 - \frac{3}{4}z + \frac{1}{8}}$; $|z| > \frac{1}{2}$ ii) $x(z) = \frac{1 - az^{-1}}{z^{-1} - a}$; $|z| > \frac{1}{a}$. (08 Marks)
- 8 a. A discrete LTI system is characterized by the difference equation:
 $y[n] = y[n - 1] + y[n - 2] + x[n - 1]$.
 Find the system function $H(z)$. Plot the poles and zeros of $H(z)$ and indicate the RoC if the system is causal. (08 Marks)
- b. Solve the difference equation using the unilateral Z-transform. $x[n-2] - 9x[n-1] + 18x[n] = 0$, with the initial conditions $x[-1] = 1$ and $x[-2] = 9$. (07 Marks)
- c. A system is described by the difference equation:
 $y[n] - y[n-1] + 1/4 y[n-2] = x[n] + \frac{1}{4} x[n-1] - 1/8 x[n-2]$. Find the transfer function of the inverse system. Does a stable and causal inverse system exist? (05 Marks)

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Sixth Semester B.E. Degree Examination, December 2011
Pattern Recognition

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Discuss two approaches to patterns recognition. (06 Marks)
b. Differentiate between linear and non – linear decision boundary. (06 Marks)
c. Explain the components of a typical pattern recognition system. (08 Marks)
- 2 a. Discuss various types of learning. (06 Marks)
b. Define generalized Bayes decision theory. (04 Marks)
c. Stating the initial assumptions, obtain the expressions for MAHALNOBIS distance measure. (10 Marks)
- 3 a. Show that $p(\text{error})$ is least when the decision boundary is taken at a point, where $p(x/w_1) p(w_1) = p(x/w_2) p(w_2)$. (08 Marks)
b. List the assumptions made in maximum likelihood estimation. Explain the concept of maximum likelihood estimation. (08 Marks)
c. Differentiate between parametric and non – parametric techniques. (04 Marks)
- 4 a. Determine maximum likelihood estimation of mean. The Gaussian case: unknown μ . (08 Marks)
b. Discuss Fisher's linear discriminant with an illustration. (08 Marks)
c. Explain hidden markov models. (04 Marks)

PART – B

- 5 a. Discuss the concept density estimation. Explain Parzen window and k_n nearest neighbour method. (08 Marks)
b. Describe k – nearest neighbour rules of classification. (06 Marks)
c. Explain ISODATA procedure. (06 Marks)
- 6 a. Explain Boltzmann learning. (08 Marks)
b. Discuss how CART can be used for classification with an example. (08 Marks)
c. Enumerate the applications of clustering. (04 Marks)
- 7 a. How are similarity and dissimilarity between two samples measured? (08 Marks)
b. Explain with suitable example :
i) Single linkage method.
ii) Complete linkage method.
iii) Average linkage method. (08 Marks)
c. Explain minimum square error criterion method of non – hierarchical clustering. (04 Marks)
- 8 Write short notes on :
a. Ho – Kashyap procedures.
b. Relaxation procedures.
c. Minimum error rate classifier.
d. Recursive Bayes approach. (20 Marks)

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Sixth Semester B.E. Degree Examination, December 2011
File Structures

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. In C++ language, how do you perform the following :
i) Open a file ii) Seek file. (06 Marks)
- b. Briefly explain how the tracks are organized by blocks. What is the non –data overhead involved? (07 Marks)
- c. Estimate how much tape is needed to store a large file with one million, 100 – byte records. The file has to be stored on a 6250 bpi tape that has an inter block gap of 0.3 inches, and blocking factor as i) 1 record per block ii) 50 records per block. (07 Marks)
- 2 a. What are the various ways of organizing records in a file? Explain each with an example. (10 Marks)
- b. When is sequential search good? What are the unix tools used for sequential search? (06 Marks)
- c. Explain the concept of inheritance, using the 10 buffer class hierarchy. (04 Marks)
- 3 a. How is key sort used to sort large files? Explain with C++ code. (08 Marks)
- b. What are inverted lists? How does it improve the secondary index structure? (08 Marks)
- c. What are the possible situations that can occur while updating the primary or secondary keys. (04 Marks)
- 4 a. Explain how heapsort overlaps processing and I/O? Write a C++ pseudocode to build a heap. (10 Marks)
- b. It is required to sort a file of 800 MB, each record being 100 bytes. If the time to access each block takes 11 m sec and the transmission rate approximately. 14500 bytes per msec. calculate the total time required to sort using : i) Merge sort ii) Key sort. (10 Marks)

PART – B

- 5 a. How are the following operations performed in B – tree?
i) Insertion ii) Deletion iii) Merging of construct using – C S D T A M P I B W and elements. Order 4. (09 Marks)
- b. How does paged binary tree overcome excessive disk accesses? Explain. (06 Marks)
- c. Calculate the worst – case search depth on B – trees. (05 Marks)
- 6 a. Discuss the simple prefix B⁺ tree and its maintenance. (12 Marks)
- b. With an example, explain how loading of simple prefix B⁺ tree is done. (08 Marks)
- 7 a. What is hashing? Explain the simple hashing algorithm. (08 Marks)
- b. Explain Collision resolution by progressive overflow. (08 Marks)
- c. How can we delete records from a hashed file? Explain any one method. (04 Marks)
- 8 a. Explain the extendible hashing performance. (10 Marks)
- b. Write short notes on : i) Buffering strategies ii) CLV vs CAV. (10 Marks)

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Sixth Semester B.E. Degree Examination, December 2011
Information Systems

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. What are the fundamental roles of information system is business? Explain briefly. (10 Marks)
- b. Explain the information system activities. (10 Marks)
- 2 a. What are the competitive strategies that can be used to counteract different competitive force using IT? (10 Marks)
- b. How to build knowledge creating company using IT? (10 Marks)
- 3 a. Explain the transaction processing cycles. (10 Marks)
- b. How human resource is support the strategic, tactical and operational use of human resources? (10 Marks)
- 4 a. What is CRM? Explain different phases of CRM. (10 Marks)
- b. What are the benefits and challenges of ERP? Explain briefly. (10 Marks)

PART – B

- 5 a. Explain the different electronic payment processes. (10 Marks)
- b. Explain the B2C and B2B e-commerce. (10 Marks)
- 6 a. Explain briefly the major business application areas of AI. (10 Marks)
- b. What is expert system? What are the components of expert system? Explain briefly. (10 Marks)
- 7 a. What ate basic categories of ethical business issues? Explain briefly. (10 Marks)
- b. Explain the few security defenses used in business applications. (10 Marks)
- 8 a. What are the major components of information technology management? Explain briefly. (10 Marks)
- b. What are the challenges faced by business while managing global information technology? (10 Marks)

Sixth Semester B.E. Degree Examination, December 2011
Computer Graphics and Visualization

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. What is computer graphics? With clear examples, explain the applications of computer graphics. (10 Marks)
- b. Define the terms: i) Pixel ii) Frame buffer iii) Resolution and iv) Aspect ratio. (04 Marks)
- c. What is a graphics system? With a neat block diagram, explain the system. (06 Marks)
- 2 a. Write short notes on: i) RGB color model ii) Indexed color model. (10 Marks)
- b. With an example, give the program structure of OPENGL. (10 Marks)
- 3 a. Define measure and trigger. Describe the different types of modes in an input device. (10 Marks)
- b. Explain how an event driven input can be programmed for the following devices. (10 Marks)
 - i) Pointing device
 - ii) Keyboard device.
- 4 a. Explain the different frames in OpenGL that are embedded in the pipeline. (10 Marks)
- b. What is transformation? Obtain the 2 – D transformation matrix for the following: (10 Marks)
 - i) Translation
 - ii) Scaling
 - iii) Rotation.

PART – B

- 5 a. Show that the following sequences commute. (10 Marks)
 - i) A rotation and a uniform scaling
 - ii) Two rotations about the same axis.
- b. What are quaternions? Find the quaternion for 90 – degree rotations about x and y axis. Determine their product. (10 Marks)
- 6 a. What is projection? Explain with examples, the perspective and parallel projections in Open GL. (10 Marks)
- b. Differentiate object space algorithms with image space algorithms for hidden surface removal. Explain any one of them. (10 Marks)
- 7 a. Derive an illumination model for diffused and specula reflections. (10 Marks)
- b. What are the steps required to shade an object using: (10 Marks)
 - i) Gourad shading algorithm
 - ii) Phong shading algorithm.
- 8 a. Explain the DDA algorithm for calculating pixel positions along a line. Obtain the co-ordinate points for a straight line, whose end points are (1,1) and (10,5). (10 Marks)
- b. With an example, explain the Cohen and Sutherland line chipping algorithm. (10 Marks)