

(DMCA 201)

M.C.A. DEGREE EXAMINATION, DECEMBER 2008.**Second Year****Paper I — SOFTWARE ENGINEERING****Time : Three hours****Maximum : 75 marks****SECTION A — (3 × 15 = 45 marks)****Answer any THREE of the following.**

1. Define CMMI. Discuss the role of it in software engineering.
2. What is software engineering practice? Explain the principles that guide it.
3. Explain how analysis model is created by identifying its elements.
4. What is software testing? Explain various test strategies.
5. Discuss the metrics used for assessing the quality of a software design model.

SECTION B — (5 × 5 = 25 marks)**Answer any FIVE of the following.**

6. Define SE and discuss the myths associated with it.
7. Distinguish between process and product of SW.
8. Write short notes on validation testing.
9. Discuss briefly the steps involved in requirements engineering.
10. Explain business process engineering.
11. Explain in brief the unified process.
12. Enumerate the principles of software engineering.
13. How does white box testing help to derive test cases?

SECTION C — (5 × 1 = 5 marks)**Answer ALL of the following.**

14. What is an agile process?
15. What is debugging?
16. What are swimlane diagrams?
17. Define software testing.
18. What is function-based metrics?

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Paper II — PROGRAMMING WITH JAVA

Time : Three hours

Maximum : 75 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE of the following.

1. What is a data type? List the type used in Java with suitable examples.
2. Define package. Describe various levels of access protocols available for packages and their implications.
3. Describe different forms of inheritance with suitable examples.
4. What is an exception? List some of the common types of exceptions that occur in Java with suitable examples.
5. What is a file? Explain the steps involved in creating a file in Java taking an example of your own.

SECTION B — (5 × 5 = 25 marks)

Answer any FIVE of the following.

6. What is OOP? Explain the basic structure of it.
7. Write a program to calculate and print the first n Fibonacci numbers.
8. Distinguish between objects and classes.
9. What is an array? What are its uses?
10. Compare and contrast overloading and overriding.
11. Distinguish between a class and an interface with an example.
12. What is a stream? What are the different types of streams available in Java?
13. What is an applet?

SECTION C — (5 × 1 = 5 marks)

Answer ALL of the following.

14. What is a string buffer?
15. What is polymorphism?
16. Define recursion.
17. What is an interface?
18. Define clipping.

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Paper III — COMPUTER NETWORKING

Time : Three hours

Maximum : 75 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE of the following.

1. Describe various transmission media to transport data from one computer to the other.
2. Discuss various layers of OSI reference model.
3. Write any three multiple access protocols in detail.
4. Explain various services provided by networks.
5. Discuss the significance of RSA in networks.

SECTION B — (5 × 5 = 25 marks)

Answer any FIVE of the following.

6. Distinguish between connection-oriented and connectionless services.
7. Write short notes on ARPANET.
8. What are end-detection and correction codes? Explain.
9. What is multiplexing? Explain.
10. Explain IEEE 802.4 (token) bus.
11. Explain the congestion control algorithm for multicasting.
12. Explain the contents of TCP/IP model.
13. Write about DSN system.

SECTION C — (5 × 1 = 5 marks)

Answer ALL of the following.

14. What is WAN?
15. Define a satellite.
16. What is FDDI?
17. Define routing.
18. Define ATM.

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Paper IV — COMPUTER ALGORITHMS

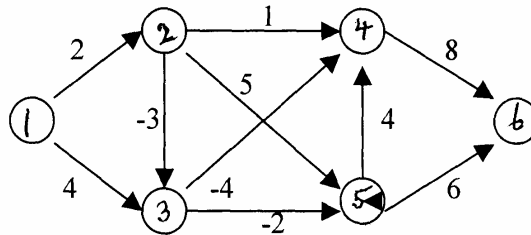
Time : Three hours

Maximum : 75 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE of the following.

1. Define binary search tree and write an algorithm to search for an identifier x in the tree.
2. Explain the quick-sort method using divide-and-conquer strategy.
3. Find the shortest path from node 1 to every other node in the following figure using Bellman and Ford algorithm :



4. Define 8-queens problem. How do you solve this using back-tracking method?
5. Write a procedure to solve salesman problem using branch-and-bound technology.

SECTION B — (5 × 5 = 25 marks)

Answer any FIVE of the following.

6. Write an algorithm to add an element to the queue.
7. Define time complexity and space complexity of an algorithm.
8. Explain Prim's minimum spanning tree with an algorithm.
9. What are Huffman Codes? Explain with an algorithm.
10. Explain 0/1 knapsack problem with an algorithm.
11. Explain the depth-first search technique.
12. Define NP hard and NP complete problems with examples.
13. Explain the FIFO branch-and-bound technique.

SECTION C — (5 × 1 = 5 marks)

Answer ALL of the following.

14. Define Stack.
 15. Define a graph.
 16. Define complexity.
 17. What is a binary tree?
 18. What is bounding?
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Paper V — DISTRIBUTED OPERATING SYSTEMS

Time : Three hours

Maximum : 75 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE of the following.

1. What is a distributed system? Discuss the advantages and disadvantages of it over centralized system.
2. Discuss the layers of OSI model with the help of a diagram.
3. Define 'deadlock'. Explain the distributed deadlock detection and prevention strategies.
4. Explain the work station model of organization the processors in a distribution system.
5. Describe the process of designing a distributed file system.

SECTION B — (5 × 5 = 25 marks)

Answer any FIVE of the following.

6. Explain the characteristic of true distributed system.
7. Distinguish between loosely-coupled system and tightly-coupled systems.
8. Define open system. Why some systems are not open?
9. Explain the structural elements of client-server model.
10. Explain the Cristian algorithm of clock synchronization.
11. Define fault tolerance. Explain various types of components faults.
12. Distinguish between dynamic and static scheduling.
13. Explain purposes of WAN.

SECTION C — (5 × 1 = 5 marks)

Answer ALL of the following.

14. (a) Define network operating system.
- (b) Define blocking primitives.
- (c) What is a thread?

- (d) What is ATM?
- (e) What is multimedia?

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Paper VI — COMPUTER GRAPHICS

Time : Three hours

Maximum : 75 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE of the following.

1. Explain the Bresenham's algorithm for scan conversion of a circle.
2. Explain the Cohen-Sutherland line clipping algorithm.
3. What is a spline? Explain the B-Spline curve method for surface design.
4. What is a projection? Explain the parallel and perspective projections of a 3-D object.
5. Define hidden surface. Explain methods for hidden surface removal.

SECTION B — (5 × 5 = 25 marks)

Answer any FIVE of the following.

6. Distinguish between random scan and master scan devices.
7. Write short notes on input devices.
8. Explain the procedure for rotation of a 2-D object.
9. What are Affine transformations? Explain.
10. Explain Blobby objects.
11. Give a short note on :
 - (a) Sphere
 - (b) Ellipsoid.
12. Explain 3-D reflection procedure with an example.
13. What are composite transformations? Explain.

SECTION C — (5 × 1 = 5 marks)

Answer ALL of the following.

14. What is the use of a data glove?
15. Define scaling.
16. What is Bezier curve?

17. Define clipping.
18. What is projection?

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Paper VII — E-COMMERCE

Time : Three hours

Maximum : 75 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE of the following.

1. Bring out the evolution of e-Commerce in India.
2. Describe the process of creating digital signature in e-commerce.
3. Describe how an online credit card transaction works with the help of a figure.
4. Define e-CRM. Explain the e-tools for retaining the existing customers.
5. What is m-commerce? Discuss the technologies used in doing it.

SECTION B — (5 × 5 = 25 marks)

Answer any FIVE of the following.

6. Explain the purposes of TCP/IP in c-commerce.
7. How do you measure the online marketing results?
8. What are the unique features of e-commerce technology?
9. How do you purchase e-cash from currency servers?
10. Explain the role of third-party processors (TPP) in credit card transactions.
11. What are the characteristics of e-SCM?
12. Explain the features of JavaScript used in web design.
13. Explain any two of the e-pricing strategies.

SECTION C — (5 × 1 = 5 marks)

Answer ALL of the following.

14. Viral marketing
15. Data Encryption Standard
16. Secure Electronic Transaction (SET)
17. eBay.com
18. FrontPage

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Paper VIII — PROBABILITY AND STATISTICS

Time : Three hours

Maximum : 75 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE of the following.

1. State and prove the Baye's Theorem. State and prove law of additions theorem and multiplication theorem for $n = 2$ events.
2. Define Mathematical expectation of a random variable. Show that the expectations of the sum of two random variables is equal to the sum of their expectations.
3. Show that mean and variance of Poisson distribution coincide. Fit a Binomial distribution to the following data :

$X:$	0	1	2	3	4
$f:$	38	144	342	287	210

4. Explain the method of least squares to fit a curve of the form $Y = aX^b$. Fit a curve $Y = a + bX$ to the following data :

$X:$	3	4	5	6
$Y:$	1	0	2	1

5. Two random samples drawn from two normal populations are :

Sample I: 20 16 26 27 23 22 18 24 25 19

Sample II: 27 33 42 35 32 34 38 28 41 43 30 37

SECTION B — (5 × 5 = 25 marks)

Answer any FIVE of the following.

6. Explain the concept of marginal and conditional probability distributions.
7. State and prove the reproduction property of the Poisson distribution.
8. If X and Y are two independent random variables, show that $Var(aX + bY) = a^2 Var(X) + b^2 Var(Y)$.
9. Fit a least squares parabola having the form $Y = a + bX + cX^2$ to the following data :

$X:$	1.2	1.8	3.1	4.9	5.7	7.1	8.6	9.8
$Y:$	4.5	5.9	7.0	7.8	7.2	6.8	4.5	2.7
10. What is correlation? Distinguish between positive and negative correlation. What is the significance of coefficient of correlation?

11. Find the moment generating function about origin of the Normal distribution.
12. Explain different small and large sample tests.
13. Explain the properties and uses of χ^2 –distribution.

SECTION C — (5 × 1 = 5 marks)

Answer ALL questions.

14. State the axioms of probability.
 15. Explain the method of least squares.
 16. Explain the distribution and expectation of a discrete random variable.
 17. What are the limits of correlation coefficient?
 18. Explain how to set up and test a hypothesis.
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