(DMCA 201)

M.C.A. DEGREE EXAMINATION, DECEMBER - 2015

(Second Year)

Paper – I : SOFTWARE ENGINEERING

Time : 03 Hours **Maximum Marks : 75**

SECTION - A

Answer any THREE questions *(3 × 15 = 45)*

1) Explain the following:

   a)   Process patterns

   b)   RAD model

2) Explain the planning and construction practices of software engineering.

3) Discuss about design process and design quality of design engineering.

4) Explain in detail basis path testing in white box testing technique.

5) Establish a framework for product metrics of software.

SECTION - B

Answer any FIVE questions *(5 × 5 = 25)*

6) Discuss about various characteristics of software process.

7) Describe the spiral process model.

8)   Explain about system modeling with UML.

9) Write about collaborative requirement gathering for requirement engineering.

10) Explain the flow-oriented modeling of analysis model.

11) Discuss about the art of debugging.

12) Describe the integration testing.

13) Explain class-oriented metrics – The CK metrics suite.

SECTION - C

Answer ALL questions (5 × 1 = 5)

14) What is software myth?

15) What are analysis rules of thumb?

16) What is the need of use case?

17) What is performance testing?

18) What is refactoring?

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Paper – II : PROGRAMMING WITH JAVA

Time : 03 Hours   **Maximum Marks : 75**

SECTION - A

Answer any THREE Questions   *(3 × 15 = 45)*

1)   Explain the structure of a java program in detail with neat illustration.

2)   Explain about looping statements in java with an example program.

3)   Write a binary search and linear search program in java using arrays.

4)   What is inheritance? Explain different types of inheritance with example.

5)   Write an applet program to draw the following shapes:
    a) Line
    b) Circle
    c) Square

SECTION - B

Answer any FIVE questions   *(5 × 5 = 25)*

6)   Discuss about the Java Virtual Machine in detail.

7)   Write a java program to find factorial of given number using recursion.

8)   Write a short notes on classes & objects.

9)   Discuss about java string handling functions.

10)   What is a package? Explain.

11)   Discuss about exception handling in java.

12)   Write a short notes on files and screens.

13)   Explain the life cycle of an applet.

SECTION - C

14)   Define interface.

15)   What is Applet?

16)   What is an Array?

17)   Define Abstract Datatype.

18)   What is type casting?

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Paper – III : COMPUTER NETWORKING

Time : 03 Hours   **Maximum Marks : 75**

SECTION - A

Answer any THREE questions   *(3 × 15 = 45)*

1) Explain about TCP/IP model in detail with neat diagram.

2) What is Switching? Explain different types of switching with neat diagram.

3) Explain multicast routing protocols in detail.

4) Explain Network technologies in detail.

5) Discuss about RSA Algorithm in detail.

SECTION - B

Answer any FIVE questions   *(5 × 5 = 25)*

6) Write a short notes on Data Communication.

7) What is topology? Explain its types.

8) Write about LAN, MAN & WAN.

9) Discuss about addressing in switching.

10) What are the applications of routing? Explain.

11) Write a short notes on asymmetric key cryptography.

12) Discuss about UDP in detail.

13) Write a short notes on binary arithmetic.

14)   Define Network.

15)   What is routing?

16)   Define protocol.

17)   What is datagram?

18)   Define cryptography.

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Paper – IV : COMPUTER ALGORITHMS

Time : 03 Hours   Maximum Marks : 75

SECTION - A

Answer any THREE of the following   *(3 × 15 = 45)*

1) Explain how the removing condition is done from the conditional Asymptotic notation with an example.

2) With a suitable algorithm, explain the problem of finding the maximum and minimum items in a set of n elements.

3) Write down and explain the algorithm to solve all pairs shortest paths problem.

4) Describe the backtracking problem to solve 8-Queens problem.

5) Suppose we build the Huffman code tree for the set of letters and frequencies given below:

Character :	A	B	C	D	E	F
Frequencies:	1	5	20	30	40	50

What will be the length of the code for the character B?

SECTION - B

Answer any FIVE of the following   *(5 × 5 = 25)*

6) Reorder the following complexity from smallest to largest $2n$, $n!$, $n10$, $24\ n\log2(n)$, justify your answer.

Calculate the big – O notation of $5n^2 + n^{3/2}$ and $3n^4 + n\log_2 n$.

7) Show that the maximum number of nodes in a binary tree of depth k is $2^{k}-1$, $k >= 1$.

8) Explain stable sorting with an example.

9) Construct the heap tree for the following keys.

15, 25, 13, 12, 26, 9, 16, 30

10) Prove that Hamiltonian path problem is NP-Class problem.

11) Solve the job sequencing problem and find maximum profit by processing jobs (j1, j2, j3, j4) with deadlines (2, 1, 2, 1) and profit (100, 15, 10, 27).

12) Define optimal and feasible solution with example.

13) What is Hamiltonian problem? Explain with an example using backtracking.

SECTION - C
Answer ALL of the following *(5 × 1 = 5)*

14) Define Time and Space complexity.

15) Define Quick Hull algorithm?

16) Define optimal binary Search tree?

17) Define Spanning tree with example.

18) What is Least Cost search?

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Paper – V : DISTRIBUTED OPERATING SYSTEMS

Time : 03 Hours   **Maximum Marks : 75**

SECTION - A

__Answer any THREE of the following__   *(3 × 15 = 45)*

1) Explain:

     a) Models in distributed system.

     b) Components & functions of distributed system.

2) Explain about critical regions with example to handle them. Explain about I/O structure.

3) Explain:

     a) Real time scheduling with an example.

     b) Deadlock detection algorithm.

4) Explain the algorithm for implementing distributed shared memory.

5) Discuss:

     a) Issues in load distributing.

     b) Implementation of distributed file system

SECTION - B

__Answer any FIVE of the following__   *(5 × 5 = 25)*

6) Give the goals of distributed system.

7) What is asynchronous transfer mode networks? Explain.

8) Discuss about atomic transaction.

9) Explain the classification of agreement problem.

10) Explain deadlock occurance and how to prevent deadlock.

11) What is mutual Exclusion? Give solutions to the problem.

12) Explain about protocols & types of protocols.

13) What is shared Memory?

SECTION - C

Answer ALL Questions   *(5 × 1 = 5)*

14) Define Kernel.& its role.

15) What is Semaphore?

16) Give the difference between long & short term scheduler.

17) Define interrupt.

18) What is topology?

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Paper – VI : COMPUTER GRAPHICS

Time : 03 Hours **Maximum Marks : 75**

SECTION - A

Answer any THREE of the following *(3 × 15 = 45)*

1) Describe the Bresenham's circle algorithm.

2) Explain the Liang-Barsky line clipping algorithm.

3) Find the transformation for

   a) Cavalier with $\theta = 45º$ and

   b) Cabinet projections with $\theta = 30º$.

   Also draw the projection of the unit cube for each transformation.

4) Discuss about Bezier-Bernstein and Bezier-B-Spline approximation.

5) Explain the subdivision algorithm.

SECTION - B

Answer any FIVE of the following *(5 × 5 = 25)*

6) Write about the visualization of the Mandelbrot set.

7) Explain the scan-line algorithm for polygonal region filling.

8) Magnify the triangle with vertices A(0, 0), B(1, 1) and C(5, 2) to twice its size while keeping C(5, 2) fixed.

9) Expain the Cohen-Sutherland line chipping algorithm.

10) Find the transformation for mirror reflection with respect to a given plane.

11) Explain about viewing coordinate system.

12) Explain different ways to generate triangle mesh.

13) Describe the wright algorithm for rendering Mathematical surfaces.

SECTION - C

14) What is an image's aspect ratio?

15) What is double buffering?

16) What is canonical clipping?

17) What is wire frame model?

18) Why are hidden-surface algorithms needed?

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Paper – VII : e-COMMERCE

Time : 03 Hours   **Maximum Marks : 75**

SECTION - A

Answer any THREE of the following   *(3 × 15 = 45)*

1) State the history e-commerce.

2) Elucidate the available e-security technologies.

3) What are the features of e-CRM?

4) Discuss the different schemes of e-transfers.

5) Describe significance of M-commerce.

SECTION - B

Answer any FIVE questions   *(5 × 5 = 25)*

6) e-strategy.

7) e-payment .

8) B To C

9) Concept of e-advertisement.

10) Enabling technologies of www.

11) EP.

12) Online e-cash

13) Encryption.

Answer ALL questions *(5 × 1 = 5)*

14) Concept of e-commerce.

15) e-marketing.

16) e-commerce opportunities.

17) Anti virus.

18) Fire walls.

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Paper – VIII : PROBABILITY & STATISTICS

Time : 03 Hours   **Maximum Marks : 75**

SECTION - A

Answer any THREE of the following   *(3 × 15 = 45)*

1) Define each of the following with example.

    a)   Conditional probability.

    b)   List any three properties of Binomial distribution.

    c)   Probability density function.

2) a) State and prove the addition theorem of probabilities for 'n' events.

    b) A and B throw alternatively with a pair of ordinary dice. A wins if he throws 6 before B throws 7 and B wins if he throws 7 before A throws 6. If A begins the same, find his chance of winning the game.

3) Discuss about t-test. Write the properties of t-test.

4) Find the correlation coefficient for the following data:

    X: 1   2   3   4   5   6   7   8   9   10

    Y: 10 12 16 28 25 36 41 49 40 50

5) The reliability plays an Important role in Quality Improvement program.

SECTION - B

Answer any FIVE of the following   *(5 × 5 = 25)*

6) The mean and variance of Binomial Distribution are 4 and 4/3 respectively. Find $P(X \geq 1)$.

7) Explain about Regression.

8) Derive the relation for the variance of Normal distribution.

9) Why 2 × 2 Latin – Square is not possible? Explain.

10) What are the two lines of Regression? Give their uses.

11) Discuss about F-test and its uses.

12) Explain Discrete probability.

13) Explain sign text.

SECTION - C

Answer ALL of the following $(5 \times 1 = 5)$

14) Define Exhaustive events.

15) Define Poisson distribution.

16) Define Replication.

17) Define F-test.

18) Define Randomisation.

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