(DMCA201)

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M.C.A. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

SOFTWARE ENGINEERING

Time : 3 Hours **Maximum Marks : 70**

SECTION – A **(3 × 15 = 45)**

Answer any three questions

Q1) Explain about Incremental and Waterfall Process Models.

Q2) Discuss various issues in Requirement engineering process.

Q3) Explain in detail about Data design, architectural design and procedural design.

Q4) What is testing? What is debugging? Draw the spiral diagram showing testing strategies with phases of software development.

Q5) a) What is risk projection and how the consequences of risk be assessed?

b) Differentiate metrics and measurement? Give metrics for maintenance.

SECTION – B **(5 × 4 = 20)**

Answer any five questions

Q6) Discuss umbrella activities and its role in software development life cycle (SDLC).

Q7) Explain requirement engineering tasks.

Q8) What is Relationship? Explain Cardinality and Modality with Examples.

Q9) Draw context diagram and data flow diagram (DFD) for Airlines Reservation System.

Q10) What is Cyclomatic Complexity? What are the steps to find cyclomatic complexity?

Q11) Briefly explain about Cohesion and coupling.

Q12) Explain Software Quality Assurance and its importance.

Q13) Distinguish between a program and a software product.

SECTION – C **(5 × 1 = 5)**

Answer all questions

Q14) What is black box testing?

Q15) What is significance of user interface design?

Q16) What is Software Reliability?

Q17) What is meant by prototyping?

Q18) What is SRS document?

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M.C.A. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

PROGRAMMING WITH JAVA

Time : 3 Hours **Maximum Marks : 70**

SECTION – A **(3 × 15 = 45)**

Answer any Three questions from the following

Q1) Explain how the java supporting object – oriented paradigm.

Q2) a) What is variable? How to declare variables in java and also list rules for valid variable declaration.

b) Write a program which shows an example of function overriding?

Q3) Discuss different exceptions in java and how to handle exceptions in java.

Q4) What is stream? Discuss about I/O stream hierarchy.

Q5) Explain about applet life cycle. Create an applet that having three scroll bars for three colors red, green and blue with minimum 0 and maximum 255 values. The background color of applet changes depending on the value of the scroll bar at that time

SECTION – B **(5 × 4 = 20)**

Answer any FIVE questions from the following

Q6) How to create and initialize one dimensional and two dimensional array in Java?

Q7) What is byte code? How does JVM help to implement the platform independence nature?

Q8) What is constructor? Explain constructor overloading with example.

Q9) Explain following key words : this, super, instance of, static.

Q10) What is package? List various built in package used in Java.

Q11) What is Layout? Explain various Layout Managers in Java.

Q12) Differentiate interfaces and abstract classes.

Q13) Explain Delegation Event model.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) Define garbage collection.

Q15) Define polymorphism.

Q16) Differentiate applet and application program.

Q17) Define object.

Q18) What is java virtual machine?

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(DMCA203)

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M.C.A. DEGREE EXAMINATION, DEC. – 2018

Second Year

COMPUTER NETWORKING

Time : 3 Hours **Maximum Marks : 70**

Section - A

(3 x 15 = 45)

Answer any three questions from the following

Q1) Explain about different network components.

Q2) Explain and compare distance vector routing and link state routing algorithm.

Q3) Explain circuit switching and packet switching.

Q4) Discuss about different routing protocols.

Q5) Explain about dynamic host configuration protocol and simple network management protocol.

Section - B

(5 x 4 = 20)

Answer any five questions from the following

Q6) Write about differential Manchester encoding.

Q7) Write about the features of local area networks.

Q8) Explain ALOHA protocol with its varieties.

Q9) Explain the working principle of bridges.

Q10) Explain IPv4 datagram format and importance of each filed.

Q11) What is RPC? Draw and explain steps for RPC.

Q12) Explain the working principle of CSMA.

Q13) Give architectural overview of WWW.

Section - C

(5 x 1 = 5)

Answer all questions

Q14) Define congestion.

Q15) What is error detection?

Q16) What is bridge and hub?

Q17) Define hierarchical routing.

Q18) Define encryption and decryption.

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M.C.A. DEGREE EXAMINATION, DEC. – 2018
Second Year
COMPUTER ALGORITHMS

Time : 3 Hours **Maximum Marks : 70**

Section - A

(3 x 15 = 45)

Answer any three questions

Q1) a) Write about asymptotic notations used to measure the running time of algorithm.

b) Describe different algorithm development steps.

Q2) Explain how divide and conquer method help multiplying two large integers and Strassen's matrix multiplication.

Q3) Using greedy algorithm find an optimal solution for knapsack instance n = 7, M = 15 $(P_1,P_2,P_3,P_4,P_5,P_6,P_7)$ = (10,5,15,7,6,18,3) and $(w_1,w_2,w_3,w_4,w_5,w_6,w_7)$ = (2,3,5,7,1,4,1).

Q4) Find the minimum number of operations required for the following matrix multiplication using dynamic programming: A (10 × 20) * B (20 × 50) * C (50 × 1) * D (1 × 100).

Q5) Explain how branch and bound technique differs from back tracking and solve N-queen problem by back tracking.

Section - B

(5 x 4 = 20)

Answer any FIVE questions from the following

Q6) Briefly explain about Simple find and union algorithm.

Q7) Analyze quick sort algorithm for best case, average case and worst case with example. In which case it performs similar to selection sort?

Q8) Write an algorithm for minimum cost spanning tree using prim's.

Q9) Write short notes on optimal binary search tree.

Q10) Explain how to find Hamiltonian path and cycle using backtracking algorithm.

Q11) Explain about job sequencing problem.

Q12) Explain use of Branch & Bound Technique for solving Assignment Problem.

Q13) Find the subset from the given sum using back tracking.
S = {1, 2, 5, 7} and d = 8.

Section - C

(5 x 1 = 5)

Answer all questions

Q14) Prove that $\sum_{k=0}^{n} k^3 = \Theta(n^4)$

Q15) What is recursion tree?

Q16) Define greedy approach.

Q17) Define principle of optimality

Q18) What is transitive closure?

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M.C.A. DEGREE EXAMINATION, DEC. – 2018

Second Year

DISTRIBUTED OPERATING SYSTEMS

Time : 3 Hours **Maximum Marks : 70**

Section - A

(3 x 15 = 45)

Answer any three questions from the following

Q1) a) What are the advantages of distributed systems over centralized systems.

b) Write about RPC semantics in presence of failures.

Q2) Discuss about logic clock and physical clock.

Q3) Explain about the following in client server model :

a) Blocking versus non-blocking primitives.

b) Buffered versus unbuffered primitives.

Q4) Explain about processor allocation models and processor allocation algorithm.

Q5) Explain about distributed file system structure with neat sketch.

Section - B

(5 x 4 = 20)

Answer any five questions from the following

Q6) Briefly explain about ATM switching.

Q7) Describe bus – based and switched multiprocessors.

Q8) Explain distributed algorithm for mutual exclusion.

Q9) Write about transaction model in distributed systems.

Q10) Briefly explain about threads and RPC.

Q11) Write about deadlock detection in distributed systems.

Q12) Explain about fault tolerance using active replication.

Q13) Write about distributed file service interface.

Section - C

(5 x 1 = 5)

Answer all questions

Q14) Give any two disadvantages of distributed systems.

Q15) Define dynamic binding.

Q16) What is concurrency?

Q17) Define fault tolerance.

Q18) What is directory server interface?

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M.C.A. DEGREE EXAMINATION, DEC. – 2018

Second Year

COMPUTER GRAPHICS

Time : 3 Hours **Maximum Marks : 70**

Section - A

(3 x 15 = 45)

Answer any three questions from the following

Q1) Draw the architecture and explain working of CRT and DVST display system.

Q2) Apply the Bresenham's algorithm to turn up pixels along the line segment determined by points (5, 7) and (12, 11).

Q3) Explain the Cohen-Sutherland algorithm for finding the category of a line segment. Show clearly how each category is handled by the Algorithm.

Q4) What are the advantages of 3 D graphics? Describe briefly about painter's algorithm for hidden surface removal.

Q5) Explain the following terms with reference to 2-D displays :

a) Viewing transformation

b) Window and viewport

Section - B

(5 x 4 = 20)

Answer any five questions from the following

Q6) Write about character generation algorithm.

Q7) What is aliasing? How to compensate the aliasing? Explain in detail.

Q8) Explain about quadratic surfaces.

Q9) Explain about 2D scaling and reflection.

Q10) What is shear transformation? Explain X-shear and Y-shear with example.

Q11) Write about perspective projections and derive its matrices.

Q12) What is Bezier curve? List all it important properties.

Q13) Explain Z buffer algorithm for hidden surface removal.

Section - C

(5 x 1 = 5)

Answer all questions

Q14) What is text clipping?

Q15) What is frame buffer?

Q16) What is meant by isometric projection?

Q17) Define composite transformation.

Q18) What is Gauraud shading?

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M.C.A. DEGREE EXAMINATION, DEC. – 2018

Second Year

E - COMMERCE

Time : 3 Hours **Maximum Marks : 70**

Section - A

(3 x 15 = 45)

Answer any three questions

Q1) Discuss briefly regarding Business models.

Q2) What is the purpose of Security on the Internet?

Q3) Discuss Risk and e-Payment System.

Q4) Explain briefly regarding Supply Chain.

Q5) Explain Data Warehouse Architecture.

Section - B

(5 x 4 = 20)

Answer any five questions

Q6) Explain Networks and Internets.

Q7) Explain about Transmission control protocol.

Q8) Explain E-business risk Management issues.

Q9) Explain the need of browsing behavior models.

Q10) Discuss the classification of New Payment system.

Q11) Explain about Cryptography.

Q12) Explain some typical Business touch points.

Q13) Explain briefly Planning of E-Commerce Project.

Section - C

(5 x 1 = 5)

Answer all questions

Q14) What is Software Agents?

Q15) What is Internet Protocol Suits?

Q16) How should Buyers Pay Online?

Q17) What should a Firewall contain?

Q18) How to secure e-Payment process method?

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M.C.A. DEGREE EXAMINATION, DEC. – 2018

Second Year

PROBABILITY & STATISTICS

Time : 3 Hours **Maximum Marks : 70**

Section - A

(3 x 15 = 45)

Answer any three questions.

Q1) a) A box contains 6 red, 4 white and 5 black balls. A person draws 4 balls from the box at random. Find the probability that among the balls drawn there is at least one ball of each colour.

b) If A and B are the any two arbitrary events of the sample space then prove that

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

Q2) Let X be a continuous random variable with p.d.f :

$$f(x) = \begin{cases} ax & 0 \le x \le 1 \\ a & 1 \le x \le 2 \\ -ax + 3a & 2 \le x \le 3 \\ 0 & \text{elsewhere} \end{cases}$$

a) Determine the constant 'a'

b) Compute $P(X \le 1.5)$

Q3) Derive the mean and variance of binomial distribution.

Q4) Fit the exponential curve of the form Y = a. bx to the following data :

X :	1	2	3	4	5	6	7	8
Y :	1.0	1.2	1.8	2.5	3.6	4.7	6.6	9.1

Q5) Explain the Chisquare test of goodness of fit. In two colleges affiliated to university 46 out of 200 and 48 out of 250 candidates failed in an examination. If the percentage of failure in the university is 18% examine whether the college differ significantly.

Section - B

(5 x 4 = 20)

Answer any five questions.

Q6) Briefly explain about tools for representing the data.

Q7) If A and B are two mutually exclusive events, show that $P(A|\overline{B}) = \frac{P(A)}{[1-P(B)]}$.

Q8) From a city population, the probability of selecting a) a male or smoker is 7/10 b) a male smoker is 2/5 c) a male, if a smoker is already selected is 2/3. Find the probability of selecting (i) non – smoker (ii) Male

Q9) Let X be a random variable taking the values –1, 0 and 1 such that P(X = –1) = 2P(X = 0) = P(X = 1). Find the mean of 2X – 5.

Q10) Random samples of sizes 500 and 400 are found to have means 11.5 and 10.9 respectively. Can the samples be regarded as random samples drawn from same population whose S.D is 5(α = 5%).

Q11) Obtain the regression lines to the data given below :

x:	6	2	10	4	8
y:	9	11	5	8	7

Q12) Fit a curve of the form $y = ab^2$ to the following data :

x	2	3	4	5	6

y	144	172.8	207.4	248.8	298.8

Q13) Write about analysis of variance (ANOVA) technique.

Section - C

(5 x 1 = 5)

Answer all questions

Q14) What the mean for a Geometric random variable?

Q15) What is normal distribution?

Q16) Define regression coefficient.

Q17) What are the axioms of probability?

Q18) What is F – Test?

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