(DMCA201)

Total No. of Questions :18]

M.C.A.DEGREE EXAMINATION, MAY– 2018

Second Year

SOFTWARE ENGINEERING

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

SECTION - A

Answer any threequestions. **(3 x 15 = 45)**

Q1) Explain Spiral model with suitable example. Also explain how it differs from Software Prototyping model.

Q2) a) Draw the Data Flow Diagram with different levels for withdraw and deposit of money in a bank.
b) What is software prototyping? Explain its significance in software engineering with example.

Q3) What is importance of User Interface? Explain user Interface design rules with examples.

Q4) Explain Black box testing and White box testing. Explain any one technique to carry out each testing.

Q5) a) Describe the differences between project metrics and process metrics.
b) Describe four P's for Project Management.

SECTION - B

Answer any five questions. **(5 x 4 = 20)**

Q6) Explain incremental model for system development.

Q7) Write about functional and Nonfunctional requirements.

Q8) Describe Different Quality standards.

Q9) Explain in detail the behavioral models of a software system.

Q10) Draw database design model.

Q11) Describe the steps to find cyclomatic complexity using flow graph.

Q12) Differentiate alpha testing and beta testing.

Q13) Explain data dictionary in brief and where it is used.

SECTION - C

Answer all questions. **(5 x 1 = 5)**

Q14) Define unit testing.

Q15) What is software product?

Q16) What is software quality?

Q17) Define cohesion.

Q18) What is meant by risk management?

(DMCA202)

Total No. of Questions : 18] **[Total No. of Pages : 02**

M.C.A. DEGREE EXAMINATION, MAY – 2018

Second Year

PROGRAMMING WITH JAVA

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

SECTION - A

Answer any three of the following questions. **(3 x 15 = 45)**

Q1) How to create string object in Java? Discuss about various string handling functions in Java with syntax.

Q2) What is constructor? Give the restrictions of constructors. Explain about different types of constructors.

Q3) a) What is collection in Java? Differentiate between Vector and ArrayList.
b) Explain how to use try, catch and finally in exception handling.

Q4) Explain polymorphism with its need. How to achieve polymorphism in Java?

Q5) What is AWT? Discuss about AWT labels, buttons menus and menu bars.

SECTION - B

Answer any five of the following questions. **(5 x 4 = 20)**

Q6) Write about JDK, JRE and Java virtual machines.

Q7) Describe different data types used in Java.

Q8) Write about public, private, protected and default access modifier with example.

Q9) Write a program that creates and initializes a four integer element array. Calculate and display the average of its values.

Q10) Explain garbage collection and finalize method in JAVA.

Q11) Explain use of Interface with suitable example.

Q12) Describe different states of applets during the execution.

Q13) Differentiate Byte stream and Character stream.

SECTION - C

Answer all of the following questions. **(5 x 1 = 5)**

Q14) Define platform independence.

Q15) Define package.

Q16) What is method overriding?

Q17) What is stream?

Q18) Give any two built–in exceptions.

(DMCA203)

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M.C.A. DEGREE EXAMINATION, MAY – 2018

Second Year

COMPUTER NETWORKING

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

SECTION - A

Answer any three of the following questions. **(3 x 15 = 45)**

Q1) Explain about frequency division and wave division multiplexing with neat architectures.

Q2) Explain various versions of CSMA protocols.

Q3) Explain distance vector routing mechanism with example.

Q4) What is internetworking? Discuss the different global addressing schemes and the issues in forwarding the IP.

Q5) What is the need of Domain name service? Explain DNS architecture.

SECTION - B

Answer any five of the following questions. **(5 x 4 = 20)**

Q6) Write about bus and ring type network topologies.

Q7) Briefly explain about congestion control mechanism.

Q8) What is the difference between guided and unguided transmission media?

Q9) Briefly explain about wide area networks.

Q10) Write short notes on packet switching.

Q11) Briefly explain about IPV4 protocol.

Q12) Describe salient features of dynamic host configuration protocol.

Q13) Explain about e-mail security.

SECTION - C

Answer all of the following questions. **(5 x 1 = 5)**

Q14) What is Ethernet?

Q15)Define hamming distance.

Q16)What is firewall?

Q17) What is bridge?

Q18) What is static and dynamic routing?

(DMCA204)

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M.C.A. DEGREE EXAMINATION, MAY– 2018

Second Year

COMPUTER ALGORITHMS

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

SECTION - A

Answer any three questions. **(3 x 15 = 45)**

Q1) a) Explain the properties of an algorithm with an example.
b) Explain about Worst case, best case and Average Case Complexity.

Q2) Discuss about quick sort algorithm with suitable example and derive its complexities.

Q3) Solve the following job sequence problem.
n = 4, $(p_1, p_2, p_3, p_4) = (100, 10, 15, 27)$, $(d_1, d_2, d_3, d_4) = (2, 1, 2, 1)$. Find the optimal Sequence and profit.

Q4) Explain Backtracking Method. What is N-Queens Problem? Give solution of 4-Queens Problem using backtracking Method.

Q5) Explain how branch and bound technique differs from back tracking. Solve the Travelling Salesman problem using branch and bound algorithms.

SECTION - B

Answer any five questions from the following. **(5 x 4 = 20)**

Q6) Briefly explain about amortized analysis of algorithm.

Q7) What is Divide and Conquer Technique? Give the use of it for binary Searching method.

Q8) State and explain about quick hull problem.

Q9) Constrict Huffman code for the following data: p(A) = 0.1 = p (B), p(C) = 0.3, p(D) = 0.14, p(E) = 0.12 and p(F) = 0.24. Encode the text CAD and Decode 10011011011101.

Q10) Explain Chained Matrix Multiplication with example.

Q11) Solve the all pair shortest paths problem for the digraph with weight matrix.

$$\begin{bmatrix} 0 & \infty & 3 & \infty \\ 2 & 0 & \infty & \infty \\ \infty & 7 & 0 & 1 \\ 6 & \infty & \infty & 0 \end{bmatrix}$$

Q12) Explain the Graph – coloring problem. And draw the state space tree for m=3 colors n=4 vertices graph.

Q13) Solve the knapsack problem by branch and bound technique.

SECTION - C

Answer all questions. **(5 x 1 = 5)**

Q14) Define Big (O) notation.

Q15) What is spanning tree?

Q16) What is meant by optimal binary search tree?

Q17) Define backtracking.

Q18) State subset sum problem.

(DMCA205)

Total No. of Questions : 18] **[Total No. of Pages : 02**

M.C.A. DEGREE EXAMINATION, MAY – 2018

Second Year

DISTRIBUTED OPERATING SYSTEMS

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

SECTION - A

Answer any three questions from the following. **(3 x 15 = 45)**

Q1) Discuss different software and hardware concepts in distributed operating system.

Q2) Explain about parameter passing and dynamic binding in remote procedure call.

Q3) Explain about deadlock detection and prevention issues in distributed systems.

Q4) Discuss about workstation and processor pool system models.

Q5) Explain about distributed file system design issues.

SECTION - B

Answer any five questions from the following. **(5 x 4 = 20)**

Q6) What are the advantages of distributed systems over independent PC's.

Q7) Describe the functions of ATM adaption layer.

Q8) What is group communication? Explain in brief.

Q9) Explain about clock synchronization algorithm.

Q10) Write about token ring mutual exclusion algorithm.

Q11) Explain about thread package.

Q12) Explain about scheduling concept in distributed systems.

Q13) Write short notes on caching and replication mechanism in distributed file system.

SECTION - C

Answer all questions. **(5 x 1 = 5)**

Q14) What is true distributed system?

Q15) What is switched multiprocessor?

Q16) What is physical clock?

Q17) Define mutual exclusion.

Q18) What is meant by atomic transaction?

(DMCA206)

Total No. of Questions : 18] **[Total No. of Pages : 02**

M.C.A. DEGREE EXAMINATION, MAY – 2018

Second Year

COMPUTER GRAPHICS

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

SECTION - A

Answer any three of the following questions. ***(3 × 15 = 45)***

Q1) Draw the architecture and explain working of raster scan display system.

Q2) Using midpoint Ellipse generation algorithm, generate points on the ellipse with center as origin, major axis is 8 units and minor axis is 6 units.

Q3) A triangle is defined by P (2, 2), Q (4, 2) and R(5, 5). Find the transformed coordinates after 90^o clockwise rotation followed by reflection about line y = -x.

Q4) Explain about parallel and perspective projections and derive its matrices.

Q5) What is depth buffer method? Write and explain the steps of a depth buffer algorithm.

SECTION - B

Answer any five of the following questions. ***(5 × 4 = 20)***

Q6) What is DVST? List merit and demerit of DVST.

Q7) Explain scan line polygon filling algorithm with example.

Q8) Explain about line clipping and polygon clipping.

Q9) Derive transformation matrix for 2D rotation.

Q10) What is scaling transformation? Prove that two scaling transformation commute that is $S_1 . S_2 = S_2 . S_1$.

Q11) Explain reflection with respect to any plane in 3D transformations.

Q12) Explain the Bazier's curves and surfaces.

Q13) Briefly explain Z-buffer visible surface determination algorithm.

SECTION - C

Answer all of the following questions. ***(5 × 1 = 5)***

Q14) Define scan conversion.

Q15) Define aspect ratio.

Q16) Define windowing.

Q17) What is meant by hidden surface?

Q18) Define quadratic surfaces.

(DMCA207)

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M.C.A. DEGREE EXAMINATION, MAY - 2018

(Second Year)

E-COMMERCE

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

SECTION - A *(3 × 15 = 45)*

Answer any THREE questions

Q1) Discuss Early Business Information Interchange efforts.

Q2) List and briefly define Identifying Web Presence Goals.

Q3) Explain briefly regarding Digital Token-Base e-Payment System.

Q4) Explain briefly regarding Customer Relationship Management.

Q5) Explain the Importance of Data Warehouse for an Organization.

SECTION - B *(5 × 4 = 20)*

Answer any FIVE questions

Q6) Discuss advantages and disadvantages of E-commerce.

Q7) Explain Network Routers and Switches.

Q8) Discuss about Online Marketing.

Q9) Explain the need of E-advertising.

Q10) Explain converting between different bit lengths.

Q11) Give some reasons for using e cash.

Q12) Explain Seven way to Reduce Inventory.

Q13) Explain briefly regarding Data Mining.

SECTION - C

(5 × 1 = 5)

Answer ALL questions

Q14) What is the importance of Search Engine?

Q15) What Markup Languages and the Web?

Q16) What is branding?

Q17) Define Privacy.

Q18) Give some examples of Encryption Technique.

(DMCA208)

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M.C.A. DEGREE EXAMINATION, MAY - 2018

Second Year

PROBABILITY & STATISTICS

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

SECTION - A ***(3 × 15 = 45)***

Answer any THREE questions

Q1) a) From vessel containing 3 white and 5 black balls, 4 balls are transferred into an empty vessel. From this vessel a ball is drawn and is found to be white. What is the probability that out of four balls transferred 3 are white and 1 is black?

b) Prove that $P(A \cup B|C) = P(A|C) + P(B|C) - P(A \cap B|C)$ for any three events A, B and C.

Q2) A random variable has the c.d.f : $F(x) = \begin{cases} 0 & : x < 0 \\ 1 - e^{-x/500} & : x \geq 0 \end{cases}$,

Find the i) $P(100 \leq X \leq 200)$ and $P(X \geq 300)$

Q3) X is normally distributed and the mean of X is 12 and standard deviation is 4. Find out the probability of the following

a) $X \geq 20$.

b) $X \leq 20$.

c) $0 \leq X \leq 12$.

d) Find x^1, when $P(X \geq x) = 0.24$.

Q4) Fit a curve of the form $y = ae^{bx}$ from the following data:

x:	1	2	3	4	5	6
y:	1.6	4.5	13.8	40.2	125	300

Q5) Find the value of Chi-square for the following data :

Observed frequency :	10	4	15	18	20	15	5	2	3
Expected frequency :	10	7	10	15	25	10	5	5	5

SECTION - B *(5 × 4 = 20)*

Answer any FIVE questions

Q6) If A and B are two mutually exclusive events, show that $P\left(A|\overline{B}\right)=\frac{P(A)}{[1-P(B)]}$.

Q7) Define marginal and conditional probabilities of a bivariate probability distribution.

Q8) X and Y are independent random variables with variance 2 and 3. Find the variance of $3X + 4Y$.

Q9) A continuous random variable X has *a.d.f.* $f(x)=3x^2, 0\le x\le 1$. Find 'a' such that $p(X\le a)=p(X>a)$.

Q10) Describe the F-test for testing equality of variances.

Q11) Obtain the correlation co-efficient to the following data :

x	10	14	18	26	30
y	18	12	24	30	36

Q12) Explain the method of least squares. Fit a straight line $y = a + bx$ to the data given below by the method of least segment.

X :	5	10	15	20	25
Y :	16	19	23	26	30

Q13) Write short notes on statistical quality improvement programs.

SECTION - C *(5 × 1 = 5)*

Answer ALL questions

Q14) State the Bayesian Rule.

Q15) Define continuous random variable.

Q16) Define statistical hypothesis.

Q17) Define correlation co-efficient.

Q18) What is normal distribution?