



Seat No.	
-------------	--

**M.C.A. (Commerce) (Semester – III) (New-CBCS) Examination, 2017  
SOFTWARE PROJECT MANAGEMENT**

Day and Date : Saturday, 13-5-2017  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

- Instructions:** 1) Q. No. 1 and 7 are **compulsory**.  
2) Attempt **two** from Q. 2 to Q. 4.  
3) Attempt **any one** from Q. 5 and Q. 6.  
4) **All** questions carry **equal** marks.

1. Fill in the blanks :

14

- 1) \_\_\_\_\_ is an activity that distributes estimated effort across the planned project duration by allocating the effort to specific software engineering tasks.  
A) Software project allocation      B) Software cost preparation  
C) Software project scheduling      D) Software project maintenance
- 2) \_\_\_\_\_ is the series of inspections reviews and tests used throughout the development cycle to ensure that each work product meets the requirements.  
A) Quality control      B) Quality testing process  
C) Quality checking process      D) Quality appraisal process
- 3) \_\_\_\_\_ is a set of activities that have been developed to manage change throughout the life cycle of computer software.  
A) Software quality management  
B) Software change management  
C) Software maintenance management  
D) Software configuration management
- 4) \_\_\_\_\_ is a procedural activity that ensures quality and consistency as changes are made to a configuration object.  
A) Change implementation      B) Quality control  
C) Change control      D) Change approval process

P.T.O.



- 5) \_\_\_\_\_ leader closely monitors the behaviour and performance.  
A) Delegative    B) Directive    C) Participative    D) Constructive
- 6) \_\_\_\_\_ is the application of knowledge, skills, tools and techniques to project activities to meet project requirements.  
A) Project management                      B) Program management  
C) Project portfolio management    D) Requirements management
- 7) A \_\_\_\_\_ is a temporary endeavor undertaken to create a unique product, service or result.  
A) Program            B) Process            C) Project            D) Portfolio
- 8) Which of the following is not generally considered a player in the software process ?  
A) Customers                                      B) End-users  
C) Project managers                              D) Sales people
- 9) Software Project Management begins with a set of activities that are collectively called  
A) Cost Estimation                              B) Project Planning  
C) Time Estimation                              D) Resources Estimation
- 10) WBS stands for  
A) Work Breakdown System                      B) Work by Standard  
C) Work Breakdown Structure                      D) Work by System
- 11) Dr. Barry Boehm thinks of \_\_\_\_\_ as “Achieving high levels of user satisfaction, portability, maintainability, robustness and fitness for use.  
A) Quality            B) Accuracy    C) Timeliness    D) Quantity
- 12) \_\_\_\_\_ techniques use empirically derived expressions for effort and time to predict these project quantities.  
A) Analytical            B) Empirical    C) Heuristic            D) Derivative
- 13) \_\_\_\_\_ is “the application of knowledge, skills, tools and techniques to project activities to meet the project requirements.”  
A) Project analysis                              B) Project management  
C) Project requirement                              D) Project re-engineering
- 14) The activities are usually organized in \_\_\_\_\_ and the process specifies what artifacts should be developed and delivered in each phase.  
A) Distinct phases                              B) Queue  
C) Irregular manner                              D) Sequence



2. A) Explain Delphi cost estimation technique. (2×7=14)  
B) Explain the characteristics of high performance management team.
  3. Attempt the following **(any 2)** : (2×7=14)
    - 1) Explain function point analysis method.
    - 2) Discuss major factors that influence in software cost.
    - 3) Illustrate Defect Management Concept and Three Defects Strategies.
  4. Attempt the following : (2×7=14)
    - 1) What is software configuration management ? Explain its stages.
    - 2) Explain empirical, heuristic and analytical cost estimation techniques.
  5. Explain the team structure in software project management. Explain its types. 14
  6. Explain basic, intermediate and complete COCOMO models. 14
  7. Write a short note on **(any 2)** : (2×7=14)
    - 1) Users role in project management.
    - 2) Leadership styles
    - 3) Risk management.
-



Seat No.	
-------------	--

**M.C.A. (Commerce) (Semester – III) (Old) Examination, 2017**  
**DATA STRUCTURE USING C++**

Day and Date : Thursday, 4-5-2017  
Time : 2.30 p.m. to 5.30 p.m.

Total Marks : 70

**Instructions:** 1) Q. 1 and Q. 7 are **compulsory**.  
2) Solve **any 2** Qs. from Q. 2 to Q. 4.  
3) Solve **any 1** Q. from Q. 5 and Q. 6.

1. Choose the correct alternative : **(7×2=14)**
- 1) \_\_\_\_\_ is used for Recursion as Data structure.  
a) Stack                      b) Queue                      c) Link list                      d) Graph
  - 2) \_\_\_\_\_ number of queues needed to implement the priority queue ?  
a) 1                              b) 2                              c) 3                              d) 4
  - 3) \_\_\_\_\_ is very useful in situation when data have to stored and then retrieved in reverse order.  
a) Stack                      b) Queue                      c) List                              d) Link list
  - 4) \_\_\_\_\_ is a graph that has weights of costs associated with its edges.  
a) Network                              b) Weighted graph  
c) Both a) and b)                              d) None a) and b)
  - 5) When a function is defined inside a class, this function is called inline. True or False.  
a) True                              b) False
  - 6) The function having the same name as class name is called as \_\_\_\_\_  
a) Inline                              b) Friend                              c) Constructor                              d) Destructor
  - 7) Constructor having no return types, True or False.  
a) True                              b) False
2. Solve the following : **(7×2=14)**
- A) What is constructor and destructor ?
  - B) Explain function overloading.



3. Define stack, explain the following points with perspective of stack. **14**
  - 1) Different operations on stack.
  - 2) Applications of stack.
  
4. Define Queue, explain the following points with perspective of queue. **14**
  - 1) Different operations on queue.
  - 2) Applications of queue.
  
5. Solve the following : **(7×2=14)**
  - A) Define linked list and explain its operations.
  - B) Explain the double linked list and its applications.
  
6. Write a program for Binary tree and its operations. **14**
  
7. Write short note on (**any 2**) : **14**
  - 1) Graph
  - 2) Tree
  - 3) Data structure – its applications.



Seat No.	
----------	--

**M.C.A. (Commerce) (Old) (Semester – III) Examination, 2017  
DATA COMMUNICATION AND NETWORKS**

Day and Date : Tuesday, 9-5-2017

Total Marks : 70

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :** 1) Q. 1 and Q. 7 are **compulsory**.  
2) Solve **any 2** Q. from Q. 2 to Q. 4.  
3) Solve **any 1** Q. from Q. 5 and Q. 6.

1. A) Choose the correct alternative :

7

- 1) Which of the following is not possible for data exchange ?  
A) Simplex                      B) Multiplex  
C) Half-duplex                  D) Full-duplex
- 2) Which of the following layer is not network support layer ?  
A) Transport                      B) Network    C) Data                      D) Physical
- 3) DHCP server provides \_\_\_\_\_ to the clients.  
A) Protocol                      B) IP-address  
C) Mac-address                  D) Router
- 4) Which of the following is reliable communication ?  
A) TCP                              B) IP  
C) UDP                              D) All of above
- 5) OSI model consist of \_\_\_\_\_ layers.  
A) 4                                  B) 5                      C) 7                              D) 8
- 6) What is the maximum header size in IP PACKET ?  
A) 32 byte                      B) 64 byte  
C) 128 byte                      D) 60 byte
- 7) The data link layer is responsible for \_\_\_\_\_ delivery.  
A) node-to-node                  B) concurrent  
C) error                              D) none of these

P.T.O.



B) State **true** or **false** :

7

- 1) LAN covers a large geographic area.
- 2) Speed of MAN Network is 1.5 to 150 Mbps.
- 3) In Bus Topology One long cable acts as a back bone.
- 4) FTP is provided by TCP/IP for copying a file from one host to another.
- 5) The telephone networks uses Packet switching.
- 6) PPP is a Data layer protocol.
- 7) Encryption is the function of Transport layer.

2. Attempt the following :

(7×2=14)

- A) Discuss the symmetric-key cryptography algorithm.
- B) Discuss the File Transfer Protocol.

3. Explain the following network devices in details.

14

- 1) Switch
- 2) Hub
- 3) Bridge
- 4) Repeater.

4. Explain the Star and Bus topology in details.

14

5. Explain the different guided transmission media in brief.

14

6. What is OSI reference model ? Explain its phases in details.

14

7. Write short note on (**any 2**) :

(7×2=14)

- 1) Packet switching
  - 2) IP-Addresses
  - 3) Firewalls.
-



Seat No.	
----------	--

**M.C.A. (Commerce) (Semester – III) (Old) Examination, 2017  
SOFTWARE PROJECT MANAGEMENT**

Day and Date : Saturday, 13-5-2017  
Time : 2.30 p.m. to 5.30 p.m.

Total Marks : 70

**Instructions :** 1) Question No. 1 and 7 are **compulsory**.  
2) Solve **any 2** Questions from Question No. 2 to Question No. 4.  
3) Solve **any 1** Question from Question No. 5 and Question No. 6.

1. State **True** or **False**. **(7×2=14)**
    - 1) Debugging is not testing, but always occurs as a consequences of testing.
    - 2) Risk is expressed in terms of probability and impact.
    - 3) Spiral model is used to find risk in a project.
    - 4) Line of code act as direct measures includes in software product.
    - 5) Verification done before the validation.
    - 6) Feasibility study is used for to find cost and benefit of project.
    - 7) PERT model is used for software cost estimation.
  
  2. A) What is project process and product process ? **7**  
B) Explain in details 4 p's of project. **7**
  
  3. What is Risk Management ? Explain risk analysis in project. **14**
  
  4. What is Software Configuration Management ? Explain in details. **14**
  
  5. Explain the different Project Management Tools. **14**
  
  6. Solve the following : **(7×2=14)**
    - 1) Explain COCOMO model.
    - 2) Explain the software team structure and its types.
  
  7. Write short note on **(any 2)** **(7×2=14)**
    - 1) Role of user in project management
    - 2) CMM
    - 3) Function point analysis.
-





Seat No.	
----------	--

**M.C.A. (Commerce) (Part – II) (Semester – IV) (Old) Examination, 2017  
ADVANCED JAVA PROGRAMMING**

Day and Date : Friday, 5-5-2017  
Time : 2.30 p.m. to 5.30 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 and 7 are **compulsory**.  
2) Solve **any two** questions from question number 2, 3 and 4.  
3) Solve **any one** question from Q. No. 5 and 6.  
4) Figures to the **right** indicate marks.

1. Multiple choice questions : **(1×14=14)**
- 1) Which of the following method can be used to read a form parameter in JSP ?  
a) request.getParameter()                      b) response.getParameter()  
c) request.getValue()                              d) response.getValue()
  - 2) Which of the following step is taken by JSP container during compilation phase ?  
a) Parsing the JSP                                      b) Turning the JSP into a servlet  
c) Compiling the servlet                              d) All of the above
  - 3) Is JSP technology extensible ?  
a) True    b) False
  - 4) Which of the following attributes are used in <jsp:include/>tag ?  
a) id, type    b) page, flush                      c) type, class                      d) type, page
  - 5) Which of the following is true about info Attribute ?  
a) The info attribute lets you provide a description of the JSP  
b) The info attribute is used by JSP container for optimization of generated servlet code  
c) Both of the above  
d) None of the above



- 6) Which of the following is true about initialization phase in JSP life cycle ?
- a) When a container loads a JSP it invokes the `jspInit()` method before servicing any requests
  - b) Container invokes `_jspService()` method during Initialization phase
  - c) Both of the above
  - d) None of the above
- 7) Can a JSP page process HTML FORM data ?
- a) true
  - b) false
- 8) What is the use of `<c:catch>` tag ?
- a) To catch any Throwable that occurs in its body and optionally exposes it
  - b) To catch the runtime error and redirect to error page
  - c) Both of the above
  - d) None of the above
- 9) Which technology do we mix our business logic with the presentation logic ?
- a) Servlet
  - b) JSP
  - c) Both a & b
  - d) None of the above
- 10) Which tag is used to execute java source code in JSP ?
- a) Declaration Tag
  - b) Scriptlet tag
  - c) Expression tag
  - d) None of the above
- 11) In JSP page directive which attribute defines the MIME (Multipurpose Internet Mail Extension) type of the HTTP response ?
- a) Import
  - b) Content Type
  - c) Extends
  - d) Info
- 12) Which pattern is the struts framework based ?
- a) MVC 2 Pattern
  - b) Bridge Pattern
  - c) MVC 1 Pattern
  - d) None of the above
- 13) Which server-side component is required to be deployed on the server ?
- a) EJB
  - b) RMI
  - c) Both a & b
  - d) None of the above
- 14) What represents a persistent global data from the database ?
- a) Session Bean
  - b) Entity Bean
  - c) Both a & b
  - d) None of the above



2. Answers the following : (2×7=14)
- a) Http Tunneling.
  - b) Explain Session Management and Request Dispatcher Servlet.
3. Explain the following with examples : (2×7=14)
- a) Introduction and Architecture of RMI.
  - b) Uniform Resource Locator.
4. Explain the following with examples : (2×7=14)
- a) 4C payment methods.
  - b) Concept of cookie.
5. Explain the following with examples : 14
- a) Default Objects in JSP.
  - b) GenericServlet and HttpServlet.
6. What are Java beans ? How are these useful and used ? Explain with examples. 14
7. Write a short notes (**any two**) : 14
- a) Servlet Life Cycle
  - b) Marshalling and unmarshalling
  - c) Internet addressing.
-





4. Attempt the following : **(7×2=14)**  
A) What is State Management in Asp.Net ? Explain with example.  
B) What is Constructor ? Explain its types with example.
5. Explain the Validation controls in Asp.Net. **14**
6. Explain the Disconnected architecture of ADO.Net. **14**
7. Write short note on **(any 2)** : **(7×2=14)**  
1) Difference between C# and Java.  
2) Feature and applications of .NET  
3) Operator overloading.
-





3. Attempt the following : **(7×2=14)**  
A) Discuss the different data model used in Data Mining.  
B) Explain supervised learning with example.
4. Attempt the following : **(7×2=14)**  
A) Discuss the different types of data used in cluster analysis.  
B) Explain classification of clustering algorithm.
5. What is Apriori algorithm explain with example. **14**
6. Explain Star Schema, Snowflake Schema, Fact constellations schema for designing data warehouse. **14**
7. Write short note on **(any 2)** : **(7×2=14)**  
1) K-means  
2) Types of web mining  
3) OLAP operations.
-







- B) State whether **true** or **false** : **7**
- 1) Testing of a program consist of two phases : debugging and profiling.
  - 2) Heap is an example of priority queue.
  - 3) In multistage graph, edge may connect nodes from same vertex set.
  - 4) Queens problem is example of backtracking algorithm design technique.
  - 5) A feasible solution that either minimizes or maximizes a given objective function.
  - 6) In multistage graph, forward method and backward method were used to calculate minimum cost path.
  - 7) In Quick sort, we don't have the control over the sizes of recursive calls.
2. Attempt the following : **14**
- 1) Explain Kruskal's algorithm and Prim's algorithm to find minimum spanning tree.
  - 2) Explain Selection sort with suitable example.
3. Attempt the following : **14**
- 1) Explain uses of different asymptotic notations. Explain all notations in detail.
  - 2) Explain binary search with examples.
4. Attempt the following : **14**
- 1) Explain multistage graph with forward and backward approach.
  - 2) Explain bubble sort with suitable example.
5. Explain concept of backtracking method. Explain in detail 8 - queen problem. **14**
6. Explain Divide and Conquer techniques with examples. **14**
7. Explain Knapsack problem by using greedy method. **14**
-



Seat No.	
-------------	--

**M.C.A. Commerce (Part – II) (Semester – IV) (Old) Examination, 2017**  
**OPTIMIZATION TECHNIQUES**

Day and Date : Wednesday, 17-5-2017  
Time : 2.30 p.m. to 5.30 p.m.

Total Marks : 70

- Instructions** : 1) Q. No. 1 and Q. No. 7 are **compulsory**.  
2) Attempt **any two** questions from Q. No. 2 to Q. No. 4.  
3) Attempt **any one** question from Q. No. 5 and Q. No. 6.  
4) **All** questions carry **equal** marks.

1. A) Select the correct alternative :

7

- 1) Expected length of non-empty queue is given by
  - a)  $L = s\mu/(\mu - \lambda)$
  - b)  $L = \lambda/(\mu - \lambda)$
  - c)  $L = \mu/(\mu - \lambda)$
  - d)  $L = \lambda/(\mu + \lambda)$
- 2) A feasible solution requires that all artificial variables is
  - a) Greater than zero
  - b) Less than zero
  - c) Equal to zero
  - d) None of the above
- 3) In a zero-sum game.
  - a) What one player wins, the other loses
  - b) The sum of each player's winnings if the game is played many times must be zero
  - c) The game is fair-each person has an equal chance of winning
  - d) Long-run profits must be zero
- 4) When the total supply is equal to total demand in a transportation problem, the problem is said to be
  - a) Unbalanced
  - b) Balanced
  - c) Degenerate
  - d) None of these
- 5) In the A/B/C designation for queuing systems, the B term represents information about
  - a) Arrival rates
  - b) Service times
  - c) Number of channels
  - d) Size of the queue



- 6) Constraints in LP model represents
- |   |                 |
|---|-----------------|
| a) Limitations                            | b) Requirements |
| c) Balancing limitations and requirements | d) All of these |
- 7) The slack for activity is equal to
- |          |                      |
|----------|----------------------|
| a) LF-LS | b) EF-ES             |
| c) LS-ES | d) None of the above |

B) State **true** or **false** :

7

- 1) In crashing the project duration of non-critical activity is reduced.
- 2) Common card games are not an example of game theory.
- 3) Adding a constraint to a linear programming problem increases the size of the feasible region.
- 4) A feasible solution to an LP problem must satisfy all of the constraints simultaneously.
- 5) On a PERT network diagram, a successor activity is an activity that can be started only after the given activity is finished.
- 6) The following constraint is linear :  $A*B + 2*A \leq 20$ .
- 7) The purpose of dummy row or column in an assignment problem is to prevent a solution from becoming degenerate.

2. Solve the LP problem by using graphical method.

14

$$\text{Max } Z = 2x_1 + 3x_2$$

$$\text{Subject to } x_1 + x_2 \leq 30$$

$$x_1 - x_2 \geq 10$$

$$x_2 \geq 3, x_2 \leq 12, x_1 \leq 20$$

$$x_1, x_2 \geq 0.$$

3. Use Simplex method to solve the following problem

14

$$\text{Max } Z = 2x_1 + 5x_2$$

$$\text{Subject to } x_1 + 4x_2 \leq 24,$$

$$3x_1 + x_2 \leq 21$$

$$x_1 + x_2 \leq 9$$

$$x_1, x_2 \geq 0.$$



4. Find the basic feasible solution of the following transportation problem by North-West corner method and VAM method. Also find the optimal transportation plan.

	P	Q	R	S	T	Available
A	4	3	1	2	6	80
B	5	2	3	4	5	60
C	3	5	6	3	2	40
D	2	4	4	5	3	20
<b>Required</b>	60	60	30	40	10	

5. A) Consider the game G with the following payoff

		B <sub>1</sub>	B <sub>2</sub>
Player A	A <sub>1</sub>	2	6
	A <sub>2</sub>	-2	$\lambda$

- a) Show that G is strictly determinable, whatever  $\lambda$  may be  
 b) Determine the value of G.

- B) Define a queue. Explain components of Queuing system.

6. The table below gives data on normal time and cost and crash time and cost for a project.

Activity	Normal		Crash	
	Time (days)	Cost (Rs.)	Time (days)	Cost (Rs.)
1 – 2	6	60	4	100
1 – 3	4	60	2	200
2 – 4	5	50	3	150
2 – 5	3	45	1	65
3 – 4	6	90	4	200
4 – 6	8	80	4	300
5 – 6	4	40	2	100
6 – 7	3	45	2	80
<b>470</b>				

The indirect cost per day is Rs. 10.

- a) Draw the network for the project  
 b) Determine the critical path.  
 c) Determine minimum total time and corresponding cost.



7. A) Solve the following assignment problem :

7

	I	II	III	IV	V
1	11	17	8	16	20
2	9	7	12	6	15
3	13	16	15	12	16
4	21	24	17	28	26
5	14	10	12	11	13

B) A project schedule has the following characteristics :

7

Activity	Time (days)
1 – 2	4
1 – 3	1
2 – 4	1
3 – 4	1
3 – 5	6
4 – 9	5
5 – 6	4
5 – 7	8
6 – 8	1
7 – 8	2
8 – 10	5
9 – 10	7

Construct the network and find critical path.

---



Seat No.	
----------	--

**M.C.A. (Commerce) (Semester – V) Examination, 2017**  
**ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS**

Day and Date : Thursday, 4-5-2017  
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 70

- Instructions :**
- 1) Q. No. 1 and 7 are **compulsory**.
  - 2) Solve **any two** questions from Q. No. 2, 3 and 4. Solve **any one** question from Q. No. 5 and 6.
  - 3) Figures to the **right** indicate marks to a question or sub question.

1. Choose the correct answer :

14

- 1) What is Artificial intelligence ?
  - a) Putting your intelligence into computer
  - b) Programming with your own intelligence
  - c) Making a machine intelligent
  - d) Playing a game
  - e) Putting more memory into computer
- 2) Which is not the commonly used programming language for AI ?
  - a) PROLOG
  - b) Java
  - c) LISP
  - d) Perl
  - e) Java script
- 3) What is state space ?
  - a) The whole problem
  - b) Your definition to a problem
  - c) Problem you design
  - d) Representing your problem with variable and parameter
  - e) A space where you know the solution
- 4) A production rule consists of
  - a) A set of rule
  - b) A sequence of steps
  - c) Both (a) and (b)
  - d) Arbitrary representation to problem
  - e) Directly getting solution
- 5) Which search method takes less memory ?
  - a) Depth-First Search
  - b) Breadth-First Search
  - c) Both (a) and (b)
  - d) Linear Search
  - e) Optimal Search



- 6) A heuristic is a way of trying
- a) To discover something or an idea embedded in a program
  - b) To search and measure how far a node in a search tree seems to be from a goal
  - c) To compare two nodes in a search tree to see if one is better than the other
  - d) Only (a) and (b)
  - e) Only (a), (b) and (c)
- 7) A\* algorithm is based on
- a) Breadth-First-Search
  - b) Depth-First-Search
  - c) Best-First-Search
  - d) Hill climbing
  - e) Bulkworld problem
- 8) Which is the best way to go for game playing problem ?
- a) Linear approach
  - b) Heuristic approach
  - c) Random approach
  - d) Optimal approach
  - e) Stratified approach
- 9) How do you represent “All dogs have tails” ?
- a)  $\forall x : \text{dog}(x) \rightarrow \text{hastail}(x)$
  - b)  $\forall x : \text{dog}(x) \rightarrow \text{hastail}(y)$
  - c)  $\forall x : \text{dog}(y) \rightarrow \text{hastail}(x)$
  - d)  $\forall x : \text{dog}(x) \rightarrow \text{has} \rightarrow \text{tail}(x)$
  - e)  $\forall x : \text{dog}(x) \rightarrow \text{has} \rightarrow \text{tail}(y)$
- 10) Which is not a property of representation of knowledge ?
- a) Representational Verification
  - b) Representational Adequacy
  - c) Inferential Adequacy
  - d) Inferential Efficiency
  - e) Acquisitional Efficiency
- 11) What are you predicating by the logic :  $\forall x : \exists y : \text{loyalto}(x, y)$
- a) Everyone is loyal to some one
  - b) Everyone is loyal to all
  - c) Everyone is not loyal to someone
  - d) Everyone is loyal
  - e) Everyone is not loyal



- 12) Which is not Familiar Connectives in First Order Logic ?
  - a) and
  - b) iff
  - c) or
  - d) not
  - e) either a or b
- 13) Which is not a type of First Order Logic (FOL) sentence ?
  - a) Atomic sentences
  - b) Complex sentences
  - c) Quantified sentence
  - d) Quality sentence
  - e) Simple sentence
- 14) Which is not a goal-based agent ?
  - a) Inference
  - b) Search
  - c) Planning
  - d) Conclusion
  - e) Dynamic search

2. Answer the following :

- A) What is artificial intelligence ? Explain its applications. 7
- B) Explain constraint satisfaction problem. 7

3. Answer the following :

- A) Differentiate between procedural knowledge and declarative knowledge. 7
- B) What are the main application areas of expert system ? 7

4. Answer the following :

- A) Explain Depth First Search and Breadth First Search Algorithm in detail. 7
- B) Explain PROLOG terminology. 7

5. What are various approaches to knowledge representation ? 14

6. Explain the method of problem reduction approach to problem solving with an example. 14

7. Write short notes on (**any two**) : 14

- 1) A\* algorithm
  - 2) Expert system
  - 3) Hill climbing.
-





Seat No.	
----------	--

**M.C.A. (Semester – V) Examination, 2017**  
**COMMERCE**  
**Software Testing and Quality Assurance**

Day and Date : Saturday, 6-5-2017

Total Marks : 70

Time : 10.30 a.m. to 1.30 p.m.

- Instructions :** 1) Question No. 1 and 7 are **compulsory**.  
2) Solve **any 2** questions from Q. No. 2 to Q. No. 4.  
3) Solve **any 1** question from Q. No. 5 to Q. No. 6.

1. A) Choose the correct alternative. 7
- 1) Average time to restore a system after a failure is known as  
a) MTTR                      b) MTBF                      c) MTTA                      d) All of above
  - 2) \_\_\_\_\_ is a measure of the amount of control structure.  
a) DRE    b) LOC  
c) Cyclometric complexity                      d) Defuzzify
  - 3) \_\_\_\_\_ is an umbrella activity that is applied throughout the software process.  
a) Testing                      b) Analysis                      c) Desing                      d) SQA
  - 4) CMM level 1 is  
a) Initial                      b) Repeatable                      c) Defined                      d) Managed
  - 5) Building the right software is a  
a) verification    b) validation  
c) query    d) all of the above
  - 6) \_\_\_\_\_ testing is micro scale of testing.  
a) system    b) regression  
c) integration    d) unit
  - 7) System testing comes after \_\_\_\_\_ testing.  
a) performance    b) regression  
c) integration    d) unit



B) State **true** or **false** :

7

- 1) SIX Sigma is mostly widely used strategy for statistical quality assurance in industry today.
- 2) As reliability increases system efficiency tends to decrease.
- 3) A good test is not redundant.
- 4) Verification involves reviews and meeting to evaluate documents, plans, code, requirements and specifications.
- 5) Unit testing is done by testers.
- 6) Black box testing required knowledge of the internal program design and code required.
- 7) Final testing based on specifications of the end-user or customer is called acceptance testing.

2. Attempt the following. **(7×2=14)**

- A) What is SQA ? Explain in details.
- B) What is software reliability ?

3. Attempt the following. **(7×2=14)**

- A) Explain the testing life cycle.
- B) Discuss the acceptance testing.

4. What is test case ? Design the test cases for date and name fields. **14**

5. What is black box testing and white box testing ? **14**

6. Explain the different types of static testing techniques. **14**

7. Write short note (**any 2**) : **(7×2=14)**

- 1) Six-sigma
  - 2) Software inspection
  - 3) Non-functional testing.
-



Seat No.	
----------	--

**M.C.A. (Commerce) (Part – III) (Semester – V) Examination, 2017**  
**EMERGING TRENDS IN INFORMATION TECHNOLOGY**

Day and Date : Tuesday, 9-5-2017  
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 70

- Instructions :**
- 1) Q. No. 1 and Q. No. 7 are **compulsory**.
  - 2) Attempt **any two** questions from Q. No. 2 to Q. No. 4.
  - 3) Attempt **any one** question from Q. No. 5 and Q. No. 6.
  - 4) **All** questions carry **equal** marks.

1. A) Multiple Choice Question : (5×2=10)

- 1) A perceptron is
  - A) a single layer feed-forward neural network with pre-processing
  - B) an auto-associative neural network
  - C) a double layer auto-associative neural network
  - D) a neural network that contains feedback
- 2) An auto-associative network is
  - A) a neural network that contains no loops
  - B) a neural network that contains feedback
  - C) a neural network that has only one loop
  - D) a single layer feed-forward neural network with pre-processing
- 3) An embedded system must have
  - A) Hard disk
  - B) Processor and memory
  - C) Operating system
  - D) Processor and input-ouput unit(s)
- 4) The values of the set membership is represented by
  - A) Discrete set
  - B) Degree of truth
  - C) Probabilities
  - D) Both B and C
- 5) Fuzzy logic is a form of
  - A) Two-valued logic
  - B) Crisp set logic
  - C) Many-valued logic
  - D) Binary set logic

B) State **True-False** : (4×1=4)

- 1) Traditional set theory is also known as Crisp Set Theory.
- 2) The human retina is a thin tissue composed of neural cells that is located in the posterior portion of the eye.
- 3) On average, neural networks have higher computational rates than conventional computers.
- 4) Artificial neurons are identical in operation to biological ones.

P.T.O.



2. Explain back-propagation algorithm in feed-forward Artificial Neural Networks. **14**
3. What is embedded system ? Explain types of embedded system. **14**
4. Attempt the following : **14**
- 1) Explain the learning strategy.
  - 2) Explain fingerprint scanning in detail.
5. Attempt the following : **14**
- 1) Consider two fuzzy subsets of the set  $X$ ,  $X = \{a, b, c, d, e\}$  referred to as  $A$  and  $B$   
 $A = \{0.2/a, 0.4/b, 1/c, 0.8/d, 0/e\}$  and  $B = \{0/a, 0.9/b, 0.3/c, 0.2/d, 0.1/e\}$   
Then, calculate the following :
    - 1) Support, core, cardinality and complement for  $A$  and  $B$  independently.
    - 2) Union and intersection of  $A$  and  $B$ .
    - 3) The new set  $C$ , if  $C = A^2$ .
    - 4) The new set  $D$ , if  $D = 0.5 * B$ .
    - 5) The new set  $E$ , for an alpha cut at  $A_{0.5}$ .
  - 2) What is Fuzzy Logic ? Explain in detail.
6. What is artificial neural network ? How do Neural Networks Work ? **14**
7. Define the following : **14**
- a) Fuzzy set
  - b) Training
  - c) ANN
  - d) Activate function
  - e) Cardinality number
  - f) Weight
  - g) Fuzzy set operations.
-



Seat No.	
-------------	--

**M.C.A. (Part – III) (Semester – V) Examination, 2017**  
**(Commerce and Management Faculty)**  
**ADVANCED INTERNET TECHNOLOGY**

Day and Date : Saturday, 13-5-2017  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

- Instructions :** 1) Q. No. 1 and 7 are **compulsory**.  
2) Solve **any two** questions from Q. No. 2, 3 and 4.  
3) Solve **any one** question from Q. No. 5 and 6.

1. Multiple choice question :

14

- 1) How do you display hyperlinks without an underline ?
  - a) `a{decoration : no-underline;}`
  - b) `a{text-decoration : no-underline;}`
  - c) `a{underline : none;}`
  - d) `a{text-decoration : none;}`
- 2) How do you select an element with id “demo” ?
  - a) `#demo`
  - b) `*demo`
  - c) `.demo`
  - d) `demo`
- 3) What is the default value of the position property ?
  - a) Fixed
  - b) Relative
  - c) Absolute
  - d) Static
- 4) Which sign does jQuery use as a shortcut for jQuery ?
  - a) The % sign
  - b) The ? sign
  - c) The \$ sign
  - d) The @ sign
- 5) What is the correct jQuery code to set the background color of all p elements to red ?
  - a) `$(“p”).layout(“background-color”, “red”);`
  - b) `$(“p”).css(“background-color”, “red”);`
  - c) `$(“p”).manipulate(“background-color”, “red”);`
  - d) `$(“p”).style(“background-color”, “red”);`



- 6) Which jQuery method is used to hide selected elements ?
- a) hide()
  - b) display (none)
  - c) visible(false)
  - d) hidden()
- 7) What scripting language is jQuery written in ?
- a) C#
  - b) VBScript
  - c) JavaScript
  - d) C++
- 8) Which jQuery method should be used to deal with name conflicts ?
- a) noNameConflict()
  - b) nameConflict()
  - c) conflict
  - d) noConflict()
- 9) Which jQuery method is used to remove selected elements ?
- a) detach()
  - b) remove()
  - c) delete()
  - d) Both methods can be used
- 10) PHP server scripts are surrounded by delimiters, which ?
- a) <script>...</script>
  - b) <&>...</&>
  - c) <?php>...</?>
  - d) <?php...?>
- 11) <?php echo \$\_SERVER['REMOTE\_ADDR'];?>
- a) Shows the IP address of the local system
  - b) Shows the IP address of the visitor
  - c) Shows the IP address of the webserver
  - d) None of the above
- 12) \$str="3dollars";\$a=20;\$a+=\$str;print(\$a);?> output ?
- a) 23 dollars
  - b) 203 dollars
  - c) 320 dollars
  - d) 23
- 13) Which of the following statements invoke the exception class ?
- a) throws new Exception();
  - b) throw new Exception();
  - c) new Exception();
  - d) new throws Exception();
- 14) You can extend the exception base class, but you cannot override any of the preceding methods because they are declared as
- a) protected
  - b) final
  - c) static
  - d) private



- 2. A) Explain Cookies and Session. 7  
B) Explain CSS positioning. 7
- 3. A) Explain the GET and POST method. 7  
B) Create a drop-down list with a pre-selected value in HTML. 7
- 4. A) Explain different CSS3 background properties with example. 7  
B) Write and explain different HTML5 input elements with example. 7
- 5. A) Explain what is AJAX. 7  
B) Explain Box model in CSS3 in detail. 7
- 6. Write a code for following using jquery. 14
  - a) Hide all headings on a page when they are clicked.  
Sample Data :  

```
<body>  
<h1>Heading – 1</h1>  
<h2>Heading – 2</h2>  
<h3>Heading – 3</h3>  
</body>
```
  - b) Click a header to add another  
Sample Data :  
HTML :  

```
<h1>Click me to add another!</h1>
```
- 7. Write a code for the following using PHP : 14
  - a) Write a PHP Calculator class which will accept two values as arguments, then add them subtract them, multiply them together, or divide them on request.  
For example :  

```
$mycalc = new MyCalculator (12, 6);  
echo $mycalc->add();//Displays 18  
echo $mycalc->multiply();//Displays 72
```
  - b) Write a function to calculate the factorial of a number (a non-negative integer).  
The function accepts the number as an argument.



Seat No.	
----------	--

**M.C.A. (Commerce) (Semester – V) Examination, 2017**  
**OBJECT ORIENTED ANALYSIS AND DESIGN**

Day and Date : Tuesday, 16-5-2017  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

- Instructions:** 1) Q. 1 and Q. 7 are **compulsory**.  
2) Solve **any 2** Q. from Q. 2 to Q. 4.  
3) Solve **any 1** Q. from Q. 5 and Q. 6.

1. State **True** or **False** : **(7×2=14)**
    - 1) Abstraction is a process of identifying the key aspects of an entity and ignoring the rest.
    - 2) UML is process independent.
    - 3) Class diagrams represent the static structure in terms of classes and relationships.
    - 4) Statechart diagrams represent the behaviour of an object in terms of its state changes.
    - 5) Component diagrams represent the physical components of the application.
    - 6) An object is also represented by a rectangle.
    - 7) Aggregation expresses a relationship between a 'whole' and its 'part'.
  2. Attempt the following : **(7×2=14)**
    - 1) What is SSAD ? Discuss the benefits and its drawbacks.
    - 2) What is OOAD ? Discuss the benefits and its drawbacks.
  3. Attempt the following : **(7×2=14)**
    - 1) Draw the activity diagram for sending the Email.
    - 2) Draw the sequence diagram for ATM.
  4. What is USE Case diagram ? Discuss its notations, description with proper example. **14**
  5. What is class diagram ? Discuss its notations and draw the diagram for Library. **14**
  6. Explain association, aggregation, dependency of a class with example. **14**
  7. Write short note on (**any 2**) : **14**
    - 1) UML
    - 2) Rational unified process
    - 3) CRC approach.
-





Seat No.	
----------	--

**M.C.A. (Commerce) (Direct II Year Students) (Bridge Course)**  
**Examination, 2017**  
**DISCRETE MATHEMATICAL STRUCTURES (Paper – I)**

Day and Date : Thursday, 18-5-2017  
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

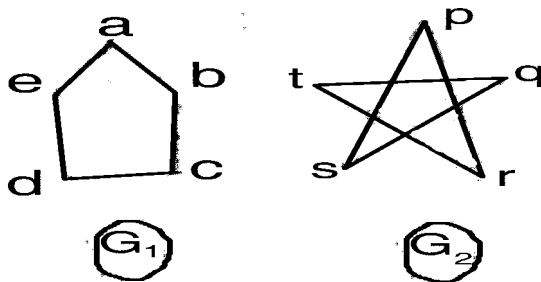
- Instructions :** 1) Q. 1 and Q. 7 are **compulsory**.  
2) Attempt **any two** questions from Q. 2 to Q. 4.  
3) Attempt **any one** question from Q. 5 to Q. 6.  
4) Figures to the **right** indicate **full** marks.

1. Fill in the blanks : **20**
- 1) The identity element of the algebraic system  $\{S, *\}$  where S is set of integers and \* is defined as  $a * b = a + b + 2$  for all a, b, • S is \_\_\_\_\_
  - 2) The zero degree vertex is called \_\_\_\_\_
  - 3) The number of regions (r) of a graph  $= e - n + 2$ , where n is number of \_\_\_\_\_ and e is number of \_\_\_\_\_ of a graph.
  - 4) A tree with n vertices has  $(n + 1)$  edges. (True/False)
  - 5) A sub-group is called \_\_\_\_\_ sub-group if its left coset is equal to right coset.
  - 6) Every function is relation. (True/False)
  - 7) The number of edges  $= n(n - 1)/2$  of a graph with n vertices then the graph is \_\_\_\_\_
  - 8) The floor function  $F(6.3) = [6.3]$  is \_\_\_\_\_
  - 9)  $\sim(p \vee q) \equiv$  \_\_\_\_\_
  - 10) If  $a * e = e * a = a$  then e is called as \_\_\_\_\_
2. A) Show that the following proposition is tautology using truth table.  
 $(p \wedge q) \vee (p \vee \sim q) \vee (\sim p \wedge q) \vee (\sim p \wedge \sim q)$ . **10**
- B) State and explain handshaking theorem. **10**
3. A) Determine whether the following arguments are valid or not.  
“If today is Monday, then there is test in computer science or in discrete mathematics. If the discrete mathematics professor is sick, there will be no test in discrete mathematics. Today is Monday and the professor of discrete mathematics is sick. Hence there will be test in computer science.” **10**
- B) Let  $(N, +)$  is an algebraic system, where + is a binary operation on the set  $N = \{0, 1, 2, 3, 4, \dots\}$ . Show that  $(N, +)$  is a monoid. **10**

P.T.O.



4. A) If  $S = \{1, 2, 3, 4, 5\}$  and if function  $f, g : S \rightarrow S$  are given by  
 $f = \{(1, 2), (2, 1), (3, 4), (4, 5), (5, 3)\}$ ,  $g = \{(1, 3), (2, 5), (3, 1), (4, 2), (5, 4)\}$ .
- i) Find  $f \circ g$  and  $g \circ f$
  - ii) Find  $f^{-1}$  and  $g^{-1}$ . 10
- B) Let  $A$  be the set of positive factors of 36 and let  $\leq$  be the relation divides such that  $\leq = \{(x, y) / x, y \in A \text{ and } x \text{ divides } y\}$ . Draw the Hasse diagram. 10
5. A) Define Graph. Explain planar graph and complete graph in detail with examples. 10
- B) Prove that premises  $p \rightarrow q, q \rightarrow r, s \rightarrow \sim r$  and  $s \rightarrow p$  are inconsistent. 10
6. A) Determine whether the following graphs are isomorphic. 10



- B) Show that  $P \rightarrow (Q \wedge R)$  and  $(p \rightarrow Q) \wedge (P \rightarrow R)$  are equivalent. 10
7. What is group code ? Find the codeword generated by the parity check matrix. 20

$$\begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

---



Seat No.	
----------	--

**M.C.A. (Commerce) Direct Second Year Students (Bridge Course)  
Examination, 2017  
OPERATING SYSTEM (Paper – II)**

Day and Date : Friday, 19-5-2017  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

- Instructions:** 1) Q. No. 1 and 7 are **compulsory**.  
2) Solve **any two** questions from Q.No. 2, 3, 4. Solve **any one** question from Q.No. 5 and 6.  
3) Figures to the **right** indicate marks to a question or sub question.

1. Multiple choice questions : **(10×2=20)**

- 1) Which of the following is contained in Process Control Block (PCB) ?
  - a) Process number
  - b) List of open files
  - c) Memory limits
  - d) All of the above
- 2) Saving the state of the old process and loading the saved state of the new process is called
  - a) Context switch
  - b) State
  - c) Multi programming
  - d) None of the above
- 3) If the Disk head is located initially at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are 98, 37, 14, 124, 65, 67.
  - a) 310
  - b) 324
  - c) 315
  - d) 321
- 4) Inter process communication can be done through
  - a) Mails
  - b) Messages
  - c) System calls
  - d) Traps
- 5) Process state is a part of
  - a) Process Control Block
  - b) Inode
  - c) File Allocation Table
  - d) None
- 6) A major problem with priority scheduling is
  - a) Definite blocking
  - b) Starvation
  - c) Low priority
  - d) None of the above



- 7) \_\_\_\_\_ does the job of allocating a process to the processor.
- a) Long term scheduler                      b) Short term scheduler  
c) Medium term scheduler                  d) Dispatcher
- 8) \_\_\_\_\_ allocates the largest hole (Free fragment) available in the memory.
- a) Best Fit    b) Worst Fit  
c) First Fit                                         d) None of the above
- 9) Page faults occurs when
- a) The page is corrupted by application software  
b) The page is in memory  
c) The page is not in main memory  
d) One tries to divide a number by 0
- 10) Semaphore can be used for solving
- a) Wait and signal                              b) Deadlock  
c) Synchronization                            d) Priority

2. Attempt the following : **(10×2=20)**

- 1) What are the system components of an operating system and explain them ?  
2) Describe in details Disk Scheduling algorithm.

3. Attempt the following : **(10×2=20)**

- 1) Write a short note on Process Control Block (PCB) by explaining its utility in process management.  
2) How processes communicate with each other ? Describe the issues related to IPC.

4. Attempt the following : **(10×2=20)**

- 1) What is page fault ? How the page fault is handled ?  
2) Find Wait Time and Turnaround Time in
- a) Preemptive and non-preemptive SJF scheduling  
b) Round Robin Scheduling with Time Quantum = 3.

	<b>Arrival Time</b>	<b>Execution Time</b>
P1	0	7
P2	2	4
P3	4	1
P4	5	4



5. Attempt the following : **(10×2=20)**
- 1) What are Semaphores ? How they are used in process synchronization ?
  - 2) Write short notes on the following :
    - i) Critical Region
    - ii) Monitors.
6. Attempt the following : **(10×2=20)**
- 1) Discuss mutual exclusion and hold and wait conditions in context to deadlock prevention.
  - 2) What are the functions of memory management in OS ? List the techniques used for memory management.
7. Attempt the following : **(10×2=20)**
- 1) Consider the following page reference string :  
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6  
How many page fault would occur for LRU page replacement algorithm assuming 3 frames ?
  - 2) Explain the Disk structure.
-