

CBCS SCHEME

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15CS51

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020

Management and Entrepreneurship for IT Industry

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Management. Explain functions of management in detail (08 Marks)
b. Explain nature and characteristics of management in detail. (08 Marks)

OR

- 2 a. Explain the levels of management. (08 Marks)
b. List the difference between administration and management. (04 Marks)
c. Explain the roles of Managers in detail. (04 Marks)

Module-2

- 3 a. Define Leadership. Explain leadership styles. (08 Marks)
b. Explain Herzberg's Hygiene theory. (08 Marks)

OR

- 4 a. Explain techniques of coordination. (08 Marks)
b. Explain steps in control process in detail. (08 Marks)

Module-3

- 5 a. Write the characteristics of Entrepreneurship and functions of entrepreneur. (08 Marks)
b. Explain types of Entrepreneurship in detail. (08 Marks)

OR

- 6 a. List the difference between Entrepreneur and Entrepreneurship. (04 Marks)
b. Explain stages of Entrepreneurial process in detail. (08 Marks)
c. Explain barriers to entrepreneurship. (04 Marks)

Module-4

- 7 a. Enumerate the content of Project report. (08 Marks)
b. Define ERP and explain its importance. (08 Marks)

OR

- 8 a. Define Project report and explain significance of report. (08 Marks)
b. Explain steps involved in Project report writing. (08 Marks)

Module-5

- 9 a. List the functions of DIC's. (08 Marks)
b. Explain KSSIDC. (08 Marks)

OR

- 10 a. List the characteristics of small scale industries. (08 Marks)
b. Explain trademark, copy rights and patents. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.

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15CS52

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Computer Networks

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain client server and peer-to-peer architecture. (08 Marks)
b. Describe HTTP with persistent and non-persistent connections. (08 Marks)

OR

- 2 a. Discuss how files are distributed in peer-to-peer application. (08 Marks)
b. Demonstrate socket implementation using TCP. (08 Marks)

Module-2

- 3 a. With a diagram, explain the connection-oriented multiplexing and de-multiplexing. (06 Marks)
b. Elaborate the three way handshaking in TCP. (05 Marks)
c. Discuss Go-Back N protocol. (05 Marks)

OR

- 4 a. With a neat sketch, explain the TCP segment and its services. (08 Marks)
b. Design rdt 2.0 protocol. (08 Marks)

Module-3

- 5 a. With general format, explain various fields of IPV6. (08 Marks)
b. Define routing algorithm. List the broadcast routing algorithms. Explain any one of them. (08 Marks)

OR

- 6 a. Illustrate Routing Information Protocol (RIP) with suitable diagram. (08 Marks)
b. Explain the spanning tree algorithm and give its advantages and disadvantages. (08 Marks)

Module-4

- 7 a. With a diagram, explain various components of GSM 2G cellular network architecture. (08 Marks)
b. With a diagram, explain the following with respect to mobile IP:
(i) Agent discovery (ii) Registration with the home agent (08 Marks)

OR

- 8 a. Illustrate the steps involved when a base station does decide to hand-off a mobile user. (08 Marks)
b. Compare mobile IP and GSM mobility. (04 Marks)
c. With a diagram, explain the problem and its solution in direct routing. (04 Marks)

Module-5

- 9 a. With a neat diagram, explain the CDN operation. (08 Marks)
b. Briefly explain the properties of Video and Audio. (08 Marks)

OR

- 10 a. Explain the working procedure of leaky bucket algorithm. (08 Marks)
b. Discuss the followings: (i) Adaptive streaming (ii) DASH (08 Marks)

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15CS53

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Database Management System

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Discuss the main characteristics of the database approach and how it differs from traditional file systems. (08 Marks)
- b. Explain the component module of DBMS and their interactions with the help of neat diagram. (08 Marks)

OR

- 2 a. Draw an ER-diagram for AIRLINE database schema with atleast five entity types and specify primary key and structural constraints and weak entity type. (10 Marks)
- b. Define the following terms:
 - i) Weak entity type
 - ii) Degree of a relationship type
 - iii) Role names and recursive relationship. (06 Marks)

Module-2

- 3 a. Discuss the different types of update operations on relational database. Explain how the basic operations deals with constraint violations. (08 Marks)
- b. Explain the data types available for attribute specification in SQL. (08 Marks)

OR

- 4 a. Consider the two tables T₁ and T₂. Show the results of the following operations:

T ₁		
P	Q	R
10	a	5
15	b	8
25	a	6

T ₂		
A	B	C
10	b	6
25	c	3
10	b	5

- i) $T_1 \bowtie_{T_1.P=T_2.A} T_2$
 - ii) $T_1 \bowtie_{T_1.Q=T_2.B} T_2$
 - iii) $T_1 \bowtie_{T_1.P=T_2.A} T_2$
 - iv) $T_1 \bowtie_{T_1.Q=T_2.B} T_2$
 - v) $T_1 \bowtie_{(T_1.P=T_2.A \text{ AND } T_1.R=T_2.C)} T_2$ (10 Marks)
- b. Explain Unary relational operations with an example. (06 Marks)

Module-3

- 5 Consider the following schema of order database
 SALESMAN (Salesmanid, name, city, commission);
 CUSTOMER (Custid, custname, city, grade, salesmanid);
 ORDERS (Ordno, purchaseamt, orddate, custid, salesmanid);
 Write SQL queries for the following:
- Find the name and numbers of all salesman who had more than one customer.
 - Count the customers with grade above Bangalore's average.
 - List all the salesman details whose first name is 'John'.
 - List all salesman and indicate those who have and don't have customers in their cities (Use UNION operation).
 - Use the delete operation by removing salesman with id = 2000. (16 Marks)

OR

- 6 a. Explain three-tier architecture with neat diagram. (08 Marks)
 b. Define stored procedure. Explain creating and calling of stored procedure with an example. (08 Marks)

Module-4

- 7 a. Define normal form. Explain 1NF, 2NF and 3NF with suitable example. (08 Marks)
 b. Discuss insertion, deletion and modification anomalies. Why are they considered bad? Illustrate with example. (08 Marks)

OR

- 8 a. Explain the four informal guidelines that may be used as measures to determine the quality of relation schema design. (08 Marks)
 b. Write an algorithm for finding a minimal cover 'F' for a set of functional dependencies 'E'. Find the minimal cover for the given set of FD's
 G: {A → BCDE, CD → E} (08 Marks)

Module-5

- 9 a. Discuss the atomicity, durability, isolation and consistency preserving properties of a database transaction. (08 Marks)
 b. Why concurrency control is needed demonstrate with example? (08 Marks)

OR

- 10 a. Discuss Two-Phase Locking Technique for concurrency control. (10 Marks)
 b. Explain NO-UNDO/REDO Recovery based on deferred update. (06 Marks)

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15CS54

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020

Automata Theory and Computability

Time: 3 hrs.

Max. Marks: 80

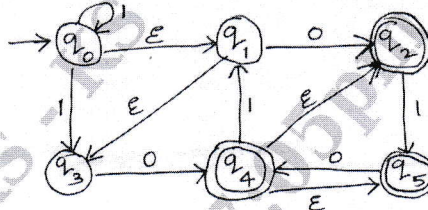
Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

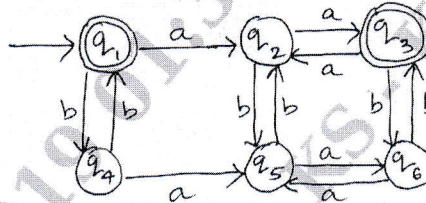
- 1 a. Briefly describe the applications of Theory of computation. (04 Marks)
- b. Define DFSM. Build DFSM for the following languages.
 - i) $L = \{w \in \{a, b\}^* : \text{every } a \text{ in } w \text{ is immediately followed by } b\}$
 - ii) $L = \{w \in \{a, b\}^* : w \text{ does not contain substring } aab\}$. (08 Marks)
- c. Describe Machine based hierarchy of language classes. (04 Marks)

OR

- 2 a. For the following NDFSM, use ndfsmtoDFSM to construct an equivalent DFSM. Begin by showing the value of eps (q) for each state q : (08 Marks)

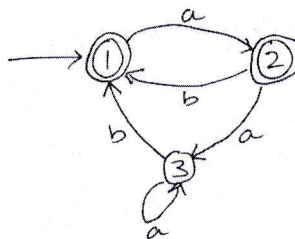


- b. Let M be the following DFSM. Use minDFSM to minimize M. (08 Marks)



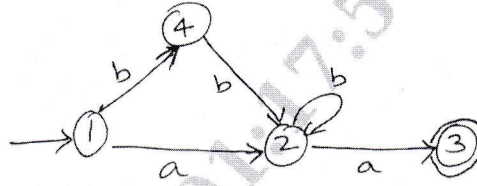
Module-2

- 3 a. Define Regular Expression. Write regular expression for the following :
 - i) $L = \{w \in \{a, b\}^* : w \text{ does not end in } ba\}$
 - ii) $L = \{w \in \{0-9\}^* : w \text{ corresponds to the decimal encoding, without leading } 0\text{'s, of an odd natural number}\}$. (06 Marks)
- b. Consider the FSM M. Use the fsmtoRegex heuristic algorithm to construct a regular expression that describes L(M). (05 Marks)



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- c. Consider the FSM M. Use fsmtoregex algorithm to construct a regular expression that describes L(M). (05 Marks)



OR

- 4 a. Show that regular languages are closed under complement and set difference. (06 Marks)
 b. State and prove pumping lemma theorem for regular languages. And show that the language $L = \{a^n b^n : n \geq 0\}$ is not regular. (10 Marks)

Module-3

- 5 a. Define CFG. Design CFG for the languages.
 i) $L = \{a^i b^j \mid 2i = 3j + 1\}$ ii) $L = \{0^{n+2} 1^n \mid n \geq 1\}$. (08 Marks)
 b. Define Chomsky Normal form. Convert the following CFG to CNF.
 $S \rightarrow aACa$
 $A \rightarrow a \mid B$
 $B \rightarrow C \mid c$
 $C \rightarrow cC \mid E$. (08 Marks)

OR

- 6 a. Define Ambiguity. Consider the grammar $E \rightarrow +EE \mid *EE \mid -EE \mid x \mid y$. Find the leftmost, rightmost derivations and parse trees for the string “+ * - xyxy”. (07 Marks)
 b. Define PDA. Design a PDA to accept the following language.
 $L = \{ww^R : w \in \{a, b\}^*\}$. Draw the transition diagram for the constructed PDA. (09 Marks)

Module-4

- 7 a. Design a TM to accept the language $L = \{a^n b^n \mid n \geq 1\}$. Obtain the transition table and transition diagram. Also show the instantaneous description for the string “aabb”. (11 Marks)
 b. Explain the working principle of TM with diagram. (05 Marks)

OR

- 8 a. State and prove pumping theorem for CFL's shown that the language $L = \{a^n b^n c^n : n \geq 0\}$ is not context free. (10 Marks)
 b. Explain the hierarchy within the class of CFL's (hierarchy of languages). (03 Marks)
 c. Show that CFL's are closed under reverse. (03 Marks)

Module-5

- 9 a. Explain Multitape TM, with diagram. (05 Marks)
 b. Prove that every language accepted by a multitape TM is acceptable by some standard TM. (06 Marks)
 c. Explain the model of Linear Bounded Automata. (05 Marks)

OR

- 10 Write short notes on :
 a. Undecidable languages.
 b. Halting problem of TM.
 c. Post correspondence problem.
 d. Church – Turing Thesis. (16 Marks)

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15CS553

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Advanced JAVA and J2EE

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is enum? With a program, explain how enumeration is used as class. (09 Marks)
b. What is autoboxing? Write a program to illustrate how auto-boxing occurs in methods and explain briefly. (07 Marks)

OR

- 2 a. What are annotations? List different built-in annotations. Explain any one. (04 Marks)
b. Define Marker annotation and single member annotation with an example. (04 Marks)
c. Write a program to obtain annotations at runtime by use of reflection. (08 Marks)

Module-2

- 3 a. What is collection framework? Explain collection interface and its methods. (08 Marks)
b. Write a java program to create an ArrayList of objects of type string. Add any five strings, display size and contents of list. Remove any two strings and display size and contents. (08 Marks)

OR

- 4 a. Write a note on TreeMap class. (06 Marks)
b. What are comparators? Explain briefly. (05 Marks)
c. Explain vector class with an example. (05 Marks)

Module-3

- 5 a. What is string? Explain different string constructors. (07 Marks)
b. Write a java program to sort array of strings using compareTo() function. (05 Marks)
c. Write a short note on replace() and substring() methods of StringBuffer class. (04 Marks)

OR

- 6 a. Write a program in java to replace all the matching substring with a given string. (06 Marks)
b. Explain indexOf() and lastIndexOf() methods of string class with an example. (05 Marks)
c. Write a note on charAt() and setCharAt() functions of StringBuffer class. (05 Marks)

Module-4

- 7 a. Explain Servlet life cycle with an example. (05 Marks)
b. Define Cookie. Write a Servlet program to add a cookie. (08 Marks)
c. List different classes and interfaces of javax.servlet package. (03 Marks)

OR

- 8 a. What is JSP? Explain different types of JSP tags. (10 Marks)
b. What is session? Explain how to create session attribute using JSP. (06 Marks)

Module-5

- 9 a. Describe the various steps of JDBC with code snippets. (10 Marks)
b. Write a note on Database Metadata and ResultSet metadata. (06 Marks)

OR

- 10 a. Write a note on different types of drivers. (04 Marks)
b. What is ResultSet? How to make ResultSet Scrollable. (04 Marks)
c. Write a Java program to execute database transaction. (08 Marks)

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15CS562

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020

Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is Artificial Intelligence? List the task domains of Artificial Intelligence. (05 Marks)
b. Explain Depth-First search algorithm with an example. (05 Marks)
c. Explain Means-Ends analysis with an example. (06 Marks)

OR

- 2 a. A water jug problem states "you are provided with two jugs, first one with 4-gallon capacity and the second one with 3-gallon capacity. Neither have any measuring markers on it. How can you get exactly 2-gallons of water into 4-gallon jug?"
i) Write down the production rules for the above problem.
ii) Write any one solution to the above problem. (08 Marks)
b. Explain problem characteristics with respect to heuristic search. (08 Marks)

Module-2

- 3 a. Explain property inheritance algorithm with example. (06 Marks)
b. Write the algorithm for conversion to clause form. (10 Marks)

OR

- 4 a. Explain forward versus Backward Reasoning with examples. (08 Marks)
b. List the issues in knowledge representation. (04 Marks)
c. Define Horn clause and give the syntactic difference between PROLOG and logic. (04 Marks)

Module-3

- 5 a. Explain Dempster-Shafer theory with example. (06 Marks)
b. Explain Partitioned Semantic Nets with example. (06 Marks)
c. Briefly explain the motivation for fuzzy logic. (04 Marks)

OR

- 6 a. Explain Bayesian network in detail. (08 Marks)
b. Write a note on Dependency-Directed Backtracking. (08 Marks)

Module-4

- 7 a. Define Conceptual Dependency. List the rules of conceptual dependency. (08 Marks)
b. Write the algorithm for minimax (position, depth, players) and explain. (08 Marks)

OR

- 8 a. What is a script? What are the components of a script? Write the Restaurant Script. (10 Marks)
b. Write the algorithm for: (i) Depth first iterative deepening (ii) Iterative deepening – A*. (06 Marks)

Module-5

- 9 a. Explain the different steps in natural language understanding process. (08 Marks)
b. Explain candidate elimination algorithm with example. (08 Marks)

OR

- 10 a. Explain knowledge acquisition. (10 Marks)
b. Explain the classification of spell checking techniques. (06 Marks)

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15CS564

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020

•Net Framework for Application Development

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define exception. With syntax and code snippets, explain try, catch, throw and finally used in exception handling. (09 Marks)
- b. Explain with code snippets optimal parameters and named arguments. (07 Marks)

OR

- 2 a. Differentiate between break and continue statements with code snippets. (02 Marks)
- b. With example, explain checked and unchecked statements and expressions. (06 Marks)
- c. Write a C# program to perform the following: Read marks obtained for 3 subjects, calculate average and display grade according to the following cases. Use switch statement.
70 ≤ avg ≤ 80 → "outstanding"
60 < avg ≤ 69 → "First class"
50 < avg ≤ 59 → "Second class"
40 < avg ≤ 49 → "Average class"
Otherwise → "Fail class" (08 Marks)

Module-2

- 3 a. Demonstrate Boxing and unboxing with code snippets. (06 Marks)
- b. Discuss two different operators to cast data safely in C#. Give examples. (06 Marks)
- c. Differentiate between class and structure. (04 Marks)

OR

- 4 a. What is a gagged array? Write a C# program to create a gagged array, populate this array with values and to display contents of the same. (06 Marks)
- b. Demonstrate ref and out parameters with suitable examples for each. (10 Marks)

Module-3

- 5 a. Write a C# program to design a method to calculate sum and average of 'n' numbers using params array. (08 Marks)
- b. What is garbage collection? Why it is needed? Explain the steps taken by garbage collector to destroy objects. (08 Marks)

OR

- 6 a. Explain inheritance with examples. How it is used in class? What are the advantages of using inheritance? (06 Marks)
- b. Define and explain abstract class and sealed class. (04 Marks)
- c. What is an interface? How it is defined in C#? Demonstrate with examples how to implement interfaces in class. (06 Marks)

Module-4

- 7 a. Explain two types of properties in C# with syntax and example for each. (06 Marks)
b. Define indexer with syntax. (02 Marks)
c. Write a C# program to create, manipulate and iterate through the contents of List Collection class. Show Add, Remove, RemoveAt and Insert methods. Give necessary comments for each method. (08 Marks)

OR

- 8 a. Write a C# program to demonstrate a generic solution for swapping of 2 integers and swapping of 2 strings. (08 Marks)
b. Differentiate between Dictionary < Tkey, Tvalues > collection class and sorted list < Tkey, Tvalues > collection class. (08 Marks)

Module-5

- 9 a. What is LINQ? With suitable example, explain ordering, grouping and aggregating data. (10 Marks)
b. Explain overloading of increment and decrement operations in C#. (06 Marks)

OR

- 10 a. Demonstrate defining an enumerator by using an iterator. (08 Marks)
b. Explain the concept of declaring an event, subscribing to an event, unsubscribing from an event and raising an event in C#. (08 Marks)
