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17CS51

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Management and Entrepreneurship for IT Industry

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define management. Explain the functional areas of management. (10 Marks)
b. Explain the steps involved in planning, and mention the importance and purpose of planning process. (10 Marks)

OR

- 2 a. Explain the contribution of F.W. Taylor to the theory of management. (10 Marks)
b. Explain types of Planning and Organization. (10 Marks)

Module-2

- 3 a. Define leadership. Explain the various leadership styles. (10 Marks)
b. Define staffing. Explain the process of recruitment and selection. (10 Marks)

OR

- 4 a. What is controlling? Explain the steps in controlling. (10 Marks)
b. What is the need for coordination and explain Maslow's hierarchy theory. (10 Marks)

Module-3

- 5 a. Explain various stages in entrepreneurial process. (12 Marks)
b. Explain technical and financial feasibility study. (08 Marks)

OR

- 6 a. List some of the most commonly attributed reasons for the lack of entrepreneurship in India. (10 Marks)
b. Differentiate between Entrepreneur, Intrapreneur and Managers. (10 Marks)

Module-4

- 7 a. Explain the objectives of market research. (10 Marks)
b. List out the various contents of project report. (10 Marks)

OR

- 8 a. Explain the guidelines by Planning Commission for Project Report. (10 Marks)
b. Discuss Enterprise Resource Planning and Supply Chain Management. (10 Marks)

Module-5

- 9 a. Explain the following: (i) NSIC (ii) DIC (iii) NIMSMIET (12 Marks)
(iv) NIESBUD (v) KSFC (vi) KIADB
b. What are the different type of patents and explain them. (08 Marks)

OR

- 10 a. Discuss case study of Microsoft. (10 Marks)
b. Discuss case study of NR Narayanamurthy and Infosys. (10 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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17CS52

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

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- Which protocol can be used for fetching web pager? Explain its working with request and response message formats. (10 Marks)
 - Explain the services offered by DNS and also explain the DNS record and message format. (10 Marks)

OR

- Explain the working of FTP along with its commands. (08 Marks)
 - Compare HTTP and SMTP. (04 Marks)
 - Illustrate how P2P architecture can be adopted in file sharing application like BitTorrent. (08 Marks)

Module-2

- Draw and explain the FSM for sender site and receiver site of rdt 2.0 protocol. (07 Marks)
 - Explain selective repeat ARQ protocol. (06 Marks)
 - Draw TCP segment structure and explain its fields. (07 Marks)

OR

- Suppose that two measured sample RTT values are 106ms and 120ms.
 - Compute Estimated RTT after each of these sample RTT values is obtained. Assume $\alpha = 0.125$ and Estimated RTT is 100ms. Just before the first of the samples obtained.
 - Compute DevRTT. Assume $\beta = 0.25$ and DevRTT is 5ms before the first of the samples obtained. (06 Marks)
 - Explain how connection establishment and termination is handled by TCP. (07 Marks)
 - What is congestion in network? Explain how TCP handles congestion. (07 Marks)

Module-3

- What is routing? With a neat diagram, explain the structure of a router. (10 Marks)
 - Write link state routing algorithm, consider the following network with the indicated link costs. Apply link state routing algorithm to compute the shortest path from 'u' to all other nodes in the network. [Refer Fig.Q5(b)]. (10 Marks)

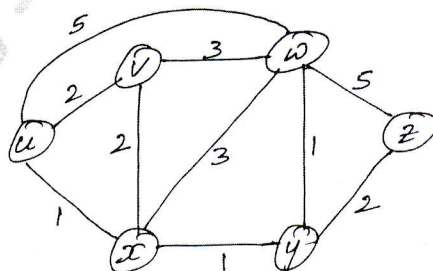


Fig.Q5(b)

OR

- 6 a. Draw IPV6 datagram format. Explain its fields. (06 Marks)
b. Illustrate the working of RIP protocol. (07 Marks)
c. List the broadcast routing algorithm. Explain any one of them. (07 Marks)

Module-4

- 7 a. With a neat diagram, explain the components of 3G cellular network architecture. (10 Marks)
b. Explain two different types of routing approaches to mobile nodes. (10 Marks)

OR

- 8 a. Explain the three phases of mobile IP. (10 Marks)
b. What is handoff? What are the steps involved in accomplishing handoff. (10 Marks)

Module-5

- 9 a. Explain three different types of streaming stored video. (10 Marks)
b. Explain the working of CDN. (10 Marks)

OR

- 10 a. Describe the leaky bucket policing mechanism. (06 Marks)
b. Explain the various packet scheduling mechanism. (08 Marks)
c. Explain the properties of Video. (06 Marks)

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17CS53

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

Database Management System

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Compare DBMS and early file systems, bringing out the major advantages of the database approach. (06 Marks)
- b. With a neat block diagram, explain the architecture of a typical DBMS. (10 Marks)
- c. What are the responsibilities of the DBA and the database designers? (04 Marks)

OR

- 2 a. Define the following terms :
i) Data model ii) Schema iii) Instance iv) Canned Transaction. (08 Marks)
- b. Draw an ER diagram to represent the Election Information System based on the following description :
In the Indian national election, a state is divided into a number of constituencies depending upon the population of the state. Several candidates contest elections in each constituency. Candidates may be from some party or independent. The election information system must record the number of votes obtained by each candidate. The system also maintains the voter list and a voter normally belongs to a particular constituency.
Note that the party details must also be taken care in the design. (12 Marks)

Module-2

- 3 a. Define the following terms : i) Key ii) Super key iii) Candidate key
iv) Primary key v) Foreign key. (05 Marks)
- b. Enumerate the steps involved in converting the ER constructs to corresponding relational tables. (07 Marks)
- c. Considering the schema
Sailors (sid, sname, rating, age)
Boats (bid, bname, color)
Reserves (sid, bid, day)
Write relational algebraic queries for the following :
i) Find names of sailors who have reserved boat # 103.
ii) Find names of sailors who have reserved a red boat.
iii) Find names of sailors who have reserved a red or green boat.
iv) Find names of sailors who have reserved all boats. (08 Marks)

OR

- 4 a. Explain with examples, the basic constraints that can be specified when a database table is created in SQL. (12 Marks)
- b. Write SQL queries for the following relational schema :
CUSTOMER (CID, CNAME, EMAIL, ADDR, PHONE)
ITEM (ITEM_NO, ITEM_NAME, PRICE, BRAND)
SALES (CID, ITEM_NO, # ITEMS, AMOUNT, SALE_DATE)
SUPPLIER (SID, SNAME, SPHONE, SADDR)
SUPPLY (SID, ITEM_NO, SUPPLY_DATE, QTY)

- i) List the items purchased by customer 'Prasanth'.
- ii) Retrieve items supplied by all suppliers starting from 1st Jan 2019 to 30th Jan 2019.
- iii) Get the details of customers whose total purchase of items worth more than 5000 rupees.
- iv) List total sales amount, total items , average sale amount of all items.
- v) Display customers who have not purchased any items. (08 Marks)

Module-3

- 5 a. What are assertions and triggers in SQL? Write a SQL program to create an assertion to specify the constraint that the salary of an employee must not be greater than the salary of the department. The employee works for in the COMPANY database. (07 Marks)
- b. Write a trigger in SQL to call a stored procedure INFORM_SUPERVISOR() whenever a new record is inserted or updated, check whether an employee's salary is greater than the salary of his or her direct supervisor in the COMPANY database. (07 Marks)
- c. How do you create a view in SQL? Give examples. Can you update a view table? If yes, how? If not, why not? Discuss. (06 Marks)

OR

- 6 a. With real world examples, explain the following : i) JDBC ii) Correlated queries
iii) Stored Procedure iv) Schema change statements in SQL. (12 Marks)
- b. Write a complete high level language program (in Java or C) to display the rows of a customer table created in oracle having < custid , custname , balance > columns with embedded SQL. (08 Marks)

Module-4

- 7 a. What are the problems caused by insertion , updation and deletion anomalies? Discuss with an example. (06 Marks)
- b. For the below given relation R (A, B, C, D, E) and its instance , check whether the FDs given hold or not. Give reasons.
i) $A \rightarrow B$ ii) $B \rightarrow C$ iii) $D \rightarrow E$ iv) $CD \rightarrow E$. (04 Marks)

A	B	C	D	E
a ₁	b ₁	c ₁	d ₁	e ₁
a ₁	b ₂	c ₁	d ₁	e ₁
a ₂	b ₂	c ₁	d ₂	e ₃
a ₂	b ₃	c ₃	d ₂	e ₂

- c. Using the minimal cover algorithm , find the minimal cover for the following FDs :
 $F = \{AB \rightarrow C , A \rightarrow D , BD \rightarrow C , D \rightarrow BG , AE \rightarrow F \}$. (10 Marks)

OR

- 8 a. Normalize the below relation upto 3NF :

Module	Dept	Lecturer	Text
M1	D1	L1	T1
M1	D1	L1	T2
M2	D1	L1	T1
M2	D1	L1	T3
M3	D1	L2	T4
M4	D2	L3	T1
M4	D2	L3	T5
M5	D2	L4	T6

(10 Marks)

- b. Define Multi valued Dependency and Join Dependency. Explain 4NF and 5NF with examples. (10 Marks)

Module-5

- 9 a. Describe the database inconsistency problems : Lost update , dirty read and blind write. (06 Marks)
- b. With a neat diagram, explain the various states of a transaction execution. (07 Marks)
- c. Check whether the below schedule is conflict serializable or not.
{b2 , r2(X) , b1 , r1(X) , w1(X) , r1(Y) , w1(Y) , w2(X) , e1, c1, e2, c2}. (07 Marks)

OR

- 10 a. What is 2PL? Explain with an example. (06 Marks)
- b. How do you detect a deadlock during concurrent transaction execution? (06 Marks)
- c. Explain the various database recovery techniques, with examples. (08 Marks)

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17CS54

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Automata Theory and Computability

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain with example,
 - (i) Strings
 - (ii) Language
 - (iii) Function on string(06 Marks)
- b. Discuss standard operations on Languages with example. (04 Marks)
- c. Construct DFSM for the following languages :
 - (i) $L = \{\omega \in \{a, b\}^* \mid \omega \text{ contains no more than one } b\}$
 - (ii) $L = \{\omega \in \{a, b\}^* \mid \omega \text{ contains Even number of } a\text{'s and odd number of } b\text{'s}\}$
 Give the transition Table and show that aabaa is accepted. (10 Marks)

OR

- 2 a. Convert the following ϵ -NFSM to DFSM by eliminating ϵ -transition.

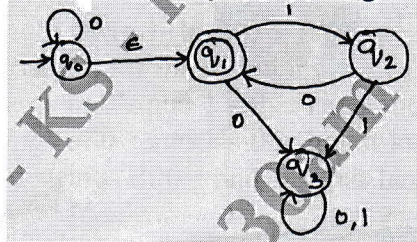


Fig. Q2 (a)

- b. Define distinguishable and indistinguishable states. Minimize the number of states in DFSM. (10 Marks)

δ	0	1
$\rightarrow A$	B	F
B	G	C
C	A	G
D	C	G
E	H	F
F	C	G
G	G	E
H	G	C

(10 Marks)

Module-2

- 3 a. Define Regular expression. Write RE for the following :
 - (i) Language of all strings of 0's and 1's that have odd number of 1's.
 - (ii) Language of all strings of 0's and 1's that has at least one pair of consecutive 0's.
 - (iii) The Language of all strings of 0's and 1's that have no pair's of consecutive 0's.(10 Marks)
- b. Prove with an example that the class of language can be defined with regular Grammar is exactly the regular language. (10 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.

OR

- 4 a. Using Kleen's theorem, prove that any language that can be defined with a Regular expression can be accepted by some FSM. (10 Marks)
- b. State and prove pumping lemma for regular language and show that the language $L = \{a^p \mid p \text{ is a prime number}\}$ is not regular. (10 Marks)

Module-3

- 5 a. Define context Free Grammar. Construct CFG for the following languages:
 (i) Balanced parantheses.
 (ii) $L = \{\omega \in \{a, b\}^* \mid \omega \text{ contains substring } ab\}$ and derive two strings for each language along with parse tree. (10 Marks)
- b. Explain deterministic PDA and construct DPDA for language given and give the trace for the string abbaab and aababb.
 $L = \{a^n b^m a^m b^n \mid m, n > 0 \text{ and } n \neq m\}$. (10 Marks)

OR

- 6 a. Discuss Chomsky normal form and Greibach normal form. Convert the following Grammar to Chomsky Normal form;
 $S \rightarrow aACa$
 $A \rightarrow B \mid a$
 $B \rightarrow C$
 $C \rightarrow cC \mid \epsilon$ (10 Marks)
- b. Explain Non deterministic PDA and construct an NPDA for the language.
 $L = \{\omega\omega^R \mid \omega \in \{a, b\}^*\}$
 Give the transition diagram and show the trace for a string abaaba. (10 Marks)

Module-4

- 7 a. State pumping Lemma for context free language. (10 Marks)
- b. Define Turing Machine. Design TM to accept the language $L = \{a^n b^n c^n \mid n \geq 1\}$. Draw the transition diagram and show the moves made by TM for the string aabbcc. (10 Marks)

OR

- 8 a. Explain with a neat diagram the working of TM and design a TM to accept all set of palidrom over $\{0,1\}^*$. Also show the transition diagram and instantaneous description on string "10101". (14 Marks)
- b. Discuss the relationship between the deterministic context free language and the languages that are not inherently ambigus. (06 Marks)

Module-5

- 9 a. With a neat diagram, explain variants of Turing Machines. (10 Marks)
- b. Explain with example,
 (i) Decidability (ii) Decidable languages (iii) Undecidable language. (10 Marks)

OR

- 10 a. Discuss Halting problem and post correspondence problem with respect to TM. (10 Marks)
- b. Define non-deterministic TM and prove that there in a deterministic TM 'M' such that, $T(M) = T(M_1)$. (10 Marks)

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17CS553

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

Advanced Java and J2EE

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. What are Enumerations? Explain values() and valueOf() methods with an example program. (05 Marks)
- b. What is Autoboxing? Write a java program that demonstrates how autoboxing and unboxing takes place in expression evaluation. (05 Marks)
- c. What are Annotations? Explain the following Built-in annotations with an example program:
@Override @Inherited @Retention (10 Marks)

OR

- 2 a. Explain the following methods of java.lang.Enum with an example program.
(i) ordinal() (ii) compareTo() (iii) equals() (10 Marks)
- b. Explain how to obtain Annotations at Run Time by use of Reflection. (10 Marks)

Module-2

- 3 a. What is collection framework? Explain the methods defined by collection interface. (10 Marks)
- b. Explain the constructors of HashSet class with an example program. (10 Marks)

OR

- 4 a. Explain the constructors of TreeSet class and write java program to create TreeSet collection. (10 Marks)
- b. Explain any four legacy classes of Java's collection framework. (10 Marks)

Module-3

- 5 a. What is string in Java? Write a java program that demonstrates any four constructors of String class. (10 Marks)
- b. Differentiate between equals() and == with respect to String comparison. (05 Marks)
- c. Explain any two character extraction methods of String class. (05 Marks)

OR

- 6 a. Explain any four String modification methods of String class. (10 Marks)
- b. Explain the following methods of StringBuffer class:
(i) append() (ii) insert() (iii) reverse() (iv) replace (10 Marks)

Module-4

- 7 a. Explain the differences between Servlets and CGI programs. (05 Marks)
- b. Write a Java Servlet program that demonstrates how parameters can be accessed from HTML. (10 Marks)
- c. Explain any two Cookies methods. (05 Marks)

OR

- 8 a. Define JSP. Explain different types of JSP tags by taking suitable example. (10 Marks)
b. List and explain core classes and interfaces in javax.servlet package. (10 Marks)

Module-5

- 9 a. Explain the four types of JDBC drivers. (10 Marks)
b. Describe the various steps of JDBC with code snippets. (10 Marks)

OR

- 10 a. Write a Java program to execute a database transaction. (10 Marks)
b. Explain :
(i) Callable Statement Object
(ii) Prepared Statement Object. (10 Marks)

CBCS SCHEME

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17CS562

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

Artificial Intelligence

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the components and categories of production system. List the requirement of good control strategies. (10 Marks)
- b. Explain steepest Hill climbing technique with an algorithm. Comment on its drawbacks and how to overcome these drawbacks. (10 Marks)

OR

- 2 a. Consider trying to solve the 8-puzzle instance given below using Hill climbing. Apply any heuristic function appropriate to solve the problem. (10 Marks)

Start state			End state		
2	8	3	1	2	3
1		4	8		4
7	6	5	7	6	5

- b. List and explain the problem characteristics which must be analyzed before deciding on a proper heuristic search. (10 Marks)

Module-2

- 3 a. Consider the following sentences:
- John likes all kinds of food.
 - Apples are food.
 - Anything anyone eats and isn't killed by is food.
 - Bill eats peanuts and is still alive.
 - Sue eats everything Bill eats.
- (i) Translate all the sentences into formulas in predicate logic.
- (ii) Convert formulas from previous step into clause form.
- (iii) Prove that John likes peanuts using resolution. (12 Marks)
- b. Differentiate between forward and backward reasoning and list the factors that influences the choice between them. (08 Marks)

OR

- 4 a. Define CNF. Give an algorithm for converting given propositions to CNF. (10 Marks)
- b. Explain the different approaches used for knowledge representation and list the qualities a good knowledge representation system should possess. (10 Marks)

Module-3

- 5 a. Explain Justification based Truth Maintenance System (JTMS). What are the two critical criterion that must be met during labeling of JTMS and illustrate with suitable example. (10 Marks)
- b. What are portioned semantic nets? Express the following quantified expression using semantic nets:
- (i) Every dog has bitten a mail carrier.
- (ii) Every dog in town has bitten the constable. (10 Marks)

OR

- 6 a. What are the key issues in non-monotonic reasoning system? Explain the two approaches used for logic representation for non-monotonic reasoning. (10 Marks)
- b. Define Bayes theorem. What are its limitations? How certainty factor is used to overcome its limitation? (10 Marks)

Module-4

- 7 a. Explain the conceptual dependency representation of an event or action. (10 Marks)
- b. Explain MINMAX search with appropriate algorithm. (10 Marks)

OR

- 8 a. What is global ontology? What are the distinctions provided by Global ontology for defining a 'thing'? (10 Marks)
- b. What are scripts? Explain the important components of a script with an example. (10 Marks)

Module-5

- 9 a. Explain the usage of Soundex Algorithm for phonetic based spell checking with suitable example. (10 Marks)
- b. Write a note on knowledge acquisition. (10 Marks)

OR

- 10 a. List and explain the steps involved in natural language processing. (10 Marks)
- b. What is Analogy based learning? Differentiate between transformations analogy and derivational analogy. (10 Marks)

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Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Dot Net Framework for Application Development

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain namespaces with programming example. (05 Marks)
- b. Define variable. Explain the details of variable like declaration, initialization, accepting the value and also rules for it. Give simple examples. (07 Marks)
- c. Explain the method with syntax. Write a C# program for method overloading and also give explanation for overloading. (08 Marks)

OR

- 2 a. Write a C# program for factorial of a given number using while and for loop. (06 Marks)
- b. Explain conditional logical operators and write C# program for the same. (06 Marks)
- c. Describe the try, catch, finally and throw keywords with a programming example. (08 Marks)

Module-2

- 3 a. Define constructors. Explain constructor overloading with programming example. (06 Marks)
- b. Describe the Static class, Static method and data with an example. (06 Marks)
- c. Explain value type and reference type and boxing and unboxing with programming example. (08 Marks)

OR

- 4 a. Briefly explain "ref" and "out" keywords with examples. (05 Marks)
- b. Define enumerations with syntax. Write C# program that display month name and its numeric value using enum. (07 Marks)
- c. Describe the structures and jagged arrays with examples. (08 Marks)

Module-3

- 5 a. Explain the concept of params array with programming example. (06 Marks)
- b. Define inheritance. Explain new methods virtual methods and override methods with examples in inheritance. (08 Marks)
- c. Explain the use of extension methods in C# with programming example. (06 Marks)

OR

- 6 a. Define interface. Demonstrate implementation of an interface with programming example. (06 Marks)
- b. Explain abstract class and abstract method, with syntax and programming example. (06 Marks)
- c. Explain the garbage collector along with working procedure. And also explain the managing system resources by garbage collector. (08 Marks)

Module-4

- 7 a. Describe the implementation of encapsulation by using methods and properties in a class with programming example. (08 Marks)
- b. List and explain the properly restrictions in C# encapsulation. (05 Marks)
- c. Define indexer. Demonstrate the use of indexers in C# with programming example. (07 Marks)

OR

- 8 a. Define Generic. Write a C# program for swapping of two numbers using generic method. (06 Marks)
- b. Define binary tree. Build a binary class by using generics. (05 Marks)
- c. Define collection class. List different collection classes and explain any one in detail. (09 Marks)

Module-5

- 9 a. Explain implementation of an enumerator by using iterator. (06 Marks)
- b. Define delegate. Explain the use of delegate in C# with an programming example. (06 Marks)
- c. Explain declaring, subscribing, unsubscribing and raising with respect to an event. (08 Marks)

OR

- 10 a. Define LINQ. Explain LINQ to selecting, filtering and ordering data with an example. (10 Marks)
- b. Explain operator overloading constraints. Write a C# program for operator + overloading. (10 Marks)
