Code: 4G141

II B.Tech. II Semester Supplementary Examinations May 2018

Computer Organization

(Common to CSE & IT)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) List and explain different interconnection structures used in multiprocessors?   7M

    b) Explain about sign magnitude and 2's complement approaches for representing the fixed point numbers. Explain why 2's complement approach is preferable   7M

OR

2. a) Simplify the following Boolean function in both Sum-of products and product-of-sums form. F(A,B,C,D) =   (0,1,2,5,8,9,10)   7M

    b) Explain about various buses such as internal, external, I/O, system, address and data bus.   7M

UNIT–II

3. a) What is Register Transfer Language? Explain few RTL statements for branching from their actual functioning.   8M

    b) For the pattern X= (A+B)*(C+D), explain three-, two-, one- and zero-address instructions by giving the syntax.   6M

OR

4.   Write short notes on the following:

        a) Register transfer language
        b) Instruction formats
        c) Addressing modes
        d) Reduced Instruction Set Computer   14M

UNIT–III

5. a) Explain why hardwired control unit is faster than micro programmed control unit.   7M

    b) What are micro-subroutines? Explain.   7M

OR

6. a) Explain micro instruction sequencing in detail.   7M

    b) What is a micro-operation? Explain the four different types of micro-operations   7M

UNIT–IV

7. a) Draw a flow chart which explains multiplication of two signed magnitude fixed point numbers.   7M

    b) Multiply 10101 and 10111 with the above procedure.   7M

OR

8.   What is Cache memory? Explain the different mapping techniques used in the usage of Cache memory.   14M

UNIT–V

9. a) What is an Input-Output processor? Explain the need for Input-Output processor   7M

    b) What is meant by pipelining? Explain   7M

OR

10. a) List and explain different asynchronous data transfer modes   7M

    b) What is DMA? What is the need for DMA? Explain the working of DMA.   7M

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Code: 5G142

II B.Tech. II Semester Regular & Supplementary Examinations May 2018
Design and Analysis of Algorithms
(Common to CSE & IT)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Define Time and Space Complexity of an algorithm. Explain how to express the complexity in asymptotic notations.   8M
    b) Explain Towers of Hanoi problem with the help of an example. Develop the pseudocode and discuss its time complexity.   6M

OR

2. a) Explain recursive functions algorithm analysis with an example.   6M
    b) Explain the method of determining the complexity of procedure by the step count approach. Illustrate with an example.   8M

UNIT–II

3. Explain quicksort algorithm with the help of an example. Give the analysis of quick sort algorithm.   14M

OR

4. Develop Pseudo code for Dijkstra's algorithm that finds the distances from a given vertex to all the other vertices of a graph represented by its weight matrix. Discuss its complexity.   14M

UNIT–III

5. Which is a more efficient way to determine the optimal number of multiplications in a matrix chain multiplication problem enumerating all the ways of parenthesizing the product and computing the number of multiplication for each or running MATRIX CHAIN ORDER? Find an optimal parenthesizing a matrix chain product whose sequence of dimensions are (5, 10, 3, 12, 5).   14M

OR

6. Explain all pair shortest path using dynamic programming with the help of an example. Write the algorithm for all pair shortest path.   14M

UNIT–IV

7. a) Define Explicit and Implicit constraint. Give examples for explicit   and implicit constraints.   7M
    b) Give the solution space organization for the 4- queen problem   7M

OR

8. a) Solve the following instance of traveling sales person problem using LCBB and draw the corresponding solution state space tree.

	1	2	3	4	5
1		7	3	12	8
2	3		6	14	9
3	5	8		6	18
4	9	3	5		11
5	18	14	9	8	

                                                                                               14M

UNIT–V

9. a) Using an example prove that satisfiability of boolean formula in 3- Conjuctive normal form is NP-Complete.   8M
    b) What does Nondeterministic Algorithm mean? Differentiate between deterministic and nondeterministic algorithm in design and analysis of algorithm?   6M

OR

10. a) What is the relationship between P, NP, NPC classes? What do you understand by Polynomial time reducibility?   8M
    b) Explain COOK's Theorem.   6M

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II B.Tech. II Semester Supplementary Examinations May 2018
Database Management Systems
(Common to CSE & IT)

Max. Marks: 70　　　　　　　　　　　　　　　　　　　　Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Identify the main components in a DBMS and explain what they do.　　7M
   b) What are the advantages of DBMS? Explain.　　7M

OR

2. a) Explain the advantages of using a query language instead of custom programs to process data.　　7M
   b) What is data independence and how does a DBMS support it?　　7M

UNIT–II

3. a) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted.　　6M
   b) Explain the following terms:
      i)　Relationship instance　　ii)　Composite attribute
      iii)　Multivalued attribute iv)　Derived attribute　　8M

OR

4. a) Name the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used?　　8M
   b) Explain the distinctions among the terms primary key, candidate key, and superkey　　6M

UNIT–III

5. a) What are views? Discuss the problems encountered in modifying database through views.　　6M
   b) Consider the following relations:
      Student(snum: integer, sname: string, major: string, level: string, age: integer)
      Class(name: string, meets at: string, room: string, fid: integer)
      Enrolled(snum: integer, cname: string)
      Faculty(fid: integer, fname: string, deptid: integer)
      Enrolled has one record per student-class pair such that the student is enrolled in the class.
      Write the following queries in SQL.
      i. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught.
      ii. Find the names of students enrolled in the maximum number of classes.　　8M

OR

6. a) Explain the differences between Triggers and constraints.　　5M
   b) Consider the following schema:
      Suppliers(sid: integer, sname: string, address: string)
      Parts(pid: integer, pname: string, color: string)
      Catalog(sid: integer, pid: integer, cost: real)
      The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL:
      i. For each part, find the sname of the supplier who charges the most for that part.
      ii. Find the sids of suppliers who supply only red parts.
      iii. Find the sids of suppliers who supply a red part and a green part.　　9M

UNIT–IV

7. a) Compare 3NF and BCNF with a suitable example.　　7M
   b) What is dependency preserving for decomposition? Explain why it is important.　　7M

OR

8. a) Explain why 4NF is more desirable than BCNF.　　5M
   b) What is Normalization? Explain briefly 1NF, 2NF & 3NF with suitable examples.　　9M

UNIT–V

9. a) Explain the distinctions between the terms Serial schedule and Serializable schedule.　　7M
   b) Why does a DBMS interleave current transactions?　　7M

OR

10. a) How is data organized in a tree-based index? When would you use a tree?　　7M
    b) Why are tree-structured indexes good for searches?　　7M

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II B.Tech. II Semester Supplementary Examinations May 2017
Managerial Economics and Financial analysis
(Information Technology)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) What is Managerial Economics?
    b) Explain the nature and scope of managerial economics

OR

2. a) What is Law of Demand? What are its exceptions?
    b) Discuss briefly the various methods of demand forecasting

UNIT–II

3. a) Distinguish between fixed and variable costs.
    b) What are the internal and external economies of scale?

OR

4. a) Describe the utilities and limitation of Break-Even Analysis.
    b) From the following data calculate the profit volume ratio , break-even point
            Fixed cost ----- Rs. 9,000
            Selling price ----Rs. 5 per unit
            Variable cost ---Rs. 3 per unit
        Suppose the price reduces to Rs. 2 per unit, what would be new the break-even point?

UNIT–III

5. a) What are the features of Monopoly?
    b)   How are price and output determined under monopoly?

OR

6. a) What are the factors governing choice of form of business organization?
    b) Explain the features of joint stock company.

UNIT–IV

7. a) Define capital budgeting. discuss the significance of capital budgeting
    b) Discuss discounted cash flow techniques of capital budgeting

OR

8.   ABC company is considering the purchase of a machine from the following:

Particulars	Machine-I	Machine-II
Life	3 years	3 years
Initial Investment	Rs. 10,000	Rs. 10,000
Net Earnings after tax :1st Year	Rs. 8,000	Rs. 2,000
2ndYear	Rs. 6,000	Rs. 7,000
3rd Year	Rs. 4,000	Rs10,000

You are required to suggest which machine should be preferred by using the following methods. The cost of capital is 10 per cent.
i) Payback period method and **ii**) Net present value method

UNIT–V

9. a) What are the principles of accounting? Explain them briefly.

   b) Journalize the following transactions for March 2015:

Date	Particulars	Amount Rs.
March 1	Vamsi started business with a capital	2,00,000
March 3	Cash deposited in to bank	1,00,000
March 5	Goods purchase for cash	40,000
March 10	Goods sold for cash	25,000
March 15	Rent Paid	10,000
March 20	Cash with drawn from bank	30,000
March 25	Goods sold Mr.Ramesh	10,000

OR

10. a) Discuss the statement 'Ratio analysis as a powerful tool' of financial analysis

   b) From the following particulars extracted from the financial statement of ABC &Co. Compute i) Current Ratio ii) Liquid Ratio iii) Inventory Turnover Ratio   iv) Gross profit Ratio v) Net profit Ratio

	Amount Rs.		Amount Rs.
Sundry Debtors	42,000	Sundry Creditors	32,000
Bills Receivable	15,000	Cash	10,000
Furniture	2,000	Closing Stock	53,000
Land and Buildings	60,000	Loose Tools	4,000
Outstanding Expenses	3,000	Prepaid Expenses	5,000
Bank Balance	8,000	Bank overdraft	15,000
Machinery	40,000		
Bills Payable	29,000	Marketable Securities	8,000
Opening Stock	47,000	Net Sales	2,52,000
Cost of goods sold	175,000	Operating Expenses	25,500

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Hall Ticket Number :

R-14

Code: 4G144

II B.Tech. II Semester Supplementary Examinations May 2018

Object Oriented Programming

(Common to CSE & IT)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

****

UNIT–I

1. a) Explain clearly how the following terms are related to Java. i. Architecture-Neutral ii. Robust iii. High-performance iv. Dynamic   7M
    b) Explain the following Object Oriented concepts with suitable examples. i) Data Encapsulation ii) Method over loading   7M

OR

2. a) Explain constructors with an example. Illustrate one scenario where constructors are used?   7M
    b) Define a class? What is the general form of a class? How objects are declared explain with an example?   7M

UNIT–II

3. a) With an example explain the effect of using final keyword in inheritance.   7M
    b) Write a program to read two numbers in one class and do the arithmetic operations on these two numbers in another class, which is stored in another package.   7M

OR

4. a) Explain with suitable example, how super class variable can refer subclass objects?   7M
    b) "Interface variables are static and final by default in Java" - Support this statement with proper explanation   7M

UNIT–III

5. a) Differentiate multitasking with multi threading?   7M
    b) Discuss about nested try statements and how such a program may be executed?   7M

OR

6. a) What is multithreading? What are the priorities given for multithreading? Explain advantages of multithreading   7M
    b) Explain various categories of the compile time errors.   7M

UNIT–IV

7. a) Write an applet to calculate student grade   7M
    b) Write a short note on boarder layout with an example?   7M

OR

8. a) Explain about the parameter passing to applets.   7M
    b) Differentiate Applet with an application?   7M

UNIT–V

9. Define sockets. Use socket programming to design a client/server application that takes the password as input and checks whether it is correct. The program should print the appropriate message.   14M

OR

10. a) Explain the steps involved in creating JCheckBox and JRadioButton?   7M
    b) What are the methods supported MouseListener interface. Explain each of them with examples?   7M

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Code: 4GC42

II B.Tech. II Semester Supplementary Examinations May 2018
Probability and Statistics
(Common to CE, ME and IT)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
****

UNIT–I

1 a) A class consists of 6 girls and 10 boys. If a committee of 3 is chosen at random from the class, find the probability that (i) 3 boys are selected (ii) exactly 2 girls are selected.   7M

   b) In a bolt factory machines A, B, C manufacture 20%, 30% and 50% of the total of their output and 6%, 3% and 2% are defective. A bolt is drawn at random and found to be defective. Find the probabilities that it is manufactured from (i) Machine A. (ii) Machine B. (iii) Machine C.   7M

OR

2 a) A random variable X is defined as the sum of the numbers on the faces when two dice are thrown. Find the mean of X.   7M

   b) A sample of 4 items is selected at random from a box containing 12 items of which 5 are defective. Find the expected number E of defective items.   7M

UNIT–II

3 a) Ten coins are thrown simultaneously. Find the probability of getting at least seven heads.   7M

   b) Fit a Poisson distribution for the following data and calculate the expected frequencies

x	0	1	2	3	4
f(x)	109	65	22	3	1

                                                                                                7M

OR

4 a) In a normal distribution 31% of the items are under 45 and 8% are over 64. Find the mean and variance of the distribution.   7M

   b) In a sample of 1000 cases, the mean of a certain test is 14 and standard deviation is 2.5. Assuming the distribution to be normal, find how many students score between 12 and 15?   7M

UNIT–III

5   A population consists of five numbers 2, 3, 6, 8 and 11. Consider all possible samples of size two which can be drawn with replacement from this population. Find a) The mean of the population. b) The standard deviation of the population. c) The mean of the sampling distribution of means and d) The standard deviation of the sampling distribution of means (i.e., the standard error of means).   14M

OR

6 a) A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative.   7M

   b) Ten bearings made by a certain process have a mean diameter of 0.5060 cm with a standard deviation of 0.0040 cm. Assuming that the data may be taken as a random sample from a normal distribution, construct a 95% confidence interval for the actual average diameter of the bearings?   7M

UNIT–IV

7 a) An ambulance service claims that it takes on the average less than 10 minutes to reach its destination in emergency calls. A sample of 36 calls has a mean of 11 minutes and the variance of 16 minutes. Test the claim at 0.05 level significance **7M**

   b) The mean yield of wheat from a district A was 210 pounds with S.D. 10 pounds per acre from a sample of 100 plots. In another district the mean yield was 220 pounds with S.D.12 pounds from a sample of 150 plots. Assuming that the S.D of yield in the entire state was 11 pounds, test whether there is any significant difference between the mean yield of crops in the two districts. **7M**

OR

8 a) 20 people were attacked by a disease and only 18 survived. Will you reject the hypothesis that the survival rate if attacked by this disease is 85% in favour of the hypothesis that is more at 5% level. **7M**

   b) A sample of 26 bulbs gives a mean life of 990 hours with a S.D of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hours. Is the sample not upto the standard. **7M**

UNIT–V

9 a) The measurements of the output of two units have given the following results. Assuming that both samples have been obtained from the normal populations at 10% significant level, test whether the two populations have the same variance.

Unit-A	14.1	10.1	14.7	13.7	14.0
Unit-B	14.0	14.5	13.7	12.7	14.1

  7M

   b) The number of automobile accidents per week in a certain community are as follows: 12, 8, 20, 2,14, 10, 15, 6, 9, 4. Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period. **7M**

OR

10 a) In one sample of 10 observations, the sum of the squares of the deviations of the sample values from sample mean was 120 and in the other sample of 12 observations, it was 314. Test whether the difference is significant at 5% level? **7M**

   b) Four coins were tossed 160 times and the following results were obtained.

No. of heads	0	1	2	3	4
Observed frequencies	17	52	54	31	6

Under the assumption that coins are balanced, finds the expected frequencies of 0, 1, 2, 3 or 4 heads, and test the goodness of fit at a level of significance 0.05? **7M**

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