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Code: 4G141

II B.Tech. II Semester Supplementary Examinations December 2017

**Computer Organization**

( Common to CSE &amp; 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) Represent the decimal numbers -7.1 and -2.01 in 32-bit floating point notation (IEEE standard 754). 7M
- b) Convert the following boolean function to its canonical form:  
 $F(A, B, C, D) = (0, 1, 2, 4, 6, 12)$ . 7M

**OR**

2. a) Simplify the following expressions using Boolean algebra:  
 i)  $AB' + A'B'C' + A'BC$       ii)  $A'B + A(C'D + CD')$  6M
- b) Represent the decimal 8264 in BCD code, excess-3 code, 2421 code and as an unsigned binary number. 8M

**UNIT-II**

3. a) Design a 4-bit incrementer circuit. 4M
- b) Represent the following conditional control statement by two register transfer statements with control functions:  
 If  $(P=1)$  then  $(R1 \leftarrow R2)$     else if  $(Q=1)$  then  $(R1 \leftarrow R3)$ . 10M

**OR**

4. a) What do you mean by Complex Instruction Set Computer (CISC)? Discuss relative advantages and disadvantages of such instruction set design. 6M
- b) Explain the different phases of an instruction cycle. What happens in case an instruction has some memory operands? 8M

**UNIT-III**

5. a) Define and differentiate between microprogrammed control unit and hardwired control unit. Point the relative pros and cons of each organization. 8M
- b) Explain about address sequencing in a microprogrammed control organization. 6M

**OR**

6. Assume that the control memory of a microprogrammed control unit has 4096 words with 24 bits each. Draw the block diagram for the selection for address for this control memory. Also find the i) number of bits in the control address register, ii) the number of multiplexers required and iii) number of inputs in each multiplexer. 14M

**UNIT-IV**

7. Multiply the two signed binary integers using the Booth's multiplication algorithm:  
 $A=100101, B=011011$  14M

**OR**

8. a) Design a 8M X 32 memory module using memory chips of capacity 512K X 8. 6M
- b) With a flowchart, illustrate the addition and subtraction of floating point numbers. 8M

**UNIT-V**

9. a) What do you mean by handshaking? With neat diagrams, explain the difference between source initiated and destination initiated asynchronous data transfers. 8M
- b) What do you mean by DMA? With a neat block diagram, explain the working of this mode of data transfer. 6M

**OR**

10. a) Why are interleaved memory organizations very effective for pipelined and vector processors? Explain the multiple module interleaved memory organization with an example. 8M
- b) Explain how the floating point addition subtraction operation can be devised as a 4-stage pipeline. Draw the corresponding arithmetic pipeline. 6M

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Code: 5G441

II B.Tech. II Semester Regular Examinations May 2017

**Database Management Systems**

( Common to CSE &amp; 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) What are the different types of user interface designed for database users? Discuss the main activities of each. 7M
- b) Briefly discuss about architecture of database system with diagram. 7M

**OR**

2. a) List four significant difference between a file processing system and a DBMS. 7M
- b) Explain various query processor components and its functions. 7M

**UNIT-II**

3. Draw ER diagram for the company database incorporating all the ER notations with explanation. 14M

**OR**

4. a) What are the steps in designing a database? 7M
- b) With examples, explain enforcing integrity constraint. 7M

**UNIT-III**

5. a) Write SQL statement to get a list of out-of-warranty products that have been stored more than 90 days. 7M
- b) Briefly discuss about virtual table. 7M

**OR**

6. a) Write SQL statement to see a listing of all rows for which the vendor code is not 21344. 7M
- b) With an example, explain trigger and its needs. 7M

**UNIT-IV**

7. a) Compute the closure of the following set F of functional dependencies for relation schema r (A, B, C, D, E). 7M
- A BC  
CD E  
B D  
E A
- b) With an example, explain 1<sup>st</sup> normal form(NF). 7M

**OR**

8. a) Give an example of a relation schema R and a set of dependencies such that R is in BCNF but is not in 4NF. 7M
- b) With an example, explain 2<sup>nd</sup> normal form(2 NF). 7M

**UNIT-V**

9. a) How does a B+ tree index handle search, insert and delete? 7M
- b) With diagram, explain tree structure index. 7M

**OR**

10. a) Describe how search, insert and delete operations work in ISAM indexes. 7M
- b) How data organized in a hash-based index. When would you use a hash-based index? 7M

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Hall Ticket Number :

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**R-14**

**Code: 4G441**

II B.Tech. II Semester Supplementary Examinations December 2017

**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) Draw the architecture of DBMS and explain the functionality of each component in it? 7M
- b) Describe about the three levels of Data Abstraction? 7M

**OR**

2. a) Differentiate data base system and file system. Discuss the benefits of data base system applications 7M
- b) Explain relational, Network data models diagrammatically 7M

**UNIT-II**

3. a) Discuss various Integrity Constraints with suitable examples 7M
- b) Explain aggregation and weak entity sets with suitable examples 7M

**OR**

4. What is meant by logical database design? Explain with examples 14M

**UNIT-III**

5. a) What is a foreign key constraint? 6M
- b) What are the SQL constructs to modify the structure of tables, views and to destroy the tables and views? 8M

**OR**

6. a) Explain the following in SQL with examples 6M
  - i) Nested queries
  - ii) EXISTS keyword
- b) What is trigger? Explain with an example 8M

**UNIT-IV**

7. a) What is normalization? Discuss first and second normal forms with examples 10M
- b) Write about the Functional dependency 4M

**OR**

8. a) Discuss the problems caused by redundancy 7M
- b) Explain BCNF with examples 7M

**UNIT-V**

9. a) What are the ACID properties? Illustrate them through examples 7M
- b) Write about Transaction Serilizability 7M

**OR**

10. a) Explain various file organization techniques in detail 6M
- b) Discuss B+ trees with suitable examples 8M

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Hall Ticket Number :																			
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**R-14**

**Code: 4G144**

II B.Tech. II Semester Supplementary Examinations December 2017

**Object Oriented Programming through JAVA**

( 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) What are the features of JAVA programming language? 7M
- b) Explain various data types, scope and life time of the variables? 7M

**OR**

- 2. a) Explain constructor overloading with an example 7M
- b) Illustrate the usage of this keyword 7M

**UNIT-II**

- 3. a) What are the differences between private, static and final variables 7M
- b) What is inheritance? Explain different types of inheritances

**OR**

- 4. a) Write the differences between class and interfaces 7M
- b) What is package? How do create a package? Explain about access protection in packages? 7M

**UNIT-III**

- 5. a) Enumerate the differences between checked and unchecked exceptions in java? Explain 7M
- b) What is Synchronization? Why is thread synchronization important for Multithreaded programs 7M

**OR**

- 6. a) What is the use of throw, throws and finally keywords? Explain with examples for each. 7M
- b) Describe inter-thread communication with a suitable example 7M

**UNIT-IV**

- 7. a) Explain the applet lifecycle? What are the different types of applets 7M
- b) What are two important TCP socket classes? Explain. 7M

**OR**

- 8. a) Explain passing parameters to applets with an example 7M
- b) Explain the collection classes: Stack, StringTokenizer and Date 7M

**UNIT-V**

- 9. a) Illustrate the usage of swing buttons 7M
- b) What are the limitations of AWT? 7M

**OR**

- 10. a) What is Event delegation model? Explain it? What are the benefits of it? 7M
- b) Explain each of the methods of MouseListener 7M

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Code: 4GC42

II B.Tech. II Semester Supplementary Examinations December 2017

**Probability and Statistics**

( Common to CE, ME &amp; 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) Box A contains nine cards numbered 1 to 9 and box B contains five cards numbered 1 to 5. A box is chosen at random and a card is drawn, if the card shows an even number another card is drawn from the same box, if the card shows an odd number, a card is drawn from the other box.
- (i) What is the probability that the both cards show an even number?
- (ii) If both cards show even number, what is the probability that they come from box A.
- (iii) What is the probability that both cards are odd? 7M
- b) i. If A and B are independent events. Then prove that  $A^c$  and  $B^c$  are also independent events.
- ii. If A and B are independent events. Then show that A and  $B^c$  are also independent events 7M

**OR**

2. a) If X is a continuous random variable and  $y = ax + b$ , prove that  $E(y) = a E(X) + b$  and  $V(y) = a^2 V(x)$  7M
- b) A continuous random variable is given by  $f(x) = \begin{cases} k(1-x^2), 0 < x < 1 \\ 0, otherwise \end{cases}$ .
- Find i) k, ii) mean iii) variance. 7M

**UNIT-II**

3. a) Explain the properties and importance of Normal Distribution. 7M
- b) If a poisson distribution is such that  $P(x=1) = \frac{3}{2} P(x=3)$ . Find
- (i)  $P(x=1)$  (ii)  $P(x=3)$  (iii)  $P(2 < x < 5)$  7M

**OR**

4. In a Normal distribution 31% of the items are under 45 and 8% are 64. Find the mean and standard deviation of the distribution. 14M

**UNIT-III**

5. A population consists of 5, 10, 14, 18, 13, 24. Consider all possible samples of size 2 which can be drawn without replacement from the population. Find
- i. The mean of the population
- ii. The standard deviation of the population
- iii. The mean of the sampling distribution of means
- The standard deviation of sampling distributions of means. 14M

**OR**

6. a) Find 95% confidence limits for the mean of a normality distributed population from which the following sample was taken 15,17,10,18,16,9,7,11,13,14. 7M
- b) What is the maximum error one can expect to make with probability 0.90 when using the mean of a random sample of size  $n=64$  to estimate the mean of population with variance 2.56. 7M

UNIT-IV
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7. a) A sample of 64 students have a mean weight of 70 kgs. Can this be regarded as a sample from a population with mean weight 56 kgs and standard deviation 25 kgs. 7M
- b) Random samples of 400 men and 600 women were asked whether they would like to have a flyover near their residence. 200 men and 325 women were in favor of the proposal. Test the hypothesis that proportions of men and women in favor of the proposal are same, at 5% level. 7M

OR

8. a) Experience had shown that 20% of a manufactured product is of the top quality. In one day, production of 400 articles only 50 are of top quality. Test the hypothesis at 0.05 level. 7M
- b) In a study on the influence of habitation, the intelligent quotients (IQs) of 16 students from urban area was found to have a mean of 107 and standard deviation of 10, while the IQs of 14 students from a rural area showed a mean of 112 and standard deviation of 8. Determine whether the IQs differ significantly at 0.05 level. 7M

UNIT-V
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9. From the following data find whether there is any significant liking in the habit of taking soft drinks among the categories of the employees.

Soft drinks	Clerks	Teachers	Officers
Pepsi	10	25	65
Thumsup	15	30	65
Fanta	50	60	30

14M

OR

10. Fit a poisson distribution and test the goodness of it for the following data.

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

14M

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