CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular Examinations February-2024
Course Name: COMPUTER ORIENTED STATISTICAL METHODS
(Common for IT & CSD)

Date: 05.02.2024 AN   Time: 3 hours   Max.Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1.	Explain about Condition Probability	1 M
2.	Define product rule.	1 M
3.	Explain about probability density function of continuous random variable.	1 M
4.	If X and Y be two independent random variables, then E(XY)=	1 M
5.	When the distribution is said to be standard distribution.	1 M
6.	Write any two characteristics of normal distribution.	1 M
7.	What is confidence interval?	1 M
8.	Explain about null hypothesis.	1 M
9.	State the important aspects for a stochastic process.	1 M
10.	Define absorbing state.	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). A manufacturing firm employs three analytical plans for the design and development of a particular product. For cost reasons all three are used at varying times. In fact plans 1,2 and 3 are used for 30%, 20% & 50% of the products respectively. The defect rate is different for the three procedure as follows,   **10M**

$$P(D/P_1) = 0.01 \ , P(D/P_2) = 0.03 \ , P(D/P_3) = 0.02$$

Where $P(D/P_j)$ is the probability of a defective product, given plan j. If a random product was observed and found to be defective, which plan was most likely used and thus responsible?

OR

11. B). i) A Town has two fire engines operating independently. The probability that a specific engine is available when needed is 0.96.   **5M**

   (a) What is the probability that neither is available when needed?
   (b) What is the probability that a fire engine is available needed?

   ii) A pair of fair dice is tossed. Find the probability of getting   **5M**
      (a) a total of 8 (b) at most a total of 5

12. A). The probability that a patient recovers from a rare blood disease is 0.4.If 15 people are known to have contracted this disease, what is the probability that   **10M**

   (i)   At least 10 survive
   (ii)   From 3 to 8 survive and
   (iii) Exactly 5 survive

(P.T.O..)

12. B). Out of 800 families with 5 children each , how many would you expect to have   10M
i) 3 boys   ii) 5 girls   iii) either 2 or 3 boys   iv) atleast one boy.
Assume equal probabilities for boys and girls.

13. A). A company pays its employees on average wage of $.15.90 an hour with a standard   10M
deviation $.1.50. If the wages are approximately normally distributed and paid to the
nearest cent

(i) What is probability of the workers receive wages between $13.75 and $16.22 an hour
inclusive.

(ii) What is the probability of workers receive wages greater than $ 17.

OR

13. B). i) Given a standard normal distribution , find the value of ' k ' such that   5M

(a) $P(z > k) = 0.2946$

(b) $P(z < k) = 0.0427$

(c) $P(-0.93 < z < k) = 0.7235$

ii) A pair of dice is rolled 180 times , what is the probability that a total of 7 occurs
   5M

  a) Atleast 25 times
  b) Between 33 and 41 times inclusive.
  c) Exactly 30 times

14. A). A random sample of 100 recorded deaths in the united states during the past year showed   10M
an average life span of 71.8 years. Assuming a population standard deviation of 8.9 years,
does this seem to indicate that the mean life span today is greater than 70 years? Use a
0.05 level of significance.

OR

14. B). A survey of 1000 students found that 274 chose professional cricket team A as their   10M
favourite team. In a similar survey involving 760 students, 240 of them chose team A as
their favourite. Is there any significant difference between the proportions of students
favouring team A in the two surveys.

15. A). In a town only two brands of LED are available X & Y. Let each of these two brands have   10M
exactly 50% of the total market in same period and let market be of a fixed size. The
transition matrix is given below:

$$From\, n = 0 \quad \begin{array}{c} X \\ Y \end{array} \begin{bmatrix} 0.8 & 0.2 \\ 0.5 & 0.5 \end{bmatrix} \quad \begin{matrix} X & Y & (to\ n = 1) \end{matrix}$$

If the initial market share break down is 50% for each brand, then determine market share
in steady state.

OR

15. B). Consider the Markov chain with three states, $S = \{1,2,3\}$ that has the following transition   10M
matrix:

$$P = \begin{bmatrix} \dfrac{1}{2} & \dfrac{1}{4} & \dfrac{1}{4} \\ \dfrac{1}{3} & 0 & \dfrac{2}{3} \\ \dfrac{1}{2} & \dfrac{1}{2} & 0 \end{bmatrix}$$

i) If we know $P(X_1 = 1) = P(X_1 = 2) = \dfrac{1}{4}$,Find $P(X_1 = 3, X_2 = 2, X_3 = 1)$

ii) Find Steady- State Probabilities.

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular Examinations February-2024
Course Name: COMPUTER ORGANIZATION AND ARCHITECTURE
(Common for CSM, CSD & AIM)

Date: 07.02.2024 AN | Time: 3 hours | Max.Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark. 10x1=10M

1. Write the structure of buses used in computer system? 1 M
2. How to specify the internal organization of a digital computer? 1 M
3. Define Microinstruction. 1 M
4. What is the role of control memory in micro programmed control? 1 M
5. Define fixed point representation. 1 M
6. Why do we use dividend alignment while performing division operation of binary numbers. 1 M
7. Define pages, blocks and page frames. 1 M
8. Define asynchronous bus. 1 M
9. Define cache coherence. 1 M
10. What is inter- process arbitration? 1 M

PART-B
Answer the following. Each question carries TEN Marks. 5x10=50M

11.A). Write in detail about Memory Reference Instructions and Register Reference instructions. 10M

OR

11. B). Explain in detail about Timing and Control. 10M

12. A). Explain the process of design of Micro Program with example also explain with a timing diagram. 10M

OR

12. B). Explain in detail about Instruction formats and addressing modes. 10M

13. A). i) How many bits are needed to store the result addition, subtraction, multiplication and division of two n-bit unsigned numbers. Prove. 5M
ii) Explain about decimal arithmetic unit. 5M

OR

13. B). i) IEEE Standard for Binary Floating-Point Representation 5M
ii) Explain Floating point arithmetic for Addition and Subtraction 5M

14. A). i) Explain how I/O devices can be interfaced with a block diagram. 5M
ii) How data transfers can be controlled using handshaking technique? 5M

OR

14. B). i) What is DMA? Explain 5M
ii) Explain about serial communication. 5M

(P.T.O..)

15. A). i) Write the major characteristics of RISC processors   5M
ii) Draw a space-time diagram for a four-segment pipeline showing the time it takes to   5M
process six tasks and explain.

OR

15. B). i) Write about Vector Processing.   5M
ii) Write about Array processing.   5M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular Examinations February-2024
Course Name: ELECTRONICS DEVICES AND CIRCUITS
(Common for CSE, IT, CSC, CSM, CSD & AID)

Date: 09.02.2024 AN　　　　　　Time: 3 hours　　　　　　Max.Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.　　　　　　**10x1=10M**

1. Show the circuit diagram of the PN junction diode under the forward biased condition.　1 M
2. Recall the PN junction diode current equation.　1 M
3. List the two applications of rectifiers.　1 M
4. Show the circuit diagram of the bridge rectifier.　1 M
5. What is the relationship between α and β of a transistor?　1 M
6. Show the circuit diagram of a transistor when it is in the active region.　1 M
7. What is the Shockley equation of a junction field effect transistor?　1 M
8. Define the pinch-off voltage of a JFET.　1 M
9. Show the circuit diagram of a Zener diode as a voltage regulator.　1 M
10. Show the symbol of a UJT.　1 M

PART-B
Answer the following. Each question carries TEN Marks.　　　　　　**5x10=50M**

11.A). Explain the operation of a PN junction diode under forward and reverse biased conditions with the help of suitable diagrams.　10M

OR

11. B). Illustrate the forward and reverse characteristics of a PN junction diode and also write the equations for static and dynamic resistances.　10M

12. A). Explain the operation of a full-wave rectifier with a suitable diagram and also derive the expressions for the average DC load current and the RMS value of the load current.　10M

OR

12. B). Determine the power delivered to the load, the percentage of regulation at full load, the rectification efficiency, and the secondary's TUF when a transformer with a center-tapped secondary winding feeds a full wave rectifier circuit. From either end of the secondary to the center tap, the rms voltage is 25V. Given a load of 2kΩ and a diode with a forward resistance of 4Ω and a secondary resistance of 10Ω.　10M

13. A). Explain the input and output characteristics of a common-emitter configuration with a suitable diagram.　10M

OR

13. B). Determine the current will flow in the collector circuit of this transistor when connected in CE configuration with a base current of 30μA when a transistor operating in CB configuration has $I_C = 2.98$mA, $I_E = 3$mA and $I_{CO} = 0.01$mA.　10M

(P.T.O..)

14. A). Construct an n-channel JFET and explain its operation in detail with a suitable diagram.   10M

OR

14. B). Choose a datasheet of a JFET gives the following information: I_{DSS} = 4mA, $V_{GS\ (off)}$ = -9V   10M
and $g_{m(max)}$ = 4000μs. Determine the transconductance for V_{GS} = -3V and find drain
current I_D at this point.

15. A). Construct and explain the workings of LEDs in detail with a suitable diagram.   10M

OR

15. B). Construct and explain the workings of a tunnel diode in detail with a suitable diagram.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular Examinations February-2024
Course Name: OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Common for CSE, CSC & CSD)

Date: 12.02.2024 AN   Time: 3 hours   Max.Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1. What is meant by JVM.   1 M
2. Define constructor.   1 M
3. What is substitutability?   1 M
4. Define interface.   1 M
5. What is meant by Exception.   1 M
6. Define Daemon thread.   1 M
7. How to create check box?   1 M
8. Define frame.   1 M
9. What is meant by application.   1 M
10. Define JDBC.   1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). List and explain Java Buzz words.   10M

OR

11. B). i) Write a java program to count the number of digits present in a string.   5M
ii) Write a java program to print prime numbers of a given number.   5M

12. A). List out forms of inheritance? Explain construction form of inheritance with an example program   10M

OR

12. B). Solve the issue of multiple inheritances with the help of interface.   10M

13. A). Write a program to implement exception handling using try with three catch blocks and one finally block.   10M

OR

13. B). Solve the given problem using synchronization of threads: Thread A should write the contents into a file. Thread B should read the contents from the file. The content written by Thread A and the content read by Thread B should be displayed on the screen.   10M

14. A). What is the significance of Layout Managers? Discuss any two Layout Managers with an example program.   10M

OR

14. B). i) Write a program to accept two numbers in text fields and print result in third textfield when add button is clicked using AWT.   5M
ii) Explain about Tabbed Panes with an example.   5M

(P.T.O...)

15. A). Write a java program to illustrate key events.   10M

OR

15. B). Write a Java program to demonstrate the Life Cycle of an applet.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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B.Tech III Semester Regular Examinations February-2024
Course Name: DATABASE MANAGEMENT SYSTEMS
(Common for CSE, CSC & CSD)

Date: 14.02.2024 AN	Time: 3 hours	Max.Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1.	Differentiate between schema and data model.	1 M
2.	Give an example for total participation and partial participation.	1 M
3.	List the types of Data Integrity.	1 M
4.	What is Domain Relational calculus?	1 M
5.	Differentiate between Trigger and view.	1 M
6.	Define Functional Dependency.	1 M
7.	Define Transaction	1 M
8.	What is multiple granularity locking?	1 M
9.	What is hashing? Give an Example.	1 M
10.	What are the advantages of using tree structured indexes?	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). What is data independence? Explain the different types of data independence.   10M

OR

11. B). State and explain additional features of E-R models.   10M

12. A). What is the purpose of integrity constraints? Discuss integrity constraints briefly.   10M

OR

12. B). Write short notes on difference, union, rename and cartesian product operations in relational algebra.   10M

13. A). Consider following schema and write SQL for given statements.   10M
       Student (Rollno, Name, Age, Sex, City)
       Student_marks (Rollno, Sub1, Sub2, Sub3, Total, Average)
   Write query to
      i). Calculate and store total and average marks from Sub1, Sub2 & Sub3.
      ii). Display name of students who got more than 60 marks in subject Sub1.
      iii). Display name of students with their total and average marks.
      iv). Display name of students who got equal marks in subject Sub2.

OR

13. B). Compare the following normal forms with examples.   10M
      i). 3NF and BCNF
      ii). 4NF and 5NF.

(P.T.O..)

14. A). Discuss about Conflict serializability and view serializability.   10M

OR

14. B). Demonstrate the concepts of Log Based Recovery and Recovery with Concurrent   10M
Transactions.

15. A). What are the indexed data structures? Describe them briefly.   10M

OR

15. B). What is the limitation of index-sequential file? Explain with example how B+ tree   10M
overcomes it.

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