

1. Attempt any three questions from each section
2. Answers to the two sections must be written in same answer sheet.
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Section I

- Q. 1 A Define: 6
1) Ambiguity 2) Parser.
B Define regular expression and draw the transition diagram for the following 6
expressions:-
1) ab^*cbb 2) $(0^*+1).(01)^*$
- Q. 2 A Explain Call by reference , Call by Value and Call by Name. 6
B Explain Backtracking with suitable example. 6
- Q. 3 A Consider the following grammar. 6
 $S \rightarrow iCtS$
 $S \rightarrow iCtSeS$
 $S \rightarrow a$
 $C \rightarrow b$
Show the step by step derivation of the string $ibtibtaea$ and also draw the parse tree for the string.
B Explain Left recursion with suitable example. 6
- Q. 4 A Explain recursive descent parser with suitable example. 6
B List various operators used in programming languages. 6
- Q. 5 A Write a short note on cross compiler. 6
B List Various types of statements used in High level programming language. 6

Section II

- Q. 6 A Derive three address code for $Q>P$ AND $T>U$ AND $P>T$ 6
B Explain loop unrolling and loop jamming optimization techniques. 7
- Q. 7 A Explain syntax direction translation scheme for following programming 6
constructs.
(i) Procedure calls
(ii) Declarations
B Differentiate between error recovery and error repair. State and explain 7
different types of errors that a compiler needs to handle.
- Q. 8 A What is data flow analysis? Explain backward flow problems. 6
B Explain code generation algorithm. 7
- Q. 9 A Define DAG. Explain the algorithm for DAG construction. 6
B Write a note on activation record for C procedure. 7
- Q. 10 A What is addressing mode? What addressing modes are used in assembly 6
language of a general purpose microprocessor?
B Explain peephole optimization. 7

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Section I

- 1 **A** Compare IIR systems with FIR systems. **6**
- B** If $x[n] = \{1, 2, 2, 1, 3, 1\}$ is a periodic signal. Plot it in circular representation for- i) $x[-n]$ ii) $x[n-2]$ iii) $x[n+2]$ iv) $x[-(n-2)]$ v) $x[-(n+2)]$ **6**
- 2 **A** Write a detailed note on biomedical applications of DSP processors. **6**
- B** If $x(n) = \{3, 4, 0, 6\}$ Find DFT $X[k]$. **6**
- 3 **A** Explain the significance of Carl's Correlation Coefficient Algorithm in digital signal processing. Evaluate Carl's Coefficient for two casual sequences $x[n] = \{2, 4, 4, 8\}$ and $y[n] = \{1, 1, 2, 2\}$ **6**
- B** For the causal signal $x(n) = \{2, 2, 4, 4\}$ compute four point DFT using DIT-Fft. **6**
- 4 **A** Find the cross correlation of two causal sequences $x[n] = \{2, 3, 1, 4\}$ and $y[n] = 3\delta(n-3) - 2\delta(n) + \delta(n-1) + 4\delta(n-2)$ **6**
- B** For the FIR digital filter with impulse response given by $h(n) = 2\delta(n-4)$ sketch the magnitude response of the filter. **6**
- 5 **A** Define BIBO Stable system. **6**
- B** Determine output response of the LTI system using time domain method, whose input is $x[n] = 3\delta[n+1] - 2\delta[n] + \delta[n-1] + 4\delta[n-2]$ and $h[n] = 2\delta[n-1] + 5\delta[n-2] + 3\delta[n-3]$ **6**

Section II

- 6 **A** Check whether the system $y[n] = a^n u[n]$ is :
i) Static or Dynamic ii) Linear or Non-linear iii) Casual or Non-casual
iv) Shift variant or shift Invariant **7**
- B** Write a detailed note on speech recognition **7**
- 7 **A** Explain any five properties of DFT. **6**
- B** Compute linear convolution of the casual sequences $x[n] = \{2, -3, 1, -4, 3, -2, 4, -1\}$ and $h[n] = \{2, -1\}$ using overlap save method. **7**
- 8 **A** Compare microprocessor with digital signal processor. **6**
- B** Compute DFT of sequence $x(n) = \{1, 2, 2, 2, 1, 0, 0, 0\}$. using DIT-FFT algorithm. **7**
- 9 **A** Explain the following properties of DFT :
i) Periodicity ii) Linearity iii) Time Shift iv) Circular Convolution
v) Time Reversal **6**
- B** Compute linear convolution of the casual sequences $x(n) = \{7, 6, 4, 5, 2, 4, 5, 2, 3\}$ and $h(n) = \{1, 2, 3, 1\}$ using overlap save method. **7**
- 10 **A** Evaluate DFT of $x(n) = \cos(0.25\pi n)$. **6**
- B** Perform Cross correlation of the casual sequences $x(n) = \{3, 3, 1, 1\}$, $y(n) = \{1, 2, 1\}$. **7**

(3 Hours)**(Total Marks : 75)**

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Section I

- | | | | |
|-----|---|---|---|
| Q1. | A | Write a note on signal propagation. | 6 |
| | B | Explain the system architecture of DECT. | 6 |
| Q2. | A | Write a note on GSM Protocols. | 6 |
| | B | Explain the detailed structure of IEEE 802.11 protocol architecture | 6 |
| Q3. | A | Write a note on Mobile TCP | 6 |
| | B | Explain World Wide Web system architecture. | 6 |
| Q4. | A | Discuss on Wireless application environment. | 6 |
| | B | Write a note on Transaction-Oriented TCP. | 6 |
| Q5. | A | Explain WATM generic reference model. | 6 |
| | B | Write a note on MAC Frames. | 6 |

Section II

- | | | | |
|------|---|---|---|
| Q6. | A | Explain Uniform distribution. | 6 |
| | B | Explain different steps in a simulation study. | 7 |
| Q7. | A | List and explain different simulation packages. | 6 |
| | B | Explain simple linear regression. | 7 |
| Q8. | A | Write a note on Time-Average Number in system L. | 6 |
| | B | Explain the characteristics of Queuing Systems. | 7 |
| Q9. | A | Write a note on Goodness-of-Fit Tests. | 6 |
| | B | Explain the iterative process of calibrating a model. | 7 |
| Q10. | A | Explain the process of model building, verification and validation. | 6 |
| | B | Explain different steps in identifying the distribution with data. | 7 |

**DATA WAREHOUSING & MINING
& ADVANCED DATABASE SYSTEMS****PAPER - IV (JAN-2020)****(3 Hours)****(Total Marks : 75)**

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Section I

- Q1. A What are the components of a data warehouse. 6
 B Write a short note on KDD. 6
- Q2. A Write a short note on the following trends in data warehouse. 6
 a) Data Fusion
 b) Multidimensional Analysis
 c) Agent Technology
 B Explain Bayes Theorem. 6
- Q3. A What are the different requirement gathering methods. 6
 B Give an account of issues involved with Decision Trees. 6
- Q4. A Describe in detail data design phase of a DW. 6
 B Explain hierarchical clustering algorithms in detail. 6
- Q5. A List out the requirement and steps in ETL. 6
 B Explain the following spatial clustering algorithms: 6
 a) CLARANS
 b) SDCLARANS
 c) DBCLASD

Section II

- Q1. A List and draw any four symbols used in ER model 6
 B State four differences between DBMS and RDBMS. 7
- Q2. A Explain with Example: 6
 i. Intra-query parallelism.
 ii. Intra operation Parallelism
 iii. Inter Operation Parallelism
 B What are transient and persistent objects? Explain in detail. 7
- Q3. A How are multimedia sources indexed for content-based retrieval? 6
 B Describe and explain any two architectures supported by distributed DBMS. 7
- Q4. A Differentiate between data-centric and document centric XML 6
 B Write short note on : 7
 i) Location Transparency
 ii) Fragmentation Transparency
- Q5. A Describe in detail temporal databases. 6
 B What is Geographical Information systems? Explain Different format used to represent geographic data. 7