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B.Sc./6th Sem (H)/COMS/23(CBCS)

2023

6th Semester Examination  
COMPUTER SCIENCE (Honours)

Paper : DSE 4-T

[CBCS]

Full Marks : 40

Time : Two Hours

*The figures in the margin indicate full marks.  
Candidates are required to give their answers  
in their own words as far as practicable.*

**[Systems Programming]**

**Group - A**

Answer any *five* questions.

2×5=10

1. What are the components of a programming system?
2. What is token? Give example.
3. What is the difference between a compiler and an interpreter?
4. Why is LR parsing attractive?
5. What are the applications of the symbol table?
6. Write about the difficulties of a top-down parser.
7. Give any two advantages of assembly language.
8. What do you mean by macro call?

P.T.O.

( 2 )

**Group - B**

Answer any *four* questions.

5×4=20

9. (i) Prove that the grammar  $G: S \rightarrow SbS/a$  is ambiguous for the string  $w=abababa$ .
- (ii) Write the functions of YACC. 3+2
10. Explain the structure of a compiler.
11. Explain Lexical Analysis phase of a compiler.
12. (i) What is ambiguous grammar?
- (ii) What is LL(1) grammar? Whether the following grammar is LL(1) or not?

$S \rightarrow iCtSS'/a$

$S' \rightarrow eS/\epsilon$

$C \rightarrow b$

1+(1+3)

13. Write the functions of the lexical analysis, semantic analysis, and code optimization phases. 2+2+1
14. (i) Construct a parse tree for the following while statement :

while ( $A > B$  &  $A \leq 2*B-5$ )

$A = A + B$

- (ii) What is a linker?

3+2

( 3 )

**Group - C**

Answer any *one* question.

10×1=10

15. (i) What are the differences between a single-pass and a two-pass assembler?

(ii) "Every SLR(1) is unambiguous, but there are many unambiguous grammars that are not SLR(1)" justify it with example. 3+7

16. (i) Construct a LR(1) parsing table for the following grammar :

$S \rightarrow CC$

$C \rightarrow eC/d$

(ii) Write the full form of DAG. Draw a DAG of the following procedure, identifying the basic blocks.

$p = c - g$

$t = b * p$

$d = a + t$

$u = g * h$

$e = t + u$

$f = u - i$

6+(1+3)

P.T.O.

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OR

[Data Mining]

Group - A

Answer any *five* questions.

2×5=10

1. What is predictive data mining technique?
2. What is meta data?
3. How is entropy of a dataset calculated?
4. Define an association rule.
5. What is supervised and unsupervised learning?
6. What are the issues in data mining?
7. What are the differences between OLAP and OLTP?
8. What is outliers?

Group - B

Answer any *four* questions.

5×4=20

9. Differentiate classification and clustering.
10. Differentiate between KDD & data mining.
11. Describe how pre-processing activity involved in the web usage mining.
12. State the Apriori property and state the two major drawbacks of the Apriori method.

( 5 )

13. What is overfitting? How to overcome this problem?
14. Explain the concept of regression in data mining.

**Group - C**

Answer any *one* question.

10×1=10

15. Discuss K-Means Clustering algorithm.
16. Use the two methods below to normalize the following group of data : 1000, 2000, 3000, 5000, 9000
  - (i) min-max normalization by setting min=0 and max=1
  - (ii) z-score normalization

What are the two measures used for rule interestingness.

6+4

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