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VI Semester BCA Degree Examination, September/October - 2022

COMPUTER SCIENCE

Machine Learning

(CBCS Scheme)

Time : 3 Hours

Maximum Marks : 100

*Instructions to Candidates :*

Answer All Sections.

## SECTION -A

Answer any TEN questions. Each question carries TWO marks:

(10×2=20)

1. Define machine learning.
2. What is accuracy in machine learning?
3. Define supervised learning.
4. What is multi layer neural network?
5. Describe conditional probability.
6. Mention any two applications of Bayesian classifier.
7. What is frequent itemset?
8. Write the Apriori rule.
9. Define cluster analysis.
10. What is confidence value in rule mining?
11. What are genetic algorithms?
12. Define fitness function.

[P.T.O.]



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### SECTION - B

Answer any **FIVE** questions. Each question carries **Five** marks:

(5×5=25)

13. List out the issues of machine learning approach.
14. Discuss the various applications of machine learning.
15. Explain the concept of decision trees.
16. Give an overview of artificial neural networks.
17. Write a note on Hidden Markov models.
18. Explain the concept of inductive bias.
19. Discuss some of the applications of genetic algorithms.
20. Explain about genetic operators with examples

### SECTION - C

Answer any **THREE** questions. Each question carries **Fifteen** marks:

(3×15=45)

21. Explain the steps of designing a learning system.
22. Illustrate the concept of Support Vector Machine.
23. Explain the principle of Bayesian optimal classifier with an example.
24. Explain the K-means clustering algorithm.
25. Write a short note on association mining and write its applications.

### SECTION - D

Answer any **ONE** question. Each question carries **Ten** marks:

(1×10=10)

26. Discuss the performance metrics of machine learning.
  27. Explain K-NN algorithm.
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VI Semester BCA Degree Examination, September/October - 2022

COMPUTER SCIENCE

System Programming

(CBCS Scheme (F+R))

Paper : BCA 601 T

Time : 3 Hours

Maximum Marks : 100

*Instructions to Candidates :*

Answer All Sections.

## SECTION - A

Answer any TEN questions. Each question carries TWO marks: (10×2=20)

1. What is system software?
2. List any two advantages of assembly language.
3. Explain MAR and MBR.
4. Mention different databases used by assemble.
5. What is Macro?
6. What are the four basic tasks of Macro processor.
7. Explain EXTRN and ENTRY.
8. What are the functions of Loader?
9. Name any two types of Loader.
10. What is compiler?
11. What do you mean by Machine dependent optimization?
12. Mention different phases of compiler.

## SECTION- B

Answer any FIVE questions. Each question carries FIVE marks: (5×5=25)

13. Explain Instruction format of IBM 360/370 with syntax and example. (5)
14. Draw Micro Flowchart for ADD instruction. (5)
15. Sort the following away using Radix sort 12, 14, 6, 9, 8, 7, 11, 10. (5)
16. What is a General format of Macro definition? Explain with an example. (5)

[P.T.O.]



(2)

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17. Sketch the format of databases used by two pass assembler. (5)
18. Explain compile-and-go loader scheme. (5)
19. Explain Machine independent optimization. (5)
20. Explain databases used in lexical phase of a compiler. (5)

### SECTION-C

Answer any **THREE** questions. Each question carries **Fifteen** marks: (3×15=45)

21. a) Explain General Machine structure of IBM 360/370 with neat diagram. (8)  
b) Explain the following pseudo-op with an example USING, END, DS, DC, START, DROP EQU. (7)
22. a) Explain with flowchart overview part I of two pass Assembler. (7)  
b) Explain longway no looping. (8)
23. a) Explain databases used in Pass I and pass II of Macroprocessor. (8)  
b) Explain Macro calls within Macro with an example. (7)
24. a) Explain design of an absolute loader with neat diagram. (8)  
b) Explain four cards used in direct heating loader. (7)
25. a) Explain different phases of a compiler with a neat diagram. (8)  
b) Explain Intermediate phase of a compiler. (7)

### SECTION-D

Answer any **ONE** questions. Each question carries **TEN** marks: (1×10=10)

26. a) Explain Major components of system software. (5)  
b) Write a note on general loading scheme. (5)
27. a) What are overlay structure? Explain with neat diagram. (5)  
b) Explain code Generation phase of compiler. For "T" operation with optimized register usage. (5)



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VI Semester B.C.A. Degree Examination, September/October - 2022

COMPUTER SCIENCE

Web Programming

(CBCS Scheme 2019-2020)

Paper : BCA 603

Time : 3 Hours

Maximum Marks : 70

*Instructions to Candidates:*

Answer all sections.

## SECTION - A

Answer any ten questions. Each question carries two marks.

(10×2=20)

1. What is a protocol? Mention them.
2. What is a web browser? Name them.
3. What are domain and subdomain.
4. What is padding?
5. What is universal selector in CSS? Illustrate.
6. What is the use of <span> and <div> tag.
7. Mention any 2 composite data types in Java Script.
8. What is web services? Mention them.
9. What do you mean by Relative Positioning?
10. List any 2 keyboard events.
11. What is DTD? What it's significance?
12. Define XML.

[P.T.O.]



## SECTION - B

Answer any five questions. Each question carries 10 marks.

(5×10=50)

13. a) Explain table tag and its subtags with an example. (5)  
b) Explain http request and response Message with an example. (5)
  14. a) What is a <form> tag? Explain any four form elements. (5)  
b) Discuss the different types of lists in XHTML with examples. (5)
  15. a) What are the different levels of CSS? Explain. (5)  
b) Write a Javascript program to illustrate any two mouse events. (5)
  16. a) What is a Javascript? Mention the features of Java Script. (5)  
b) Write a Java Script code to find factorial of a given number. (5)
  17. a) Explain alert(), confirm() and prompt() method of window object. (5)  
b) Differentiate between HTML and XHTML. (5)
  18. What is an array in JavaScript? Write a JavaScript to illustrate different methods? (10)
  19. a) What are the different types of Positioning techniques? Explain. (5)  
b) Write a short note on DOM. (5)
  20. a) Explain XHTML events. (5)  
b) What do you mean by XML name space? Explain. (5)
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VI Semester BCA Degree Examination, September/October - 2022

COMPUTER SCIENCE

Cryptography and Network Security  
(CBCS Scheme)

Time : 3 Hours

Maximum Marks : 100

*Instructions to Candidates :*

Answer All Sections.

## SECTION - A

Answer any TEN questions. Each question carries TWO marks:

(10×2=20)

1. What is Steganography?
2. Differentiate between active and passive attack.
3. Mention two security goals.
4. What is Shift Cipher?
5. Write any two differences between Block Cipher and Stream Cipher.
6. What is expansion D box?
7. Define residue class.
8. What is one way function in Knapsack Cryptosystem?
9. Define Kerberos.
10. What is cryptographic hash function?
11. Define digital signature.
12. What is S/MIME?

[P.T.O.]

**SECTION- B**

Answer any **FIVE** questions. Each question carries **FIVE** marks:

(5×5=25)

13. Explain the various security mechanisms.
14. Explain extended Euclidean algorithm with example.
15. Explain encryption and decryption.
16. Write general design of DES.
17. Explain two types of attacks to Elgamal Cryptosystem.
18. Write a note on X.509 Certificate.
19. Explain various phases of Handshaking process in SSL?
20. Briefly explain the architecture of SSL.

**SECTION- C**

Answer any **THREE** questions. Each question carries **FIFTEEN** marks:

(3×15=45)

21. a) Explain asymmetric key model with a neat diagram. (10)  
b) What is divisibility? List four properties of divisibility. (5)
22. a) Explain Triple DES algorithm with a neat diagram. (10)  
b) Compare AES and DES. (5)
23. a) State and explain Chinese remainder theorem. (8)  
b) Explain different attacks in RSA. (7)
24. a) What is Hijacking? Explain. (6)  
b) Explain Diffie-Hellman Key Agreement. (9)
25. a) Explain SSL Protocol stack. (8)  
b) Differentiate between Tunnel mode and Transport mode. (7)

**SECTION- D**

Answer any **ONE** questions. Each question carries **10** marks:

(1×10=10)

26. Explain different cryptographic attacks.
  27. Explain Internet exchange key.
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**VI Semester B.C.A. Degree Examination, September/October - 2022****COMPUTER SCIENCE****Professional And Business Communication****(CBCS Scheme)****Time : 3 Hours****Maximum Marks : 100****Instructions to Candidates:***Answer All sections***SECTION - A****I. Answer any Ten questions. Each question carries 2 marks.****(10×2=20)**

1. Define Communication.
2. What do you mean by Leadership?
3. What is a source in the concept of communication?
4. Who are receivers and why feedback is important?
5. State any two cultural deference at work.
6. What is conflict at work?
7. Mention any two elements of Team Work.
8. What do you mean by Meeting Agenda?
9. What is the Memo?
10. What do you mean by Resume?
11. What is an Interview?
12. Mention any two requirements of good Presentation.

**SECTION - B****II. Answer any Five questions. Each question carries 5 marks.****(5×5=25)**

13. Discuss two types of Communication.
14. Explain any five barriers of listening.
15. Explain how to manage conflict at work?
16. Discuss the ethics of Interview.
17. Explain the essential piece of information that you should include in your resume.
18. Describe any five preparatory steps that are required before any meeting.
19. Describe the strategies to overcome general differences in communication.
20. Write a cover letter for a job application.

**[P.T.O]**

**SECTION - C**

- III.** Answer any **Three** of the following. Each question carries **15** marks. (3×15=45)
21. Describe the fundamental principles to effectively increase the communication and leadership skills.
  22. Social style is unique and cannot be seen in other person if so explain social style and identifying the social style at work in detailed manner.
  23. Explain the steps involved in preparing and conducting an interview.
  24. A company has conducted a meeting to discuss the sales performance in the first quarter and address the issues of drop in sales and sales promotion. Draft the minutes of the meeting.
  25. Explain the steps to improve the team dynamics.

**SECTION - D**

- IV.** Answer any **One** of the following. Each question carries **10** marks. (1×10=10)
26. Prepare a resume for applying the post of system analyst at MNC.
  27. Describe listening problems and their possible solutions.
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VI Semester B.C.A. Degree Examination, September/October - 2022  
**COMPUTER SCIENCE**  
**Theory of Computation**  
**(CBCS Scheme)**

Time : 3 Hours

Maximum Marks : 100

*Instructions to Candidates :*

Answer all sections.

**SECTION - A**

Answer any 10 questions. Each question carries 2 marks.

(10×2=20)

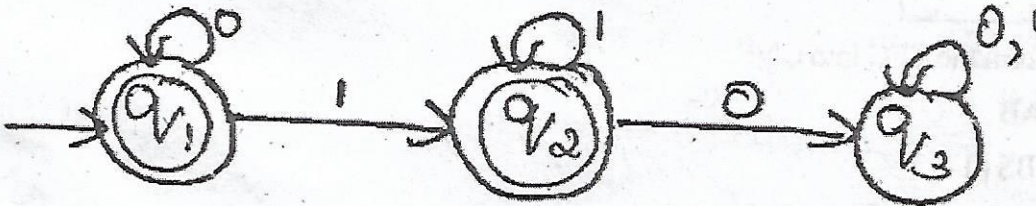
1. Define Automata.
2. Draw a DFA to accept strings of even number of a's.
3. What is trap state?
4. Define pumping Lemma?
5. Design a RE over  $\Sigma = \{a, b\}$  for the language accepting string of exactly length 2?
6. Define E-closure.
7. What are the different types of grammar?
8. What is parsing?
9. Define GNF.
10. Define Nullable variable.
11. What is Turing Machine?
12. State post correspondence problem.

**SECTION - B**

Answer any 5 questions. Each question carries 5 marks.

(5×5=25)

13. Construct a DFA to accept strings of O's and I's representing zero modulo 5.
14. Write the differences between DFA and NFA.
15. Convert the DFA to Regular Expression.



[P.T.O.]



16. State and prove Kleene's Theorem.
17. Prove that  $s \rightarrow a s b s / b s a s / \Sigma$  is ambiguous.
18. Obtain CFG for the following language

$$L = \{a^n b^n \mid n \geq 1\}$$

19. Explain Halting problem of Turing Machine.
20. Eliminate unit production from the following grammar.

$$S \rightarrow AB$$

$$A \rightarrow a$$

$$B \rightarrow C$$

$$B \rightarrow b$$

$$C \rightarrow D$$

$$D \rightarrow E$$

$$E \rightarrow a$$

### SECTION - C

Answer any 3 questions. Each question carries 15 marks :

(3×15=45)

21. Construct a NFA with E for  $(0+1)^*1(0+1)$ .
22. Minimize the following DFA using table filling algorithm.

| $\delta$ | $a$ | $b$ |
|----------|-----|-----|
| $A$      | $B$ | $C$ |
| $B$      | $G$ | $C$ |
| * $C$    | $A$ | $C$ |
| $D$      | $C$ | $G$ |
| $E$      | $H$ | $F$ |
| $F$      | $C$ | $G$ |
| $G$      | $G$ | $E$ |
| $H$      | $G$ | $C$ |

23. Transform the CFG into GNF

$$S \rightarrow AB$$

$$A \rightarrow BS \mid 1$$

$$B \rightarrow SA \mid 0$$



(3)

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24. a) Find the language accepted by CFG.

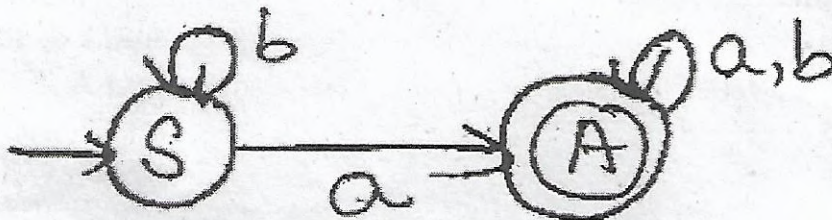
(5)

$$G = \{V, T, P, S\}, V = \{S\}, T = \{a, b\}$$

$$S = S, P = \{S \rightarrow aS / b\}$$

- b) Obtain a grammar to generate string  $S = \{a, b\}$  having atleast one 'a'.

(5)



- c) Obtain a PDA for the language

(5)

$$L = \{wcw^R / w \in (a, b)^*\}$$

25. Obtain a Turing machine that accepts the language  $L = \{a^n b^n \mid n \geq 1\}$ .

#### SECTION - D

Answer any 1 question.

(1×10=10)

26. Explain the types of Turing Machine
27. Write a note on Chomsky's Hierarchy of language.
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