PRN: 1941

GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

(An Autonomous Institute of Government of Maharashtra)

National Highway No.6, JALGAON – 425 002

Name of Examination : **Winter 2022**

Course Code & Course Name : **CO404UC - Professional Elective-IV Data Analytics**

Maximum Marks : **60** Duration : **3 Hrs**

Instructions:

1. *All questions are compulsory.*
2. *Illustrate your answer with suitable figures/sketches wherever necessary.*
3. *Assume suitable additional data; if required.*
4. *Use of logarithmic table, drawing instruments and non programmable calculators is allowed.*
5. *Figures to the right indicate full marks.*

1) Attempt Any Two of the following.

A) Define decision tree classifier? Write the algorithm to make a decision tree and its advantages. [6]

B) What is Big data visualization? Discuss the challenges in Big data visualization. [6]

C) What are the various steps involved in any analysis of project. [6]

2) Attempt Any Two of the following.

A) List and explain technical tools that are used for analysis and presentation purpose. [6]

B) List different phases in data analytics life cycle and explain each in brief. [6]

C) Explain K-means algorithm and its applications. [6]

3) Attempt Any Two of the following.

A) What is Analysis of variance (ANOVA)? Explain ANOVA techniques in brief. [6]

B) What is regression? Differentiate between linear and nonlinear regression. [6]

C) List and explain important steps in the data validation process in brief. [6]

4) Attempt Both the Questions.

A) What do you mean by hypothesis testing? Discuss different types of Hypothesis testing. [6]

B) What are the responsibilities of a data analyst? Discuss requirements to become a data analyst. [6]

5) Attempt Both the Questions.

A) What is Naïve Bayes classifier? Explain it with its applications. [6]

B) Define clustering and its types. Explain any one clustering technique in brief. [6]

All the best!

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Name of Examination : **Winter 2022**

Course Code & Course Name : **CO402U - Cryptography And Network Security**

Maximum Marks : **60** Duration : **3 Hrs**

Instructions:

1. *All questions are compulsory.*
2. *Illustrate your answer with suitable figures/sketches wherever necessary.*
3. *Assume suitable additional data; if required.*
4. *Use of logarithmic table, drawing instruments and non programmable calculators is allowed.*
5. *Figures to the right indicate full marks.*

1) Solve any three sub-question

a) Give an example each for substitution and transposition ciphers [3]

b) Prepare the list of keys are required for two people to communicate via a cipher? [3]

c) Discuss: security mechanism [3]

d) Explain active and passive attack with example? [3]

2) Solve any three sub-question

a) Difference between Substitution Cipher and Transposition Cipher [3]

b) Compare stream cipher with block cipher with example. [3]

c) Give the five modes of operation of Block cipher [3]

d) What is traffic Padding? What is its purpose? [3]

3) Solve any three sub-question

a) Compare MD5 and SHA1 algorithm [3]

b) Distinguish between direct and arbitrated digital signatures. [3]

c) What are the properties a digital signature should have? [3]

d) What is Kerberos? What are the uses? [3]

4) Solve any two sub-question

a) Explain the reasons for using PGP. [4]

b) List the steps involved in the SSL record protocol. [4]

c) What is meant by SET? What are the features of SET? [4]

5) Solve any three sub-question

a) Assume that client C wants to communicate with server S using the Kerberos procedure. How can it be achieved? [5]

b) Explain the sequence of steps involved in the message transmission and reception in Pretty Good Privacy (PGP) with block diagrams [5]

c) Mention the strengths and weaknesses of the DES algorithm. [5]

d) Difference between SHA1 and SHA2 [5]

6) Solve all sub-question

a) Give the format of the X.509 digital certificate and explain the use of a digital signature in it. [5]

b) Explain RSA algorithm [5]

All the best!

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Name of Examination : **Winter 2022**

Course Code & Course Name : **CO401U - Compiler Design**

Maximum Marks : **60** Duration : **3 Hrs**

Instructions:

1. *All questions are compulsory.*
2. *Illustrate your answer with suitable figures/sketches wherever necessary.*
3. *Assume suitable additional data; if required.*
4. *Use of logarithmic table, drawing instruments and non programmable calculators is allowed.*
5. *Figures to the right indicate full marks.*

1) Attempt any two

a) Explain in detail the various phases of compilers with an example. [6]

b) Describe the topic on (i) Parser Generators (ii) Syntax directed translation engines (iii) Scanner Generators. [6]

c) What is syntax tree. Draw the syntax tree for the following string [6]

i) a – b * c + d

ii) a * (b + c) – d /2

2) Attempt any two

a) Convert the regular expression (a|b)* abb to dfa using direct method and minimize it. [6]

b) What is ambiguous grammar and how ambiguity is eliminated? Explain with example. [6]

c) What are different storage allocation strategies [6]

3) Attempt any two

a) Show that the following grammar is LALR(1) but not SLR(1) [6]

$$S \rightarrow Aa \mid bAc \mid dc \mid bda$$

$$A \rightarrow a$$

b) **Construct the** [6]

a) canonical LR and

b) LALR sets of items for the grammar

S→SS+|SS*|a

c) **Translate the arithmetic expression.** [6]

a + - (b+c) into:

i) Quadruples

ii)Triples

iii) Indirect triples.

4) Attempt the following

a) Explain i) Loop Optimizations ii) Code Motion iii) Induction Variables [6]

b) Write short note on: i) Three address code ii) Back patching [6]

5) Attempt the following

a) Explain issues in code generator. [6]

b) Draw the flow graph of following code:

i) $i = 1$
ii) $j = 1$
iii) $t_1 = 10 * i$
iv) $t_2 = t_1 + j$
v) $t_3 = 8 * t_2$
vi) $t_4 = t_3 - 88$
vii) $a[t_4] = 0.0$
viii) $j = j + 1$
ix) if $j \leq 10$ goto (3)
x) $i = i + 1$
xi) if $i <= 10$ goto (2)
xii) $i = 1$
xiii) $t_5 = i - 1$
xiv) $t_6 = 88 * t_5$
xv) $a[t_6] = 1.0$
xvi) $i = i + 1$
xvii) if $i <= 10$ goto (13)

All the best!