(DMCA 301)

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, DECEMBER 2020

Third Year

ARTIFICIAL INTELLIGENCE

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. Analyze Tic — Tac — Toe, Chess, Travelling Salesmen Problem, Bridge game and Theorem proving problems with respect to the following problem characteristics:
   (a) Is the problem decomposable?
   (b) Can solution step be ignored?
   (c) Is the good solution absolute or relative?
   (d) Is the solution state or a path?

2. (a) Explain A* algorithm with example.
   (b) Solve the following crypt arithmetic problem.
   SEND + MORE = MONEY

3. What is Matching? Illustrate Fuzzy matching and RETE matching algorithm with suitable example.

4. Explain about resolution algorithm in predicate logic with suitable example.

5. What is Expert System? Explain its Architecture, Features and applications in brief.

6. Define AI. Describe different AI techniques.

7. Briefly explain simple hill climbing.

8. Construct state space tree for 8 – puzzle problem.

9. Describe the various components of Script.

(DMCA 301)

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, DECEMBER 2020

Third Year

ARTIFICIAL INTELLIGENCE

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. What is semantic net? Represent the fact that "Sourav is taller than Sachin" with the help of semantic net.

2. Describe different approaches for knowledge representation.

3. Illustrate Bayesian Network with suitable example.

4. Describe the characteristics of expert systems.
   (a) Representation adequacy
   (b) Inferential adequacy

5. Define Artificial intelligence.

6. What state space tree?

7. Define Inferential adequacy.

8. State Bayesian rule.

9. Represent the following sentence in Predicate Form:
   "All Elephants has trunk"

———————

(DMCA302)

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION,
DECEMBER 2020

Third Year

CRYPTOGRAPHY AND NETWORK SECURITY

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. (a) Write about different transposition techniques.
   (b) Describe a single round of DES with neat block diagram.
2. Explain about division and Euclidean algorithm with suitable example.
3. What is the round transformation of IDEA and also give key scheduling of IDEA?
4. (a) What characteristics are needed in secure hash function? Explain.
   (b) Briefly explain different approaches to Digital Signatures.
5. Explain about packet filtering firewall and application gateway firewall in brief.
6. What are the various active attacks? What security mechanisms are suggested to counter attack active attacks?
7. Write differences between substitution techniques and transposition techniques.
8. Elaborate AES encryption with neat sketches.
9. What are the principal elements of public-key cryptosystem? Explain in brief.

(DMCA302)

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION,
DECEMBER 2020

Third Year

CRYPTOGRAPHY AND NETWORK SECURITY

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. How is GCD calculated with Euclid's algorithm? Calculate the GCD of (270, 192).

2. How to Find the Multiplicative Inverse in GF (p)?

3. What is the difference between Hash function and Message Authentication Code?

4. Write note on signature based Intrusion Detection Systems.

5. What are block ciphers?

6. What is the different between symmetric key and asymmetric key cryptography?

7. Define digital certificate.

8. Define relative prime? Give an example.

9. What are the different categories of intruders?

———————

(DMCA 303)

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, DECEMBER 2020

Third Year

EMBEDDED SYSTEMS

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. Explain about the common characteristics of an Embedded systems and explain about a digital camera example with a neat block diagram.

2. Explain about the General-purpose processor architecture. Explain about two memory architectures:

   (a) Harvard,

   (b) Princeton.

3. Explain about the Implementation of combinational functions with a ROM.

4. Explain about the Design of Digital Camera.

5. Explain about the FSM and FSMD models.

6. Explain about the co-design ladder.

7. Explain about PLDs.

8. Explain about the several stages of microprocessor's execution of instructions.

9. Explain about real-time clocks.

(DMCA 303)

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, DECEMBER 2020

Third Year

EMBEDDED SYSTEMS

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. Explain about Cache write techniques.
2. Sketch the internal design of a 4×3 RAM.
3. Explain about Priority arbiter.
4. Describe a system as a state machine.
5. Explain about the Hardware/Software codesign.
6. What is an Emulators?
7. What's dynamic RAM and Static RAM?
8. What is Daisy-chain arbitration?
9. What is blocking and non-blocking message passing?

———————

(DMCA 304)

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, DECEMBER 2020

Third Year

DATAMINING TECHNIQUES

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. Discuss various tools for display single variables and relationship between two variables.
2. (a) Describe the CART algorithm for building tree classifier.
   (b) Explain about multilayer perceptron for regression and classification.
3. (a) Write about evaluation of models and patterns.
   (b) Explain about EM algorithms with example.
4. Discuss about partition based clustering algorithms in detail.
5. Explain about OLAP operations and its data structures.
6.
7. State different types of data measurements and distance measures.
8. What are the desirable properties of estimators?
9. What is high dimensional data? How to transform high dimensional data?

(DMCA 304)

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, DECEMBER 2020

Third Year

DATAMINING TECHNIQUES

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. Describe the score functions for predictive models.
2. What is univariate parameter optimization and multivariate parameter optimization?
3. Write about Naïve Bayes classification model.
4. Describe agglomerative clustering method.
5. Explain linear regression model for prediction.
6. What is score pattern?
7. What is Euclidean distance?
8. Define FP - tree.
9. Define sampling.
10. What is data cube?

———————

(DMCA 305)

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, DECEMBER 2020

Third Year

SYSTEM AUDITING

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. (a) Write about different types of audit procedures?

   (b) Describe various steps in an audit.

2. State and explain different phases of programming development life cycle.

3. Briefly explain about the following communication controls :

   (a) Physical component controls

   (b) Line error controls

   (c) Topological controls

4. Explain about concurrent auditing techniques.

5. Explain the model of factors affecting the information system effectiveness.

6. What is an impact of the information systems audit function on organization?

7. State the hierarchical structure of system and subsystem with example.

8. Describe the quality assurance functions.

9. Write about menu drive languages, command languages and form based languages.

(DMCA 305)

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, DECEMBER 2020

Third Year

SYSTEM AUDITING

MAXIMUM MARKS : 30

ANSWER ALL QUESTIONS

1. What is concurrency? Describe different concurrency controls.

2. Briefly explain about black box and white box testing.

3. Write short notes on utility software's.

4. What is workload model? Describe different types of workload models.

5. What is the difference between system effectiveness and system efficiency?

6. What is meant by security threat?

7. Define data integrity.

8. What is an audit expert system?

9. What is Bayesian model?

———————