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6E1551

Roll No. _____ [Total No. of Pages : 2

6E1551

B.Tech. VI Sem. (Main/Back) Examination, June - 2022
Information Technology
6IT3-01 Digital Image Processing

Time : 2 Hours

Maximum Marks : 80
Min. Passing Marks : 28

Instructions to Candidates:

*Attempt **all five** questions from **Part A**, **four** questions out of **six** questions from **Part B** and **two** questions out of **three** from **Part C**.*
Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.
Use of following supporting material is permitted during examination. (Mentioned in form No.205)

Part - A

(Answer should be given up to 25 words only)

All questions are **compulsory** **(5×2=10)**

1. Define Histogram?
2. What are the gray level transformation function of an image?
3. What is minimum mean square error filtering?
4. What do you mean by image registration?
5. Explain gradiant operator?

Part - B

(Analytical/Problem solving questions)

Attempt any **four** questions **(4×10=40)**

1. Explain Image sensing and acquisition with suitable diagram.
2. What is spatial filtering? Define spatial correlation and convolution with an example.
3. Explain image restoration model with diagrams.
4. What is data redundancy? Also write its take?
5. Explain descriptor in detail.

6. Explain :

   a. IHPF.

   b. Image - Enhancemnet.

Part - C

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any **two** questions **(2×15=30)**

1. What is segmentation? Explain point, line and edge detection in brief. Also explain how to improve fast scanning algorithm by using morphological?
2. What is noise PDF. Explain erlang noise and Impulse noise. Differentiate between Gaussion noise and impulse noise?
3. What is image sharpening? Explain first and second order derivatives of image sharpening?

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6E1552

Roll No. _____ [Total No. of Pages : 7

6E1552

B.Tech. VI Sem. (Main/Back) Examination June- 2022
Information Technology
6IT4-02 Machine Learning

Time : 3 Hours **Maximum Marks : 120**
Min. Passing Marks : 42

Instructions to Candidates:

*Attempt **all ten** questions from **Part A**, **five** questions out of **Seven** from **Part B**, and **Four** questions out of **Five** questions from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination (Mentioned in form No. 205)

Part - A

(Answer should be given up to 25 words only)

All questions are **compulsory** **(10×2=20)**

1. *"Is Machine Learning just another name for Artificial Intelligence"?* Comment.

2. Write one difference and one similarity between classification and regression.

3. Let C be a candidate item set in C_k generated by the Apriori algorithm. How many length (K-1) subsets do we need to check in the prune step?

4. It is difficult to assess classification accuracy when individual data objects may belong to more than one class at a time. In such cases, comment on what criteria you would use to compare different classifiers modeled after the same data.

5. Differentiate between feature extraction and feature selection.

6. Suppose we clustered a set of N data points using two different clustering algorithms, such as K-means and Gaussian mixtures. In both cases, we obtained five clusters and in both cases, the centers of the clusters are the same. Can three points that are assigned to different clusters in the K - means solution be assigned to the same cluster in the Gaussian mixture solution? Why or why not?

7. In outlier detection by semi - supervised learning, what is the advantage of using objects without labels in the training data set?

8. *Is reinforcement learning an appropriate abstract model for evolution?* Why or why not?

9. Briefly describe an application of Artificial Neural Network that is used for learning to steer an autonomous vehicle.

10. You are provided with data from a music streaming platform. Each of the 450,000 records indicates the songs a user has listened to in the past month. How would you build a music recommendation system? List the steps.

Part - B

(Analytical/Problem solving questions)

Attempt any **five** questions **(5×8=40)**

1. a. Assume you have roughly classified a set of your previous e - mail messages as junk, unimportant, normal, and important. Describe how a machine learning system may take this as the training set to automatically classify new e-mail messages or unclassified ones.

   b. Give application examples for each of the following cases and also explain them :

      i. An application that uses clustering as a major machine learning function.

      ii. An application that uses clustering as a pre - processing tool for data preparation and other machine learning tasks. **(8)**

2. a. Why is the naive bayesian classification called "naive"? Explain.

   b. The support Vector Machine (SVM) is a highly accurate classification method. However, SVM classifiers suffer from slow processng when training with a large set of data tuples. Describe how to overcome this difficulty and design a scalable SVM algorithm for efficient SVM classification in large datasets. **(8)**

3. a. Give an example to show that items in a strong association rule actually may be negatively correlated.

b. Suppose that you are to allocate several Automatic Teller Machines (ATMs) in a given region to satisfy several constraints. Households or workplaces may be clustered so that typically one ATM is assigned per cluster. The cluster may be constrained by two factors :

i. Obstacle objects. (i.e. there are bridges, rivers, and highways that can affect ATM accessibility), and

ii. Additional user - specified constraints such as that each ATM should serve at least 10,000 households.

How can a clustering algorithm such as K - means be modified for quality clustering under both constraints? **(8)**

4. a. Explain the concept of Principal Component Analysis with a suitable example.

b. Precision and recall are two essential quality measures of a machine learning system. Explain why it is the usual practice to trade one measure for the other. Explain why the F-score is a good measure for this purpose. **(8)**

5. a. Write the differences among dynamic programming, Monte Carlo, and temporal methods of reinforcement learning. How is policy evaluation performed in Monte Carlo? Explain.

b. How can you perform sentiment analysis of 'multiple - choice questions' using reinforcement learning? Explain. **(8)**

6. a. What is the Markov decision process? Explain it with a suitable example.

b. Explain various methods of SARSA. **(8)**

7. a. Explain the role of collaborative - based and content - based recommendation systems in machine learning along with their advantages and disadvantages.

b. How does the collaborative recommendation system differ from a typical classification or predictive modeling system? Explain. **(8)**

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Part - C

(Descriptive/Analytical/Problem Solving/Design questions)

Attempt any **Four** questions **(4×15=60)**

1. The following table shows the midterm and final exam grades obtained for students in a database course. **(4+5+6)**

Midterm Exam (x)	Final Exam (y)
72	84
50	63
82	77
74	78
94	90
86	75
59	49
83	79
65	77
33	52

i. Do x and y seem to have a linear relationship? Explain.

ii. Use the method of least squares to find an equation for the prediction of a student's final exam grade based on the student's midterm grade in the course.

iii. Predict the final exam grade of a student who received a 94 on the midterm exam.

2. The following table consists of training data from an employee database. The data have been generalized. For example, '31.....35' for 'Age' represents the age range of 31 to 35. For a given row entry, 'Count' represents the number of data tuples having the values for Department, Status, Age, and Salary given in that row. **(4+5+6)**

Department	Status	Age	Salary	Count
Sales	Senior	31.....35	46K.....50K	30
Sales	Junior	26.....30	26K.....30K	40
Sales	Junior	31.....35	31K.....35K	40
Systems	Junior	21.....25	46K.....50K	20
Systems	Senior	31.....35	66K.....70K	5
Systems	Junior	26.....30	46K.....50K	3
Systems	Senior	41.....45	66K.....70K	3
Marketing	Senior	36.....40	46K.....50K	10
Marketing	Junior	31.....35	41K.....45K	4
Secretary	Senior	46.....50	36K.....40K	4
Secretary	Junior	26.....30	26K.....30K	6

Let 'Status' be the class label attribute.

i. How would you modify the basic decision tree algorithm to take into consideration the 'Count' of each generalized data tuple? Explain.

ii. Use the algorithm to construct a decision tree from the given data.

iii. Given a data tuple having the values 'Systems', '26.....30', and '46K.....50K' for the attributes Department, Age, and Salary, respectively, what would a Naive Bayesian classification of the status for the tuple be? Explain.

3. A database has five transactions, where minimum support (s) is 60% and minimum confidence (c) is 80%. **(7+8)**

TID	Items Bought
T100	{M,O,N,K,E,Y}
T200	{D,O,N,K,E,Y}
T300	{M,U,C,K,Y}
T400	{M,A,K,E}
T500	{C,O,O,K,I,E}

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i. Find all frequent itemsets using Apriori and FP - growth, respectively.

ii. List all the strong association rules (with s and c) matching the following meta - rule, where X_i is a variable representing customers, and $item_i$ denotes variables representing items :

$\forall x \in$ transaction, buys (X, $item_1$) $\wedge$ buys (X, $item_2$) $\rightarrow$ buys (X, $item_3$) [s, c].

4. Suppose that you are a data scientist who has been recruited to help detect fraud during the college admissions process. It requires the process to narrow the focus to fraudulent information submitted in the college application forms, whether it is an inflated GPA, an invented sports achievement, or a fake community service achievement, or other types of forgeries. You will be building a set of fraud detection models. Explain. **(2+2+3+2+3+3)**

i. In this case, which classification methods would you recommend to develop the model : neural networks, random forest, or naive Bayes?

ii. Why did you choose that as your first method?

iii. How would you build this model?

iv. What training data will you need to run that model?

v. Where and how will you obtain the data?

vi. What cross - validation technique would you use on a time series dataset? If needed.

5. a. Suppose that a training set contains only a single sample, repeated 100 times. In 80 of the 100 cases, the single output value is 1; in the other 20, it is 0. What will a backpropagation network predict for this sample, assuming that it has been trained and reaches a global optimum? Explain. **(7)**

b. Suppose you had a neural network with linear activation functions? For each unit, the output is some constant c times the weighted sum of the inputs. **(4+4)**

i. Assume that the network has one hidden layer. For a given assignment to the weights W, write down equations for the value of the units in the output layer as a function of W and the input layer I, without any explicit mention of the output of the hidden layer. Show that there is a network with no hidden units that compute the same function.

ii. Repeat the calculation part (i), this time for a network with any number of hidden layers. What can you conclude about linear activation functions?

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6E1553

Roll No. _____ [Total No. of Pages : 2

6E1553

B.Tech. VI Sem. (Main/Back) Examination, June - 2022
Information Technology
6IT4-03 Information Security System

Time : 2 Hours

Maximum Marks : 80
Min. Passing Marks : 28

Instructions to Candidates:

*Attempt **all five** questions from **Part A**, **four** questions out of **six** questions from **Part B** and **two** questions out of **three** from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

Part - A

(Answer should be given up to **25** words only)

All questions are **compulsory** **(5×2=10)**

1. What is encryption?
2. Define Cryptanalysis.
3. What is digital signtaure?
4. Write down the name of five web security threats.
5. Define block ciphers.

Part - B

(Analytical/Problem solving questions)

Attempt any **four** questions **(4×10=40)**

1. What are security attacks? Explain substitution ciphers and transposition ciphers.
2. Explain Data Encryption standard with the help of an example.
3. Explain the design principles of block cipher in detail.
4. What are public key cryptosystams? Explain its requirements and cryptanalysis in detail also explain RSA cryptosystem.

5. Explain the concept of hash functions along with its requirement and security also describe secure hash algorithm (SHA).

6. Explain following in detail.

   a. HTTPS and SSH.

   b. SSL architecture and protocol.

Part - C

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any **two** questions **(2×15=30)**

1. Explain Rabin Cryptosystem, Elgamal cryptosystem and Elliptic curve cryptosystem in detail.
2. What are Message Authentication codes. Explain MACs based on Hash functions and MACs based on Block ciphers in detail.
3. What is Symmetric key distribution? How it can be achieved using symmetric and Asymmetric encryptions also explain concept of public key infrastructure.

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6E1554

Roll No. _____ [Total No. of Pages : 2

6E1554

B.Tech. VI Sem. (Main/Back) Examination, June - 2022
Information Technology
6IT4-04 Computer Architecture and Organization

Time : 3 Hours **Maximum Marks : 120**
Min. Passing Marks : 42

Instructions to Candidates:

*Attempt **all ten** questions from **Part A**, **five** questions out of **Seven** from **Part B** and **Four** questions out of **Five** from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

Part - A

(Answer should be given up to 25 words only)

All questions are **compulsory** **(10×2=20)**

1. What do you mean by computer performance? (2)
2. If the memory is represented in 12 bits × 16 bits then how many words can be accommodated in the memory? (2)
3. Describe subroutine? (2)
4. What do you mean by Hit Ratio in cache memory? (2)
5. Write a quick note on Interrupt intiated input - output? (2)
6. Discuss on concept of parallel processing? (2)
7. Explain the concept of microprogrammed control unit? (2)
8. Convert +1001.11 in 8 bit fraction and 6 bit exponent as per floating point representation. (2)
9. Describe the three fields (Mode, Opcode and Address field) of 16 bit instruction format. (2)
10. Perform selective component over
    A = 1011 0110 and B = 0110 1110. (2)

Part - B

(Analytical/Problem solving questions)

Attempt any **five** questions **(5×8=40)**

1. Draw the flow diagram for the hardware that implements the following statements - (8)
   $X + yz : AR \leftarrow AR + BR$
   Where AR and BR are two n - bit registers and x y and z are control variable. Include the logic gates for the control function. (Remember that the symbol '+' designates an OR operation in a control or Boolean function but that it represents and arithmetic plus in a micro operation.

2. What is priority interrupt? Explain Daisy chaining Priority Interrupt's polling logic using its block diagram and logical diagram both. **(8)**

3. A non - pipeline system takes 100 ns to process a task. The same task can be processed in a six - segment pipeline with a clock cycle of 20 ns. Determine the speed - up ratio of pipeline for 200 tasks. What is maximum speed - up that can be achieved? **(8)**

4. Explain the functional units of an architecture of computer with diagram? **(8)**

5. Explain the types of instructions? **(8)**

6. Differentiate between Hardwired and Micro - programmed control unit? **(8)**

7. Explain significance of data register, address register, instruction register, temporary register, program counter and accumulator in common bus system. **(8)**

Part - C

(Descriptive/Analytical/Problem Solving/Design questions)

Attempt any **Four** questions **(4×15=60)**

1. Perform Multiplication of -13 and +9 using Booth Algorithm. With the help of diagram. Explain line coding schemes. **(15)**

2. A digital computer has a common bus system for 8 registers and 16 bits each. The bus is constructed with multiplexers. **(15)**
   a. How many selection inputs are there in each multiplexer?
   b. How many multiplexers are there in the bus?
   c. What size of multiplexers is needed?
   d. Draw the diagram of the mentioned problem definition.

3. Explain the need of cache memory. What is Hit Ratio? Elaborate over the three types of mapping under cache memory with neat diagram. **(15)**

4. Why pipeline is useful in processing? Explain instruction pipeline including the processing steps used in pipeline. Explain speedup, efficiency and through put in pipelining. Prove that ratio of non pipeline based architecture and pipeline based architecture depends upon the no. of segments (k). **(15)**

5. a. How many 128×8 RAM chips are needed to provide a memory capacity of 2048 bytes? **(15)**
   b. How many lines of address bus must be used to access 2048 bytes of memory? How many of These lines will be common to all chips?
   c. How many lines must be decoded for chip select?
   d. Specify the size of the decoders?

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6E1555

Roll No. _____ [Total No. of Pages : 2

6E1555

B.Tech. VI Sem. (Main/Back) Examination, June - 2022
Informaiton Technology
6IT4-05 Artificial Intelligence

Time : 2 Hours **Maximum Marks : 80**
Min. Passing Marks : 28

Instructions to Candidates:

*Attempt **all five** questions from **Part A**, **four** questions out of **six** questions from **Part B** and **two** questions out of **three** from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to **25** words only)

All questions are **compulsory** **(5×2=10)**

1. What is Artificial Intelligence?
2. What is Alpha - beta pruning?
3. Define NLP (Natural Language Processing).
4. What is Expert system?
5. Write the difference between supervised and unsupervised learning?

PART - B

(Analytical/Problem solving questions)

Attempt any **four** questions **(4×10=40)**

1. Explain the steepest Hill - Climbing techniques. Also explain the various potential problems associated with hill climbing. How we can overcome these problems?
2. What are the steps in natural language processing (NLP)? List and explain in detail.
3. Explain Approaches to knowledge representation using predicate logic with example.

4. Enumerate classical "water Jug problem". Describe the state space for this problem. Solve this problem by giving its operation sequence.

5. What do you mean by learning? Explain any one technique which is used in learning.

6. Discuss the algorithm of A* with the advantage over best first search procedure?

PART - C

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any **two** questions **(2×15=30)**

1. Describe Alpha - beta pruning and give the other modifications to minimax procedure to improve its performance.
2. Explain with neat diagram the architecture of expert system and mention its features.
3. i. Discuss the need and structure of Bayesian Network.
   ii. Discuss the various types of machine learning with appropriate examples.

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6E1560

Roll No. _____ [Total No. of Pages : 2

6E1560

B.Tech. VI-Sem. (Main/Back) Examination, June - 2022
Computer Sc. & Engg.
6CS4-06 Cloud Computing

Time : 3 Hours **Maximum Marks : 120**
Min. Passing Marks : 42

Instructions to Candidates:

*Attempt **All Ten** questions from **Part A**, **Five** questions out of **Seven from Part B** **and four questions** out of five from **Part C.***

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205).

PART - A

(Answer should be given up to 25 words only)

(All questions are compulsory) **(10×2=20)**

1. Define Cloud Computing.
2. Write the name of top ten obstacles and opportunities for adoption and growth of cloud computing?
3. Write the advantages of SaaS.
4. Why should one prefer public cloud over private cloud?
5. What are the main features of cloud computing?
6. How many types of deployment models are used in cloud?
7. Explain hybrid cloud?
8. Mention platforms which are used for large scale cloud computing?
9. What is the difference in cloud computing and computing for mobiles?
10. What are the security aspects provided with cloud?

PART - B

(Analytical/Problem Solving Questions)

(Attempt any Five questions) **(5×8=40)**

1. What is Amazon SQS? How buffer is used to Amazon web services?
2. Mention what is Hypervisor in cloud computing and their types?
3. What is a cloud service? As a infrastructure as a service what are the resources that are provided by it? Explain.
4. In cloud computing what are the different layers? Explain Also How important is the platform as a service?
5. Define cloud architecture? What are the characteristics of cloud architecture that separates it from traditional one?
6. What is google app engine? In cloud computing explain the role of performance cloud.
7. State the limitation of virtualization. What is the goal of encrypted cloud storage?

PART - C

(Descriptive/Analytical/Problem Solving/Design Questions)

(Attempt any Four questions) **(4×15=60)**

1. a) Explain briefly the security concerns of cloud computing. **(8)**
   b) Write a short note on origins of cloud computing. **(7)**
2. Discuss the regulatory issues of cloud computing & the government policies.
3. a) Explain in detail about cloud delivery model. **(7)**
   b) Discuss the operational and economic benefits of SaaS. **(8)**
4. a) Explain in detail the various aspects for the need of virtualization in cloud computing? **(9)**
   b) Explain briefly about virtual threats. **(6)**
5. Write a short notes on:
   a) Software Virtualization
   b) Network Virtualization

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6E1650

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. VI Sem(Main/Back) Exam 2022
Information Tech.
6IT4-06 Distributed System
6E1650

Time: 3 Hours **Maximum Marks: 120**
Min. Passing Marks: 42

Attempt all 10 questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. nil 2. nil

Part A(Answer should be given up to 25 words only)
All questions are compulsory

Q. 1 Explain characteristics of a distributed system.
Q.2 Explain the role of Middleware in distributed system.
Q.3 Discuss characteristics of Concurrent Programming Languages.
Q.4 State the difference between static and dynamic process scheduling.
Q.5 What do you understand by recording the state of the distributed system?
Q.6 State the objective of resource sharing model.
Q.7 Write the uses of threads.
Q.8 Define Transparency. What are its types?
Q.9 Differentiate between RMI and RPC.
Q.10 What are the techniques used to synchronize clocks?

10 x 2 = 20

Part B Analytical/Problem solving questions
Attempt any five questions

Q.1 State the difference between Network Operating Systems and Distributed Operating Systems.

Q.2 With the help of suitable diagram, explain working of RPC (Remote Procedure Call).

Q.3 Explain Distributed Deadlock Detection mechanism with the help of suitable example.

Q.4 What is Byzantine fault and Byzantine Fault Tolerance system?

Q.5 What are CORBA services?

Q.6 With the help of suitable diagram, discuss Sun network file system.
Q.7 What is the purpose of external data representations and marshaling? Discuss.

5 x 8 =40

Part C(Descriptive/Analytical/Problem Solving/Design Question)
Attempt any four questions

Q. 1 With the help of suitable flow chart, explain sender and receiver initiated load distribution algorithm.

Q.2 What do you understand by logical clocks in a distributed system? With the help of suitable example explain lamport's timestamp and vector clocks.

Q.3 With the help of suitable diagram explain the architecture of page based Distributed Shared Memory and also explain how data consistency is maintained in such systems.
Q.4 Discuss the design and Implementation issues in Remote Method Invocation.
Q.5 a) Generate Chandy and Lamport's a snapshot algorithm for determining global states of distributed systems. [7]
b) What is dynamic distributed manager algorithm and also explain Thrashing. [8]

4 x 15 =60

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6E1556

Total No. of Questions: Total

No. of Pages:

Roll No. _____

B.Tech. VI sem(Main) Exam. June 2020
HSMC Information Technology
6IT5-12 Cloud Computing
6E1556

Time: 2 Hours

Maximum Marks: 80
Min. Passing Marks: 28

Attempt all five questions from Part A, four questions out of six questions from Part B and two questions out of three from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1_____ 2. _____

Part A (Answer should be given up to 25 words only)
All questions are compulsory

Q.1 Discuss the Ethical issue with reference to cloud computing?
Q.2 List the various services provided by the cloud to the end user?
Q.3 Explain the benefits of virtualization?
Q.4what are the cloud security requirements?
Q.5 Explain the data analysis application of cloud computing? **5 x 2 = 10**

Part B Analytical/Problem solving questions
Attempt any four questions

Q.1 Assess the broad approaches for migration in to the cloud? Discuss the challenges and risk involved in this process?
Q.2 Explain the various features, characteristics and components of cloud computing system?
Q.3 Explain parallel and distributed programming Paradigms in cloud computing using a practical example?
Q.4.Explain the various levels of virtualization. Differentiate between server and desktop virtualization?
Q.5 what is Business continuity planning (BCP)? Explain the importance & process of BCP?
Q.6 Describe system architecture of Aneka using suitable example?

4 x 10 =40

3.5

Part C(Descriptive/Analytical/Problem Solving/Design Question)
Attempt any two questions

Q. 1 (a) Discuss the networking support for cloud computing? (5)
(b) write a short note on future of cloud computing? (5)
(c) Illustrate VMware Hypervisor? (5)

Q.2 (a) Explain various service layer in layered architecture of cloud with suitable example? (10)
(b) Write a short note on Hadoop. (5)

Q.3 (a) what is Google App? Explain the architecture of Google App Engine in detail. (10)
(b) write a short note on trust Management ? (5)

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6E1557

Roll No. _____ [Total No. of Pages : 2

6E1557

B.Tech. VI Sem. (Main Back) Examination June - 2022
Computer Sc. and Engg.
6CS5-11 Distribution System

Time : 2 Hours **Maximum Marks : 80**
Min. Passing Marks : 28

Instructions to Candidates:

*Attempt **all five** questions from **Part A**, **four** questions out of **six** questions from **Part B** and **two** questions out of **three** from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

Part - A

(Answer should be given up to **25** words only)

All questions are **compulsory.** **(5×2=10)**

1. What are the main characteristics of Distributed system?
2. What are the different models of Distributed system?
3. Define Distributed Filed system (DFS) with its requirements.
4. What is the need of multicast communication in Distributed system?
5. Define replication. What are the needs of replication?

Part - B

(Analytical/Problem solving questions)

Attempt any **four** questions. **(4×10=40)**

1. "Transparency is one the most important feature of Distributed system", Justify the statement with example.
2. Give the reason for "Access transparency is not maintained by conventional Remote procedure call (RPC)".
3. How does Distributed file system (DFS) encourage sharing a storage device, explain with the help of DFS architecture.

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4. Define Distributed mutual exclusion. In how many ways the mutual exclusion can be achieved in Distributed system?

5. In which situations, the following election algorithms are suitable
   i. Bully.
   ii. Ring.

6. Explain transaction recovery techniques with example.

Part - C

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any **two** questions. **(2×15=30)**

1. Why do we need a Distributed system? What are the challenges in achieving the requirements of Distributed system? Explain.
2. Define distributed objects. What are the needs of event notification during the communication among distributed system? Explain the distributed event notification architecture in detail.
3. Define fault tolerance. Explain how fault tolerance is ensured in distributed system. What are the different fault tolerance techniques?

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6E1559

Roll No. _____ [Total No. of Pages : 2

6E1559

B.Tech. VI Sem. (Main/Back) Examination, June - 2022
Computer Sc. & Engg.
6CS5-13 E-Commerce and ERP

Time : 2 Hours **Maximum Marks : 80**
Min. Passing Marks : 28

Instructions to Candidates:

*Attempt **all Five** questions from **Part A**, **Four** questions out of **Six questions from Part B and Two questions out of Three from Part C.***

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205).

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory **(5×2=10)**

1. What are the modes of Payments used in e-commerce?
2. Differentiate traditional marketing and E-marketing?
3. Define digital cash or e-cash.
4. What are the components of E-Commerce?
5. What are the different types of issues to be considered in E-Commerce?

PART - B

(Analytical/Problem solving questions)

Attempt any Four questions **(4×10=40)**

1. What are the different types of issues to be considered in E-Commerce? Explain. **(10)**
2. What is an EDI? Explain the advantages of EDI. **(10)**
3. a) Explain about E-marketing? **(5)**
   b) What are the different models of E-Commerce? **(5)**

4. What are the requirements of web based E-Commerce? **(10)**

5. What is E-Commerce? Explain advantages and disadvantages of E-Commerce. **(10)**

6. What are the different security methods for E-Commerce? **(10)**

PART - C

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any TWO questions **(2×15=30)**

1. a) What do you know the history of the internet and www? Also explain their services for electronic commerce? **(8)**

   b) Explain CRM in current scenario. **(7)**

2. a) Discuss the revenue generation models for spelling on the web also explain how communication take place with consumer on the web **(8)**

   b) Explain the advantages of online marketing. **(7)**

3. Write a short note on

   a) ISP **(5)**

   b) Technology issues in E-commerce **(5)**

   c) Business importance in using XML based Technology **(5)**

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6E6022

Total No. of Questions: Total No .of Pages:

Roll No. _____

B.Tech. VI-Sem (Back) Exam 2022
Computer Sc. & Engg.
6CS2A Design and Analysis of Algorithms
6E6022

Time: 3 Hours **Maximum Marks: 80**
Min Passing Marks: 24

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.
Use of following supporting material is permitted during examination.
(Mentioned in form No.205)
1_____ NIL **2. _____NIL____**

Q 1: a) Give recurrence relation that represents time complexity of Merge Sort Algorithm. Solve the recurrence to prove that time complexity of Merge Sort Algorithm is O(n log n). [8]

b) Define Minimum Spanning Tree. With the help of a suitable example explain Prim's Algorithm for finding MST of a given Graph G (V, E). [8]

OR

Q 1: a) Write Binary Search Algorithm. Prove that the time complexity of Binary Search algorithm is O (log n). [8]
b) What is Strassen's Matrix multiplication Algorithm? Enumerate its limitations. [4+4]

UNIT -II

Q. 2 : a) What do you understand by Dynamic Programming? How it is different from Greedy Strategy? [6]

b) What is Matrix Chain Multiplication Problem? Give dynamic programming algorithm to solve Matrix Chain Multiplication Problem. [10]

OR

Q.2: a) What do you understand by Backtracking? Solve 4-Queen Problem using Back Tracking? [6]

b) What is Travelling Salesman Problem (TSP)? Explain how to solve TSP using branch and bound? [10]

UNIT -III

Q. 3: a) Write Robin Karp String Matching Algorithm. Explain the algorithm with the help of an example. [12]

b) State quadratic assignment problem. [4]

OR

Q.3: In context of Boyer Moor Pattern Matching Algorithm explain the following:

a) Bad Character Heuristic [8]

b) Good Suffix Heuristic [8]

UNIT -IV

Q. 4 Write Short note on:

a) Monte Carlo Algorithms. [5]

b) Las Vegas Algorithms. [5]

c) Multi Commodity flow [6]

OR

Q.4: a) State Min-Cut Problem and give randomized algorithm to solve min-cut problem. [8]

b) State 2-SAT Problem and give randomized algorithm to solve 2-SAT problem. [8]

UNIT -V

Q. 5: a) State Vertex Cover Problem and give approximation algorithm to solve Vertex Cover Problem. [8]

b) State Set Cover Problem and give approximation algorithm to solve Set Cover Problem. [8]

OR

Q.5: Write Short note on:

a) NP-Complete Class [6]

b) Cooks Theorem [5]

c) Decision Problems [5]

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6E6023

Total No. of Questions: Total No .of Pages:

Roll No. _____

B.Tech. VI-Sem (Back) Exam 2022
Computer Sc. & Engg.
6CS3A Theory of Computation
6E6023

Time: 3 Hours Maximum Marks: 80

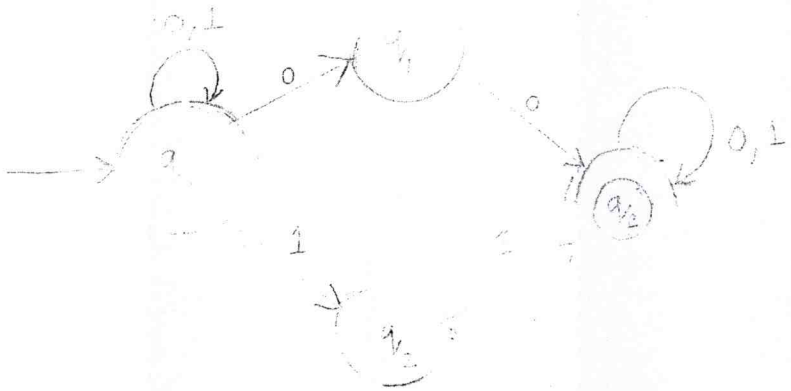
Min Passing Marks: 24

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1_____ 2. _____ ____

Q.1 (a) Differentiate between deterministic and Non deterministic finite automater. Convert the following non deterministic transition system into deterministic system.



[2+8=10]

P.T.O.

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(b) State pumping lemma for regular languages. [6]

OR

Q.1 Explain the basic concepts of finite state systems. Also explain the terms trap state , final state, non final state & Initial state? [16]

UNIT-II

Q.2 (a) Explain the concept of Regular sets and regular grammar with the help of an Example. [8]

(b) Write down the closure properties of regular languages. Also describe Pigeon hale principle ? [8]

OR

Q.2 (a) What is Myhill-Nerode theorem? Also Prove that L is regular languages, if L consisting of all string over {a,b}. [8]

(b) Construct finite automata equipment to the regular expression.

(0+1)* (00+11)* (0+1)* [8]

UNIT-III

Q.3 (a) Explain context free grammar and find the context free grammar for the following languages.

(i) $L = \{a^n b^m : n \geq 1\}$

(ii) $L = \{a^n b^m : n \leq m + 1\}$ [5+5]

(b) Explain Greiback normal form in detail. [6]

OR

Q.3 (a) Define push down automation Model and its role , also illustrate the move relation in detail. [12]

(b) Write a short note on description of ambiguity in context free grammar. [4]

UNIT-IV

Q.4 (a) Design a Turning Machine that computes to's complement of the given string over the $\varepsilon = \{0,1\}$. Also show the output of the machine for string"00000". [10]

(b) Explain Rice's theorems in detail. [6]

OR

Q.4 Construct a Turning Machine for

$L = \{a^n b\, c^n / n \geq 1\}$ [16]

UNIT-V

Q.5 Write a short note on :-

(i) Recursive and recursively enumerable language

(ii) Properties of context of language

(iii) Chomsky-Hierarchy of languages

(iv) Variation of turning Machine [4x4=16]

OR

Q.5 (a) Explain the Model of Linear Bounded Automata(LBA). [8]

(b) Find the linear bounded Automata for language

$L = \{a^n : n\ is\ a\ prime\ number\}$ [8]

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6E6024

Total No. of Questions: Total No .of Pages:

Roll No. _____

B.Tech. VI-Sem (Back) Exam 2022
Computer Sc. & Engg.
6CS4A Computer Graphics and Mutimedia Techniques
6E6024

Time: 3 Hours

Maximum Marks: 80
Min Passing Marks: 24

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1_____ 2. _____ ____

Ques1. Explain Raster scan displays and Storage tube displays in detail also describe the concept of refreshing, flicking, interlacing, color monitors, display processors and resolution. (16)

OR

Ques1. (a) Briefly discuss about antialiasing techniques (8)
(b) Write short note on programmer's model of interactive graphics (8)

Ques2. (a) Write and Explain Cohen-Sutherland Line Clipping Algorithm (8)
(b) Explain Sutherland-Hodgeman polygon Clipping Algorithm (8)

OR

Ques2. Explain the concepts of Translation, Rotation, Scaling and Reflection with the help of appropriate example. (16)

Ques3. (a) Explain Bezier curve with the help of an example (8)
(b) Explain B-Spline Curves with the help of example (8)

OR

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Ques3. (a) Write and Explain Scan line algorithm with example (8)
(b) Write short note on Hidden Lines & Surfaces. (8)

Ques4. Explain following in detail
(a) Phong shading (8)
(b) Gourand shading (8)

OR

Ques4. (a) What is rendering? Explain Basic illumination model in detail (8)
(b) Write short note on Ray Tracing (8)

Ques5. (a) Explain all the major components of multimedia along with their applications in detail (10)
(b) Write short note on problems and Animation techniques (6)

OR

Ques5. Explain following in detail.
(a) Storage and retrieval technologies (8)
(b) Architectural and telecommunication considerations (8)

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6E6027

Total No. of Questions: Total No .of Pages:

Roll No. _____

B.Tech. VI-Sem (Back) Exam 2022
Computer Sc. & Engg.
6CS6.2A Artificial Intelligence
6E6027

Time: 3 Hours

Maximum Marks: 80
Min Passing Marks: 24

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1_____ 2. _____ ____

UNIT-I

Q.1 (a) What is Artificial Intelligence? [8]
(b) Discuss various Production Systems in detail. [8]

OR

Q.1 (a) Differentiate between BFS and DFS. [8]
(b) Explain Hill Climbing technique in detail. [8]

UNIT-II

Q.2 (a) What are the problems behind representing knowledge? [8]
(b) Explain knowledge representation using Predicate logic. [8]

OR

Q.2 (a) Explain Monotonic and Non-Monotonic reasoning in detail. [10]
(b) What is refutation? [6]

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UNIT-III

Q.3 (a) What do you mean by Probabilistic reasoning? [8]
(b) What is Fuzzy Logic? [8]

OR

Q.3 (a) Explain Baye's Theorem in detail. [8]
(b) Explain forward and backward reasoning. [8]

UNIT-IV

Q.4 Discuss Game Playing Techniques in detail [16]

OR

Q.4 What is Natural Language Processing (NLP)? Explain different algorithms to implement NLP in Artificial Intelligence. [16]

UNIT-V

Q.5 (a) What is learning? Explain supervised and unsupervised learning. [8]
(b)What is Expert System? [8]

OR

Q.5 (a) What is Neural Network? Explain its applications. [8]
(b) Discuss softmax and relu functions in Neural Network. [8]