D 34391

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. (SPECIAL) SUPPLEMENTARY DEGREE EXAMINATION, SEPTEMBER 2017

MCA 2K 504(C)—MOBILE COMMUNICATION SYSTEMS

(2000 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*
Each question carries 20 *marks.*

1. (a) What is Multi-path propagation ? What do you mean by short-term fading and long-term fading ?

   (b) Explain the following :—

   (i) Amplitude shift keying.

   (ii) Frequency shift keying.

   (iii) Phase shift keying.

2. (a) Explain in detail about CDMA.

   (b) Explain in detail Fixed TDM.

3. (a) Explain the mobile services of GSM in detail.

   (b) Explain about routing, localization and handover in satellite systems.

4. (a) What is DECT ? Explain in detail the system architecture of DECT.

   (b) Explain about the security services offered by GSM in detail.

5. (a) With neat diagrams, explain the system architecture of IEEE 802.11.

   (b) Write notes on mobile quailty of service.

6. (a) What is use of encapsulation in Mobile network ? What are the different types of encapsulation performed in Mobile IP ? Explain.

   (b) Explain the following :—

   (i) Congestion control in TCP.

   (ii) Slow start in TCP.

   (iii) Fast recovery in TCP.

7. (a) Explain in detail about HTML.

   (b) Write notes on wireless transport layer security.

[5 × 20 = 100 marks]

C 23576 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 18 505 F—MACHINE LEARNING

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer the five full questions.
Each question carries 20 marks.

1. (a) Distinguish between supervised learning and Reinforcement learning. Illustrate with an example.

(10 marks)

(b) Discuss any four examples of machine learning applications. (10 marks)

2. (a) Briefly explain the working of decision tree algorithm with a suitable example. (10 marks)

(b) How Naïve Bayesian classifier works ? Explain with the help of an algorithm.

(10 marks)

3. (a) Explain the procedure for the computation of the principal components of the data.

(6 marks)

(b) Illustrate K means clustering algorithm with an example. (8 marks)

(c) Explain about linear discriminant analysis. (6 marks)

4. (a) Explain the methods used to learn multiple classes for a K class Classification Problem.

(8 marks)

(b) Explain the concept of a Perceptron with a neat diagram. (6 marks)

(c) What do you mean by Gradient Descent ? (6 marks)

5. (a) What are activation functions ? How are they classified ? (6 marks)

(b) What are the various activation functions used for binary and multi class classification problems ? Explain.

(14 marks)

6. (a) Explain about Deep feed forward networks. (6 marks)

   (b) What are recurrent neural networks ? Explain. Also state its drawbacks. (7 marks)

   (c) What is the need for regularization ? Explain various methods employed for deep learning applications. (7 marks)

7. Write notes on :

   (a) Concepts of hypothesis space. (5 marks)

   (b) Classification tree and regression tree. (5 marks)

   (c) Hierarchical Clustering. (5 marks)

   (d) Canonical correlation analysis. (5 marks)

C 23575 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 18 505 A—INTERNET OF THINGS

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. (a) Define IoT and list different Ubiquitous IoT Applications. (10 marks)

   (b) What is network topology ? Which topology will you prefer to develop a smart city ? Justify your answer. (10 marks)

2. (a) What are the Gaps between IoT standardization, IoT research, IoT development and IoT innovation ? (10 marks)

   (b) What is the importance of Zigbee Architecture ? (10 marks)

3. (a) What is WoT in IoT ? Describe Unified Multitier WoT Architecture in detail. (10 marks)

   (b) What is Cloud of Things ? What is the importance of Service Oriented Architecture (SoA) in IoT ? (10 marks)

4. (a) Briefly explain different Business Models for the IoT. (10 marks)

   (b) Briefly explain.

   (i) Cascading Behavior in Networks. (5 marks)

   (ii) Small World Phenomenon. (5 marks)

5. (a) Explain different resources used in IoT and its Proper Management. (10 marks)

   (b) What is Sensorbody-area-network ? Explain its functions. (10 marks)

Turn over

6. (a) Explain Cloud of Things Architecture in detail. (10 marks)

   (b) What is Cloud Middleware and differentiate Grid/SOA and Cloud Computing ? (10 marks)

7. (a) What is Zigbee ? Explain 802.15.4 physical layer, MAC layer and Security. (10 marks)

   (b) Explain SCADA Middleware , alliance MAC layer and related Security Issues . (10 marks)

C 23574

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (REGULAR/SUPPLEMENTARY) APRIL 2022

M.C.A.

MCA 18 504D—MOBILE COMPUTING

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions*
Each question carries 20 *marks.*

1. (a) What do you mean by Mobile Computing ? Explain the Characteristics of Mobile computing ?

   (b) Explain the various Information Management Issues and the reliability issues with respect to Mobile Computing ?

2. (a) What do you understand by Multiplexing ? Elaborate on the various types of Multiplexing ?

   (b) Describe in detail about the Fixed Channel Allocation in wireless communication. Explain its various advantages and limitations.

3. (a) Explain in detail about Location Management ? Briefly explain the various Location Management architectures, that you know.

   (b) List out the various problems that has to be addressed with respect to Location Management.

4. (a) With a neat diagram explain the architecture of TCP/IP.

   (b) Explain the Mobile payment schemes and security issues.

5. (a) List out the various applications of Wireless Sensor Network and explain each one of them in brief.

   (b) Write Short notes on (i) Data Aggregation ; and (ii) Data Fusion.

6. (a) With a neat sketch, explain Cellular Architecture.

   (b) Describe in detail about the Dynamic Channel Allocation in wireless communication. Explain its various advantages and limitations.

7. (a) What Short notes on the following components in Mobile computing ? i) XML ; and ii) J2ME.

   (b) Explain the working procedure and architecture of Mobile TCP with suitable diagrams.

(5 × 20 = 100 marks)

C 23573

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 18 504A—BIG DATA TECHNOLOGIES

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. A) What is NoSQL database ? List the differences between NoSQL and relational databases.

   B) Distinguish between document and columnar databases.

2. A) Why is Big data analytics important ? Explain.

   B) Explain the characteristics of a Big Data Analysis Framework.

3. A) What are Lists ? Explain how to Create and Merge Lists.

   B) Define Regression model. Explain Multiple linear regression used in R.

4. A) Explain the features of MapReduce.

   B) List and explain any five basic operations of Map Reduce programming model.

5. A) Explain the different data processing operators in Pig.

   B) What is Pig ? Explain the different complex data types in Pig.

6. A) Explain the execution of map function and reduce function with an example.

   B) Briefly explain the visualization process in HBase.

7. A) Explain some important Data Structures used in R Programming.

   B) Explain the various stages of MapReduce.

(5 × 20 = 100 marks)

C 23572 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 18 503—WEB PROGRAMMING

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. (a) What do you mean by Cascading Style Sheets ? Write out the steps to create CSS Style Sheets. List and explain the Font and text element properties and values used CSS.

   (b) Write an HTML document to display the following paragraph as per the given description Using CSS :

   1. Font Name Cooper Black.
   2. Style : Bold Italics.
   3. Colour : Blue.

   "The State Institute of Education (SIE) was established in 1965 to provide for systematic study of problems relating to School Education under the administration of Directorate of School Education".

2. (a) Explain the following with examples :

   a) Branching statements in PHP.

   b) Loops in PHP.

   (b) With a help of an example, explain accessing data from a MySQL database.

3. (a) Explain the following list methods with an example : a) Append () ; b) Extend () ; c) Insert() ; d) Index() ; and e) Sort().

   (b) Explain the different string formats available in Python with examples.

4. (a) Elaborate Server side scripting using python using an example.

   (b) Write short notes on ; (i) Capturing Form Data ; ii) Validation ; and iii) Processing Data.

Turn over

5. (a) How do you insert data into SQLite with Python. Explain with an example.

   (b) Write SQL queries to perform the following :

   i) Creating a database ;
   ii) Fetch one row from a table ;
   iii) Fetch all rows from the table ;
   iv) Filtering data using > and < "greater than" or "less than" ; and
   v) Deleting an entire table.

6. (a) Explain Hyperlinks in HTML document with examples.

   (b) Write short notes on Text Formating Tags in HTML with an example.

7. (a) List out the differences between Python Arrays and Lists ? Explain with an example.

   (b) Write a Python program to display the Fibonacci sequences up to nth term, where n is provided by the user.

(5 × 20 = 100 marks)

C 23571 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 18. 502—WIRELESS COMMUNICATION

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each Question carries 20 *marks.*

1. (a) "Signals are physical representation of data." Comment on this statement. (10 marks)

   (b) Explain in detail various effects of multipath propagation. (10 marks)

2. (a) Explain handover in Cellular Systems. (10 marks)

   (b) Explain the GPRS architecture model. (10 marks)

3. (a) Explain the process of registration of Mobile Node (MN) with Home Agent (HA) after the reception of COA. (10 marks)

   (b) Explain Dynamic Host Configuration Protocol (DHCP). (10 marks)

4. (a) Explain the architecture of IEEE 802.11 ad-hoc wireless LANs. (10 marks)

   (b) Explain Destination Sequence Distance Vector (DSDV) routing in ad-hoc networks. (10 marks)

5. Write a short note on :

   (a) Wireless application Environment (WAE). (5 marks)

   (b) Wireless session Protocol (WSP). (5 marks)

   (c) Wireless Transaction Protocol (WTP). (5 marks)

   (d) Wireless Datagram Protocol (WDP). (5 marks)

Turn over

6. (a) Compare SDMA, TDMA, CDMA and FDMA. (10 marks)

   (b) Explain Frequency Hopping Spread Spectrum in Detail. (10 marks)

7. (a) Explain WAE logical model in detail. (10 marks)

   (b) Explain Wireless Transport Layer Security (WTLS) in detail. (10 marks)

[5 × 20 = 100 marks]

C 23570

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 18 501—COMPUTER GRAPHICS

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. (a) Explain Raster Scan Systems. (15 marks)

   (b) Write a note on Raster Scan Display Processor. (5 marks)

2. Explain Midpoint Circle Drawing Algorithm with example. (20 marks)

3. (a) Explain different 2D viewing in detail. (10 marks)

   (b) Explain Cohen Sutherland Line Clipping with example. (10 marks)

4. (a) Explain Depth buffer method in detail. (10 marks)

   (b) Explain Perspective projection in detail. (10 marks)

5. Explain about motion specification. (20 marks)

6. (a) Explain 3D transformation in detail. (15 marks)

   (b) Write a note on A-buffer method. (5 marks)

7. (a) Explain DDA line drawing algorithm. (10 marks)

   (b) Write a note on computer animation languages. (10 marks)

C 23560 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 10 505.A—DATA MINING AND DATA WAREHOUSING

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions.*
Each question carries 20 *marks.*

I. (a) Differentiate between database and data warehouse. (10 marks)

(b) What do you mean by attribute in a data field ? Explain the different types of attributes with suitable examples. (10 marks)

II. (a) Explain the different methods for data cleaning. (10 marks)

(b) Write an algorithm for FP-Tree construction and explain how frequent item sets are generated from FP-Tree. (10 marks)

III. (a) Explain tree pruning with an example. (10 marks)

(b) Explain the various attribute selection measures. (10 marks)

IV. (a) Compare and contrast ROLAP and MOLAP. (10 marks)

(b) Discuss the representation, schema and measures of a multi-dimensional model in a Data Warehouse. (10 marks)

V. (a) Explain the algorithm for mining frequent item sets without candidate generation for the given dataset. Consider minimum support value as 2.

TID	ITEMS
100	(a, b, c, d, f, g, i, m, n)
200	(a, b, c, f, l, m, o)
300	(b, f, h, j, o, n)
400	(b, c, k, s, p)
500	(a, f, c, e, l, p, m, n)

(10 marks)

(b) Describe the data warehouse architecture in detail.

(10 marks)

Turn over

VI. (a) Explain Bayesian classification with suitable examples. (10 marks)

(b) Differentiate between linear and non-linear regression methods for prediction. (10 marks)

VII. (a) Describe K-Means and K-Medoid clustering algorithm with example. (12 marks)

(b) What are rough sets ? How are they used for classification ? (8 marks)

[5 × 20 = 100 marks]

C 23559 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION APRIL 2022

M.C.A.

MCA 10 504.B—COMPUTER ARCHITECTURE

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions.*
Each full question carries 20 *marks.*

1. (a) What do you mean by *Addressing modes* ? With suitable examples, explain the relevance of addressing modes. (14 marks)

   (b) State and explain *Amdahl's law.* (6 marks)

2. (a) Explain the quantitative principles of Computer Design. (10 marks)

   (b) Explain a Pipeline with Multicycle operations with suitable examples. (10 marks)

3. (a) What is meant by *Piplelining* ? What are the advantages of Pipelining ? Explain the different hazards which may occur in pipelining with suitable examples. (15 marks)

   (b) Consider a Multistage Pipeline that executes instructions in sequential order. Explain the different hazards which may occur as and when a JUMP instruction is processed by the processor. What are the actions required to resume the normal execution. (5 marks)

4. (a) What is meant by *Vector Chaining* ? What are its advantages ? Explain. (6 marks)

   (b) Explain the concept of Instruction level parallelism? Explain the potential challenges associated with it. (14 marks)

5. (a) Write notes on :

   (i) Chime and Convoy.

   (ii) Compiler Vectorization.

   (6 marks)

   (b) What do you mean by *Cache Memory* ? Explain its operational principles. (8 marks)

   (c) What is meant by *Cache Miss Penalty* ? Explain the technique to reduce this problem.

   (6 marks)

Turn over

6. What is meant by *Virtual Memory* ? What are its advantages ? How the virtual to physical address translation is done with suitable examples. (20 marks)

7. (a) Explain the various Multiprocessor architectures in detail. (10 marks)

   (b) Explain how Synchronisation is achieved in a Multiprocessor system. (10 marks)

[5 × 20 = 100 marks]

C 23558 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 10 504.A—ELECTRONIC COMMERCE

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. What do you mean by EDI through Internet ? What are its major benefits and challenges ? Explain. (20 marks)

2 (a) Give short notes on :

(i) Web Advertisements.

(ii) Catlog Publishing.

(iii) Interactive Ordering. (15 marks)

(b) Distinguish between Passive attacks and Active attacks. (5 marks)

3. (a) What is meant by Private Key Encryption ? Describe how secure message transmission can be done with private key encryption. (12 marks)

(b) Explain any two specific Intruder approaches to security threats in detail. (8 marks)

4. (a) What is meant by Electronic-Cash ? What are its characteristic properties ? Explain. (10 marks)

(b) What are Smart Cards ? Explain the different, types of Smart Cards in detail. (10 marks)

5. (a) Write notes on :

   (i) E-payment using plain credit card.

   (ii) E-Payment using Encrypted Credit Card.

   (iii) E-Payment using Third Party verification. (12 marks)

   (b) Explain the different risks occurring in payment through Electronic modes. (8 marks)

6. (a) Bring out the idea of Web branding. (8 marks)

   (b) Explain the different techniques for purchasing and support activities. (12 marks)

7. Explain the different legal, ethical and tax issues in connection with Electronic Commerce in detail. (20 marks)

[5 × 20 = 100 marks]

C 23557

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION, APRIL 2022

M.C.A.

MCA 10 503—WIRELESS COMMUNICATION

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*
Each full question carries 20 *marks.*

1. Give notes on the following :

   (a) ASK (b) FSK (c) PSK (d) MSK (e) QPSK.

   (20 marks)

2. (a) Explain the classical ALOHA and Slotted ALOHA protocols for Wireless Communication.

   (12 marks)

   (b) What is CSMA ? Distinguish between Persistant and Non-persistant CSMA.

   (8 marks)

3. (a) With a block diagram, explain the operational steps in Digital Audio Broadcasting.

   (12 marks)

   (b) Give a detailed note on WDM optical networks. (8 marks)

4. (a) Explain the Packet delivery process between a mobile node and the correspondent node in a typical mobile network.

   (10 marks)

   (b) Give a note on DHCP. (10 marks)

5. (a) What is Snooping TCP ? What are its merits and demerits ? Explain. (10 marks)

   (b) Explain the advantages and disadvantages of Wireless LAN. (10 marks)

6. (a) What is meant by an adhoc network ? Explain the different challenges of routing protocols in adhoc networks.

   (10 marks)

   (b) Give a detailed note on 1EEE 802.11 Blutooth networks. (10 marks)

7. What is Wireless Transaction Protocol(WTP) ? Explain the WTP Class-0, Class-1 and Class-2 protocols in detail.

   (20 marks)

C 23556 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION APRIL 2022

MCA

MCA 10 502—COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*
Each full question carries 20 *marks.*

1. (a) Explain the Cohen Sutherland Line Clipping Algorithm. Illustrate the algorithm by means of a suitable example.

(12 marks)

(b) Explain the Window to Viewport Transformation. (8 marks)

2. (a) A 2-D object kept at location (5,10) undergores the following 2D transformations :

(i) Translation through 5 units in horizontal direction and 8 units in vertical direction.

(ii) Rotation through an angle 45 degrees about the origin.

(iii) Reflection about the vertical axis.

Determine the Composite transformation matrix and obtain the co-ordinates of the final location.

(12 marks)

(b) Explain the 3D transformations Translation and Rotation. (8 marks)

3. Explain the parallel projection and perspective projection in 3-D in detail. (20 marks)

4. (a) What are the merits and demerits of Digital Audio and MIDI ? What are the usual parameters which determine the choice of MIDI versus Digital Audio ? Explain.

(10 marks)

(b) Explain any Five Audio File formats in detail. (10 marks)

5. (a) Explain the different properties of Multimedia Systems. (10 marks)

(b) What is Computer Animation ? Explain the different techniques in creating and controlling web animations.

(10 marks)

Turn over

6. Explain the JPEG Compression technique in detail. (20 marks)

7. Write short notes on the following :

   (i) Run Length Encoding.

   (ii) MPEG Compression.

   (iii) Multimedia Databases.

   (iv) H.261 Video Encoding.

(20 marks)

[5 × 20 = 100 marks]

C 23555

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION APRIL 2022

M.C.A.

MCA 10 501—OBJECT ORIENTED MODELING AND DESIGN

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*
Each Full Question carries 20 marks.

1. Explain the characteristics of Object Oriented Systems in detail. (20 marks)

2. (a) With suitable illustrative examples, explain the concept of *Polymorphism.* (10 marks)

   (b) What is UML ? What are its goals and features ? Explain. (10 marks)

3. (a) Differentiate between *Composition* and *Aggregation* in detail. (10 marks)

   (b) Draw a sequence diagram for the process of withdrawing money from an ATM. (10 marks)

4. (a) Write a detailed account on *Deployment Diagram.* (10 marks)

   (b) What is *architectural modelling* ? Explain the different UML notations used in architectural modelling. (10 marks)

5. (a) What is *Cohesion* ? Explain the different Cohesion problems which a class may have. (10 marks)

   (b) Define *Connascence.* Explain the different types of Connascence in detail. (10 marks)

6. (a) Write a note on *Direct Encumbrance.* State and explain the law of demeter for controlling encumbrance. (10 marks)

   (b) Explain the different ways in which inheritance may be misused in OO design. (10 marks)

7. (a) What are *Components* ? What are the merits and demerits of using components in OO design ? Distinguish between Lightweight and Heavyweight components. (12 marks)

   (b) Write notes on :

   (i) Mix in Classes.

   (ii) Rings of Operations. (8 marks)

D 13284 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 505 F—MACHINE LEARNING

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. a) Discuss with examples why machine learning is important. (6 marks)

   b) Write short notes on Inductive Learning. (8 marks)

   c) Describe in detail the different steps involved in designing a learning system. (6 marks)

2. a) What is Overfitting ? Why it happens ? How it can be avoided ? (7 marks)

   b) Differentiate between Supervised, Unsupervised and Reinforcement Learning. (7 marks)

   c) Explain any *three* applications of machine learning ? (6 marks)

3. a) What do you mean by Gain and Entropy ? How is it used to build the Decision tree in algorithm? Illustrate using an example. (10 marks)

   b) Explain Naïve Bayes Classifier with an example. (10 marks)

4. a) Compare Feature Extraction and Feature Selection techniques. Explain how dimensionality can be reduced using PCA. (10 marks)

   b) Define Clustering. What are the different types of clustering methods ? Explain in detail. (10 marks)

5. a) What is linearly inseparable problem ? Design a two-layer network of perceptron to implement a) X OR Y ; and b) X AND Y. (10 marks)

   b) Explain how to learn Multilayer Networks using Backpropagation algorithm. (10 marks)

Turn over

6. a) What are generative models ? Explain briefly. (4 marks)

   b) Explain Multiclass Classification with a suitable diagram. (8 marks)

   c) What is Regularization ? What are the various methods used for regularization in deep neutral networks. (8 marks)

7. a) What is deep learning ? Discuss its importance. (6 marks)

   b) What are the applications of Convolutional Neural Networks ? Explain. (4 marks)

   c) Explain the architecture of recurrent neural networks. (10 marks)

[5 × 20 = 100 marks]

D 13279 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 505A—INTERNET OF THINGS

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions.*
Each question carry 20 *marks.*

1. a) What is IoT ? Describe in detail about IoT ecosystem. (10 marks)

   b) What is Virtualization ? Discuss the advantages and disadvantages of virtualization. (10 marks)

2. a) Define IoT protocols, what is the important Vertical IoT Applications. (10 marks)

   b) What is BACNet Protocol ? What are the elements of one M2M IOT architecture ? Explain. (10 marks)

3. a) Explain different Middleware Platform for WoT. (10 marks)

   b) Describe :

      (i) OSGi : The Universal Middleware ; and (5 marks)

      (ii) WoT Framework. (5 marks)

4. a) Define IoT integration and explain Integrated Billing Solutions in the IoT. (10 marks)

   b) Explain in detail :

      (i) Population Models and Information Cascades ; and (5 marks)

      (ii) Network Effects. (5 marks)

5. a) Write applications of Internet of Things for e-health body area network. (5 marks)

   b) Explain in detail application of Internet of Things in city automation and home automation. (5 marks)

   c) Explain different resources used in IoT and how to manage the resources properly. (10 marks)

Turn over

6. a) What is the role of things and internet in IoT ? Explain in detail IoT Architecture with neat diagram. (10 marks)

   b) Compare Internet, Intranet and Extranet. With the help of a neat diagram explain IoT reference model. (10 marks)

7. a) What are the different smart technologies used for the development of IoT applications ? (10 marks)

   b) IoT is called as a Network of Network. Justify it. (5 marks)

   c) Summarize Sensor Network Technology in IoT. (5 marks)

[5 × 20 = 100 marks]

D 13277

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 504 D—MOBILE COMPUTING

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full question.*

Each question carries 20 *marks.*

1. (a) Enlist the applications of Mobile computing.

   (b) What are the different characteristics of mobile computing ?

2. (a) Explain different types of terminals used in wireless communication.

   (b) Describe Channel allocation and its types.

3. (a) Explain different location management algorithms.

   (b) Write a note on two tier architecture.

4. (a) What are the issues in traditional TCP ? Describe how to overcome the issues.

   (b) Differentiate between traditional TCP and mobile TCP.

5. (a) Define Protocol, Explain different types of sensor network routing protocols.

   (b) What is J2ME and explain how to develop Mobile Computing application platform.

6. (a) Define group-based mobility model and its types.

   (b) How to transfer Information dissemination through wireless medium.

7. (a) Define different location management update principles.

   (b) What is meant by location management? Explain the various challenges involved in it.

(5 × 20 = 100 marks)

D 13276

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 504 C—CYBER SECURITY

(2018 Syllabus Year)

Time : Three Hours | Maximum : 100 Marks

Answer any **five** *full question.*

Each question carries 20 *marks.*

1. (a) How to provide security in web applications ? Explain in detail.

   (b) Define Off-the shelf Technologies and explain its fundamental security mechanism.

2. (a) How to build a Network Disaster Recovery Systems to provide security ?

   (b) Explain different security systems available.

3. (a) Define secure coding and how to enable security.

   (b) Define Denial of Service and Session Hijacking and explain its importance in networking.

4. (a) What are the different cloud architectural models in detail ? Explain.

   (b) What are the secure cloud software requirements ? Explain in detail.

5. (a) Explain the benefits of biometrics over traditional authentication systems.

   (b) What is Tickets and tokens in biometrics ? Explain the concepts with examples.

6. (a) What are the different attack vectors through which the attacker can attack information system ? Explain.

   (b) Enumerate different phases of hacking. Explain each in detail.

7. (a) Why are programs and applications vulnerable to buffer overruns ?

   (b) What are the defenses against buffer over runs ? How can buffer overruns be prevented ?

(5 × 12 = 60 marks)

D 13275

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 504-B—DIGITAL IMAGE PROCESSING

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. a) What are the Components of Digital Image Processing, Explain.

   b) Explain the histogram processing and equalization process.

2. a) Explain the 2D Discrete Fourier Transformations properties.

   b) Explain smoothening filters in frequency domain.

3. a) What do you mean by Noise in image processing ? Explain any *three* noise models.

   b) Briefly explain different Mean Filters and Order-Statistics Filters. What are its uses for image processing ?

4. a) Explain any *two* image compression techniques with example.

   b) Write short notes on Structuring elements in image morphological transformations.

5. a) Describe erosion morphological transformations on a binary image.

   b) Explain JPEG image compression steps.

6. a) Explain Image Segmentation using Discontinuity Based Approach.

   b) Explain about basic adaptive thresholding process used in Image Segmentation.

7. a) Discuss about the following relationships between pixels with neat diagrams :

      (i) Neighbors of a pixel and Connectivity.

      (ii) Distance measures and Path.

   b) Explain some basic Intensity Transformation functions.

(5 × 20 = 100 marks)

D 13274 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 504 A——BIG DATA TECHNOLOGIES

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. (a) Discuss the role of NoSQL database in big data storage and Distinguish SQL database from NoSQL. (10 marks)

   (b) Explain big data processing method in real time mode. (5 marks)

   (c) Illustrate any three layers of Big Data stack. (5 marks)

2. (a) Explain the extraction techniques which is used in Big Data analytics. (10 marks)

   (b) Describe the Characteristics of a Big Data Analytics Framework. (10 marks)

3. (a) Explain control structures in R with example. (10 marks)

   (b) Explain the functioning of apply(), sapply() in R program with one example each and define any three math functions in R. (10 marks)

4. (a) On what concept the Hadoop framework works ? Explain the main components of a Hadoop Application ? (10 marks)

   (b) Explain the techniques for optimizing MapReduce job. (5 marks)

   (c) List the main features of MapReduce. (5 marks)

5. (a) Distinguish between Pig and hive, briefly explain its applications. (10 marks)

   (b) Explain in detail :

   (1) Data Processing Operators in Pig. (5 marks)

   (2) Architecture of Hive in Hadoop Ecosystem. (5 marks)

6. (a) Illustrate the computing technologies used for handling big data and discuss big data processing method in real time mode.

(10 marks)

(b) How the analysis of Big Data useful for organizations ? Discuss the role of NoSQL database in big data storage ?

(10 marks)

7. (a) Explain how to implement Linear Regression and Multiple Regression using R programming.

(10 marks)

(b) Discuss the various data types and different operators used in R programming.

(10 marks)

[5 × 20 = 100 marks]

D 13273 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 503—WEB PROGRAMMING

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. (a) What is XHTML ? What are the importance of XHTML ? Explain the Modularization in XHTML ?

   (b) Write short note on :

   (1) Dynamic HTML.

   (2) Cascading Style Sheets.

2. (a) Describe content management system and its features.

   (b) Explain different operators and control statements used in PHP.

3. (a) What are the different data structures used in python programming ? Explain.

   (b) What is list ? Explain append(), insert(), remove() method with examples.

4. (a) Elaborate the role of Web server and the mechanism behind exchange of data between form and server.

   (b) Write a short note on :

   (i) Capturing form data.

   (ii) Validation.

   (iii) Processing data.

5. (a) How to establish database connection using Python-SQLite.

   (b) Write queries for :

      (1) Database and table creation.

      (2) Selection.

      (3) Insertion and deletion.

6. (a) Explain the various file handling operations in Python.

   (b) Explain different string handling functions in Python.

7. (a) What are the advantages of server side programming using Python ? Explain in detail.

   (b) How To Secure Website Hosted On Apache Web Server ?

(5 × 20 = 100 marks)

D 13272

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 502—WIRELESS COMMUNICATION

(2018 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. (a) Provide an overview of the frequencies used for radio transmission. (10 marks)

   (b) Write a note on different signal propagation effects. (10 marks)

2. (a) What are the various types of numbers required to locate and address a mobile station ? (10 marks)

   (b) Explain the different security services offered by GSM. Which are the algorithms used to provide these services ? (10 marks)

3. (a) Explain the packet delivery to and from a mobile node. (10 marks)

   (b) Explain Indirect TCP. What are its advantages ? (10 marks)

4. (a) Explain the advantages and disadvantages of infrared technology and radio transmission. (10 marks)

   (b) Explain infrastructure - based system architecture of IEEE 802.11. (10 marks)

5. (a) Write a short note on Wireless Transport Layer Security (WTLS) in WAP. (5 marks)

   (b) Write a short note on Wireless Transaction Protocol (WTP) in WAP. (5 marks)

   (c) Explain how the WAP model works in detail. (10 marks)

6. (a) Explain in detail :

   (i) Code Division Multiplexing.

   (ii) Space division Multiplexing. (10 marks)

   (b) Explain Direct Sequence Spread Spectrum in detail. (10 marks)

7. (a) Explain Dynamic Source Routing (DSR) in detail. (10 marks)

   (b) Explain the IEEE 802.11 ad-hoc wireless LAN system architecture. (10 marks)

[5 × 20 = 100 marks]

D 13271

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 18 501—COMPUTER GRAPHICS

(2018 Syllabus Year)

Time : Three Hours | Maximum : 100 Marks

Answer any **five** *full questions.*
Each question carries 20 *marks.*

1. (a) Explain Raster and Random Scan Displays. (15 marks)

   (b) Explain various applications of Computer Graphics. (5 marks)

2. Explain Bresenham's Line Drawing Algorithm with example. (20 marks)

3. (a) Explain different 2D transformation in detail. (15 marks)

   (b) Explain Text Clipping with example. (5 marks)

4. (a) Explain Back face detection method in detail. (10 marks)

   (b) Explain parallel projection in detail. (10 marks)

5. (a) Write a note on computer animation. (5 marks)

   (b) Explain key frame systems in detail. (15 marks)

6. (a) Write a note on DVST. (5 marks)

   (b) Explain Cohen Sutherland line clipping in detail. (15 marks)

7. (a) Write a note on flat panel displays. (5 marks)

   (b) Explain Boundary fill algorithm in detail. (15 marks)

[5 × 20 = 100 marks]

D 13268 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 10 505.A—DATA MINING AND DATA WAREHOUSING

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer all **five** *questions.*
Each question carries 20 *marks.*

1. (a) What is meant by Knowledge Recovery ? What are the steps in Knowledge Discovery in Databases ? Explain.

(8 marks)

(b) What is meant by Data Cleaning ? Explain the different methods for data cleaning.

(6 marks)

(c) Write notes on the following multidimensional data model schema.

(i) Star Schema.

(ii) Snowflake Schema.

(iii) Fact Constellation Schema.

(6 marks)

2. (a) What is a Data Cube ? How does a Data Cube model Multidimensional data ? Explain.

(8 marks)

(b) Explain how Data Cube Aggregation and Dimension Reduction perform Data Reduction.

(12 marks)

3. (a) What do you mean by Concept Hierarchy ? Explain the different types of Concept Hierarchy with illustrative examples.

(10 marks)

(b) Give notes on the following measures of pattern interestingness :

(i) Simplicity. (ii) Certainity.

(iii) Utility (iv) Novelty.

(10 marks)

Turn over

4. (a) What is meant by Concept Description ? What are the differences between Concept Description in large Databases and OLAP ? Explain.

(8 marks)

(b) What do you mean by Data Generalisation ? Explain how data generalisation can be done by attribute oriented induction approach.

(12 marks)

5. (a) Explain the steps in performing Concept Description using Attribute Relevance Analysis.

(10 marks)

(b) Explain how Quantitative Discriminant rules can be framed up for performing Comparision Description.

(10 marks)

6. What do you mean by Association Rule Mining ? How Strong Association rules can be mined by extracting Frequent Item sets ? Explain in detail.

(20 marks)

7. (a) What do you mean by Data Warehouse ? Explain the Three Tier architecture for Data Warehouse.

(12 marks)

(b) Explain the need for separate Data Warehouse. (8 marks)

[5 × 20 = 100 marks]

D 13266

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A

MCA 10 504.B—COMPUTER ARCHITECTURE

(2010 Syllabus Year)

Time : Three Hours | Maximum : 100 Marks

Answer **five** *full questions.*

Each question carries 20 *marks.*

I. (A) Discuss the concept of instructions and executions. (10 marks)

(B) Define RISC machine. What are the main principles used to construct an RISC machine ? (2 + 8 = 10 marks)

II. (A) Explain various addressing modes with suitable example. (20 marks)

III. (A) What is pipelining ? Describe the speed up gain due to pipelining. (10 marks)

(B) Explain different types of hazards that can occur in pipeline. (10 marks)

IV. (A) What are the performance metrics of parallel systems ? Explain. (10 marks)

(B) With a suitable example explain vector processing. (10 marks)

V. (A) What are *five* techniques to reducing miss penalty ? Briefly explain. (10 marks)

(B) Explain the Address Translation in Virtual Memory. (10 marks)

VI. (A) With suitable diagram explain the memory hierarchy. (10 marks)

(B) Define multilevel caching. What are the advantageous of multilevel caching ? (10 marks)

VII (A) Describe the role of interconnection network in a multiprocessor system. (10 marks)

(B) Explain any *four* types of multiprocessor systems. (10 marks)

[5 × 20 = 100 marks]

D 13265

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 10 504.A—ELECTRONIC COMMERCE

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*

All questions carry equal marks.

I. (a) Describe the concept of E-commerce.

(b) Explain Internet and WWW tools which aids e-commerce.

II. (a) Explain Transaction Integrity and how it can be Ensured ?

(b) Discuss in detail about Security policy for E-commerce.

III. (a) What are the security requirements for using online e-cash services ?

(b) Explain the characteristics of online payment system ?

IV. (a) Describe the role of internet in setting E-commerce strategy ?

(b) Explain Applications of EDI.

V. (a) Discuss some of the marketing tactics used by Web sites to promote their auctions.

(b) Describe the process of the e-commerce project planning and management.

VI. (a) Discuss about the limitations of electronic commerce.

(b) Explain Advantages and Disadvantages of Internet/E-Commerce Integrated Supply Chain.

VII. (a) Once a company has acquired customer, the key to maximizing revenue is keeping them. Explain how e-commerce is helpful in customer retention ?

(b) Explain about E-marketing.

(5 × 20 = 100 marks)

D 13264

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 10 503—WIRELESS COMMUNICATION

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*
All questions carry equal marks.

I. A) What do you mean by multiplexing ? Explain about time division multiplexing. If a link transmits 4000frames per second, and each slot has 8 bits, then what is the transmission rate of the circuit if time division multiplexing is used ?

(10 marks)

B) Which are the three different basic schemes known for analog modulation ? Briefly explain each of them.

(10 marks)

II A) Explain in detail about SDMA. (10 marks)

B) What do you mean by MACA ? Briefly discuss the concept of MACA. (10 marks)

III A) With neat diagram explain the functional architecture of GSM systems. (10 marks)

B) What do you mean by MOC in GSM systems ? Explain about the message flow for MOC.

(10 marks)

IV A) Explain in detail about high speed circuit switched data. (10 marks)

B) Explain the concept of Digital Audio Broad casting. (10 marks)

V A) Explain IP packet delivery. (10 marks)

B) With neat diagram explain Generic routing encapsulation. (10 marks)

VI A) What are the advantages and disadvantages of WLAN ? (10 marks)

B) Explain in detail the architecture of ad-hoc based IEEE 802.11. (10 marks)

VII A) Explain in detail about WAE model. (10 marks)

B) Discuss about Wireless transaction protocol specification. (10 marks)

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 10 502—COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*

All questions carry equal marks.

I. (a) Explain different Application of Computer Graphics. (10 marks)

(b) Rotate a triangle with vertices (10, 20), (10, 10), (20, 10) about the origin by 30 degrees and then translate it by $t_x = 5, t_y = 10$. Roughly plot the original and resultant triangles. (10 marks)

II. (a) Elaborate Matrix Representation and Homogeneous co-ordinates (10 marks)

(b) Explain the following 3D transformations with their 3D transformation matrix :

(i) Scaling with respect to origin. (3 marks)

(ii) Rotation with respect to $z = 0$ plane. (4 marks)

(iii) xy-Shearing. (3 marks)

III. (a) Explain multimedia system. (10 marks)

(b) Write about attributes, file formats, compression standards for Digital Audio. (10 marks)

IV. (a) Elaborate the working of animation techniques. (10 marks)

(b) Discuss in detail about Captured Image Format. (10 marks)

V. (a) Explain Major Steps of Data Compression. (10 marks)

(b) Explain the Coding Algorithms used in H.261 (10 marks)

VI. (a) Explain in detail the Cohen-Sutherland line clipping algorithm with an example. (10 marks)

(b) Discuss any two audio file formats that are used in multimedia. (10 marks)

VII. (a) Explain brashenham line drawing algorithm briefly. (10 marks)

(b) Given a circle with radius $r = 8$, determine pixel position along the circle in the 1st quadrant from $x = 0$ to $x = y$. (10 marks)

D 13262

Name.....

Reg. No.....

FIFTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2021

M.C.A.

MCA 10 501—OBJECT ORIENTED MODELLING AND DESIGN

(2010 Syllabus Year)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*

All questions carry equal marks.

I. (a) Explain in detail the object oriented concepts used in UML.

(b) Write short notes on the history of object orientation.

II. (a) Describe in detail about aggregation and composition ? Differentiate between aggregation and composition.

(b) What is an activity diagram ? Draw the activity diagram for a ticket vending machine.

III. (a) Explain the concept of sequence diagrams. Draw the sequence diagram which shows the interactions between a user and a ticket booking system in booking a seat.

(b) Describe with an example the concept of state diagrams. What is the use of a state diagram ?

IV. (a) What is a package diagram ? Explain. Which is the different dependency notations used in package diagram ?

(b) Describe in detail about interface diagrams.

V. (a) Explain encapsulation structure. Which are the different levels of encapsulation ?

(b) Explain the concept of state spaces and behavior of subclasses. Give an example.

VI. (a) What are the uses and abuses of inheritance ?

(b) What are components and objects of a class ? Explain.

V. (a) What are the merits and demerits of using components ?

(b) What are mix-in classes ? Give an example.

[5 × 20 = 100 marks]