| R6055 | Sub. Code |
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|       | **541101** |

## M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021

### First Semester

### Computer Applications

### COMPUTER ARCHITECTURE AND ORGANIZATION

### (CBCS – 2020 onwards)

Time : 3 Hours                   Maximum : 75 Marks

**Part A**                   (10 × 2 = 20)

Answer **all** the questions.

1. Define : number system.

2. Convert the following binary number to octal number form.

   (a) $10110100_2$

   (b) $110001_2$

3. What do you mean by decoder?

4. Define : register.

5. What is instruction code?

6. What is interrupt?

7. Define : addressing modes.

8. What is data transfer instruction?

9. Define virtual memory.

10. What is the use of peripheral devices?

**Part B** (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a short notes on floating point representation.

Or

(b) Briefly explain De-Morgan's theorems with examples.

12. (a) Define half adder. Explain the logic circuit and its function with example.

Or

(b) Briefly explain JK flip flop and its characteristics.

13. (a) Write a short notes on basic computer instructions.

Or

(b) Explain briefly about memory reference instructions.

14. (a) Discuss : Instruction formats.

Or

(b) Explain general register organization.

15. (a) Discuss : Asynchronous data transfer.

Or

(b) Discuss : Auxiliary memory.

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**Part C**                    $(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain Karnaugh map simplification with example.

17. Define full adder. Explain the logical circuit and the function of full adder with example.

18. Describe timing and control unit in computer organization and design.

19. Explain various data transfer manipulation instructions with examples.

20. Explain in detail about associative memory and cache memory organization.

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**M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Computer Applications**

**OBJECT ORIENTED PROGRAMMING AND C++**

**(CBCS – 2020 onwards)**

Time : 3 Hours　　　　　　　　　　Maximum : 75 Marks

**Part A**　　　　　　$(10 \times 2 = 20)$

Answer **all** questions.

1.　What do you mean by a token?

2.　Define : Encapsulation and data hiding.

3.　Define class and objects.

4.　What is the function of copy constructor?

5.　What is inheritance?

6.　What do you mean by virtual function?

7.　What are the file streams?

8.　How do you declare class template?

9.　What is the role of catch block?

10.　Define exception.

**Part B**                          $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe different data types along with their representations and size in C++.

Or

(b) What are the features of object oriented programming**?**

12. (a) Differentiate call by value and call by reference.

Or

(b) Discuss default constructor and parameterized constructor with example.

13. (a) Explain multiple inheritance with example.

Or

(b) Explain virtual function with example.

14. (a) Write a C++ program involving a class template.

Or

(b) Write a C++ program involving reading and writing of class objects in a file.

15. (a) Write a short note on C++ exception classes.

Or

(b) How do you handle exceptions in constructors and destructors?

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**Part C** $(3 \times 10 = 30)$

Answer any **three** questions.

16. Differentiate nested if else and switch statement with example.

17. What is the significance of static data and member functions in C++? Explain it with example.

18. Explain the concept of polymorphism with example.

19. Discuss in detail about various file stream classes and its purpose with example.

20. Explain the concepts of exception handling with example.

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**R6057**

**M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Computer Applications**

**RELATIONAL DATABASE MANAGEMENT SYSTEM**

**(CBCS – 2020 onwards)**

Time : 3 Hours                    Maximum : 75 Marks

**Part A**          (10 × 2 = 20)

Answer **all** questions.

1.    Define : data abstraction.

2.    What is attribute and entity sets?

3.    What is the use of joins?

4.    Define : integrity constraints.

5.    What do you mean by functional dependencies?

6.    What is lossless-join decomposition?

7.    List the types of serializability.

8.    What is recovery and atomicity of transaction?

9.    What are the benefits of using Index-sequential files?

10.   What is hashing?

**Part B** $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss in detail about relational model with example.

Or

(b) Discuss : Database users and administrator.

12. (a) Explain in detail about Tuple relational calculus.

Or

(b) Discuss briefly about views with example.

13. (a) Discuss the following

(i) aggregative operators

(ii) NULL values.

Or

(b) Explain BCNF with examples.

14. (a) Discuss : Timestamp based protocols.

Or

(b) Explain : Buffer management.

15. (a) List out similarities and differences between extendible and linear hashing.

Or

(b) How does B⁺ tree index handle search insert and delete? Explain it in detail.

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Answer any **three** questions.

16. Elaborate : Database languages with example.

17. Explain briefly about relational algebra with example.

18. Define normalization. How normalization can be done in 1NF, 2NF and 3NF. Give suitable examples.

19. Discuss the following :

    (a) failure with loss of nonvolatile storage

    (b) advance recovery systems

    (c) remote backup systems

20. How doe ISAM index handle search, insert and delete operations? Explain it in detail.

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**M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Computer Applications**

**DISCRETE MATHEMATICS**

**(CBCS – 2020 onwards)**

Time : 3 Hours                                    Maximum : 75 Marks

**Part A**                        $(10 \times 2 = 20)$

Answer **all** the questions.

1.   Define statement and give example.

2.   Obtain disjunctive normal form of $P \wedge (P \to Q)$.

3.   Define equivalence relation.

4.   Define characteristic function.

5.   Define

     (a)   Semi group (b) Monoid.

6.   Is $(Z, *)$ a monoid? Justify your answer.

7.   What is a directed graph?

8.   When will the graph is said to be connected? Give example.

9.   What are the types of probability distribution?

10.  What is the average toss of a fair six-sided die?

**Part B** $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Write the difference between disjunctive normal form and conjunctive normal form.

   Or

   (b) Tabulate the most commonly used rules of inference.

12. (a) If $S = R$ and $\mathbb{R}$ be $\leq$. Then check whether it is

   (i)   reflexive
   (ii)  symmetric
   (iii) antisymmetric
   (iv)  transitive
   (v)   an equivalence relation
   (vi)  a partial order

   Or

   (b) Prove that $(A_1 \times A_2 \times \cdots \times A_k) \cap (A_{K+1} \times A_{k+2} \times \cdots \times A_{2k})$
   $\cdots n(A_n \times A_1 \times \cdots \times A_{k+1}) = (A_1 \cap A_2 \cap \cdots \cap A_n)^k$

13. (a) Let ($\mathsf{M}$,*) be a monoid. Let $x, y \in \mathsf{M}$. Then prove that

   (i)   If $x$ is invertible, then $x^{-1}$ is invertible with $\left(x^{-1}\right)^{-1} = x$.

   (ii)  If $x$ and $y$ are invertible, the $x * y$ is invertible with inverse $y^{-1} * x^{-1}$

   (iii) The identify element 1 is invertible with $1^{-1} = 1$.

   Or

   (b) State and prove Lagrange's theorem.

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14. (a) Show that a graph $G$ is disconnected $\Leftrightarrow$ it is vertex set $V$ can be partitioned into two non empty subsets $V_1$ and $V_2$ such that $\nexists$ no edge in $G$ whose one end vertex is in $V_1$ and other in $V_2$.

Or

(b) Prove that a connected graph $G$ is Eulerian $\Leftrightarrow$ all the vertices are of even degree.

15. (a) If you pull two cards out of a deck, what is the probability that both are spades?

Or

(b) Determine the mean and variance of the random variable $X$ having the following probability distribution.

| $X = x$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---------|------|------|------|------|------|------|------|------|------|------|
| $P(x)$ | 0.15 | 0.10 | 0.10 | 0.01 | 0.08 | 0.01 | 0.05 | 0.02 | 0.28 | 0.20 |

**Part C** $(3 \times 10 = 30)$

Answer any **three** questions.

16. Define

(a) Tautology

(b) Contradiction

(c) Contingency

Explain with examples.

3

17. (a) If $f$ and $g$ are bijections on set $A$, then prove that $f \circ g$ is also a bijection.

    (b) If $R$ is an equivalence relation on a set $A$, prove that $[x] = [y] \Leftrightarrow xRy$ where $[x]$ and $[y]$ denote equivalence classes containing $x$ and $y$ respectively.

18. Show that the composition of semi group homomorphism is also a semigroup homomorphism.

19. If $G$ has atleast 3 vertices, the $G$ is 2-connected iff every two vertices $u$ and $v$ are contained in a cycle.

20. State and prove Bayers' Theorem.

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**M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Computer Applications**

**COMPUTER NETWORKS**

**(CBCS – 2020 onwards)**

Time : 3 Hours                    Maximum : 75 Marks

**Part A**                    (10 × 2 = 20)

Answer **all** questions.

1.   Write short note on use of computer networks.

2.   List the feature of LAN.

3.   What is meant by CSMA/CD?

4.   How is the minimum size of an Ethernet frame determined?

5.   What are the different kinds of routing?

6.   What is the difference between congestion control and flow control?

7.   What are the goals for setting up networks?

8.   Define SMTP.

9.   Define Network security.

10.   What are the different types of network security services?

**Part B** (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) With a neat block diagram, explain any ISO/OSI reference model of network.

Or

(b) Discuss the techniques used in transmission media.

12. (a) Discuss briefly about data link layer.

Or

(b) Write a short note on link layer services.

13. (a) Write any two routing algorithms.

Or

(b) Discuss briefly about circuit switching.

14. (a) Illustrate the features of FTP and its operations.

Or

(b) Write the difference between connection oriented Vs connection less services.

15. (a) Discuss the various principles involved in private and public key cryptography.

Or

(b) Perform decryption and encryption using RSA algorithm with p = 3, q = 11, e=7 and N = 5.

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**Part C** (3 × 10 = 30)

Answer any **three** questions.

16. With a neat diagram. Explain the categories of Network.

17. What is CSMA? List the protocols used with CSMA.

18. Discuss the types of switching and its advantages and applications.

19. Draw and explain TCP state transition diagram.

20. (a) Discuss various transformation functions of AES. (5)

    (b) Write a note on Block apher design principles. (5)

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**M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Computer Applications**

**DATA MINING AND WAREHOUSING**

**(CBCS – 2020 onwards)**

Time : 3 Hours                    Maximum : 75 Marks

**Part A**          (10 × 2 = 20)

Answer **all** the questions.

1. What is Data Mining?

2. Define Meta data.

3. Define KDD.

4. List any four reasons to perform data preprocessing.

5. What is Association Rule?

6. Differentiate classification and prediction.

7. Define Genetic Algorithm.

8. List at two approaches of Clustering.

9. State any two applications of data mining.

10. What is Data Store?

Answer **all** the questions, choosing either (a) or (b).

11.  (a)  Elucidate briefly about different types of Warehouse schemes.

Or

(b)  Brief about Date Modeling Tools.

12.  (a)  Describe the stages of KDD.

Or

(b)  Discuss the visualization concept in Data Mining.

13.  (a)  Describe the methods to discover Association Rule.

Or

(b)  Explain pincer search algorithm.

14.  (a)  Describe in detail about K- Medoid algorithm in clustering.

Or

(b)  Brief about the uses of Neural Network.

15.  (a)  Explain web content Mining in detail.

Or

(b)  Write about the Web usage Mining.

**Part C** (3 × 10 = 30)

Answer any **three** questions.

16.  Elaborate the concept of Data Mining techniques with suitable example.

17.  Discuss the different KDD steps in detail.

2 **R6060**

18. Explain Apriori Algorithm with examples.

19. Write in detail about Clustering Partitioning Algorithm.

20. Discuss Data Analytics life cycle.

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**R6060**

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| | **541302** |

## M.C.A. (Computer Applications) DEGREE EXAMINATION, NOVEMBER – 2021

### Third Semester

### PYTHON PROGRAMMING

### (CBCS – 2020 onwards)

Time : 3 Hours　　　　　　　　　　Maximum : 75 Marks

**Part A**　　　　　　　(10 × 2 = 20)

Answer **all** questions.

1. Identify the types of data supported by Python programming.

2. List the symbols used in drawing the flowchart.

3. Outline the logic to swap the contents of two identifiers without using third value.

4. What is a string?

5. Write a Python program to accept two numbers, find the greatest and Print the result.

6. Mention the use of pass statement in Python code.

7. How to slice a list in Python?

8. Define recursive function.

9. What is a class?

10. Define the term data encapsulation.

## Part B  (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss about the building blocks of algorithms.

Or

(b) What is programming language? List and explain the types of errors in programming?

12. (a) Mention the list of keywords available in Python.

Or

(b) Write a Python code to search a string in the given list.

13. (a) Demonstrate with code on how the break statement that can be performed in switch- case statement.

Or

(b) Write a Python code to search a string in the given list.

14. (a) Describe with code the various operations that can be performed on tuples.

Or

(b) Outline pass by value in Python with example.

15. (a) Write a short note on abstract data types.

Or

(b) Explain about how exceptions are handled with example.

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Answer any **three** questions.

16.  What is an pseudo code? How to prepare a pseudo code to find a maximum of any three numbers?

17.  Summarize the role of operators in Python programming.

18.  Discuss the usage of control statement in Python programming.

19.  Write short notes on the following.

     (a)   String

     (b)   List.

20.  List the types of inheritance with programming examples.

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## M.C.A. (Computer Applications) DEGREE EXAMINATION, NOVEMBER – 2021

### Third Semester

### SOFTWARE ENGINEERING

### (CBCS – 2020 onwards)

Time : 3 Hours                    Maximum : 75 Marks

**Part A**                    (10 × 2 = 20)

Answer **all** the questions.

1.   What is software engineering?

2.   Write advantages of using software engineering for the development of software.

3.   List the characteristics of validation requirements.

4.   What is scenario-based engineering process (SEP)?

5.   What do you infer from the design quality attributes 'FURPS'?

6.   How do you create a design evaluation?

7.   "Integration testing is harder than unit testing". Justify.

8.   Distinguish between verification and validation.

9.   Mention the activities of software quality management?

10.  What is the significance of agile methodology?

**Part B**          $(5 \times 5 = 25)$

Answer **all** the questions, choosing either (a) or (b).

11. (a) What are the five levels of CMMI? List important features of each of these levels.

Or

(b) Explain software process assessment cycle.

12. (a) Summarize the three analysis techniques that are used in object-oriented analysis.

Or

(b) Outline about class-based modeling in software engineering.

13. (a) Explain in detail types of coupling with examples.

Or

(b) Develop the design issues in interface design.

14. (a) Briefly discuss and differentiate between the following:

(i) Verification and validation

(ii) Alpha and Beta testing.

Or

(b) Discuss the purpose of information flow metrics during development of a software project.

15. (a) What do you mean by software review process? Sketch and explain the workflow of software review process.

Or

(b) Describe in detail about extreme programming.

2          **R6062**

**Part C**                    $(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain Increment Development process model with a neat block diagram. List its benefits and problems.

17. What do you mean by requirement engineering? List and explain the four steps of requirement engineering process.

18. Discuss about user interface design of a software with an example and neat sketch.

19. What is black box testing? Explain in detail boundary value analysis with an example.

20. Summarize the components of SQA system in detail.

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3                    R6062

| R6063 | Sub. Code |
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# M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021

## Third Semester

## Computer Applications

## INFORMATION AND CYBER SECURITY

## (CBCS – 2020 onwards)

Time : 3 Hours    Maximum : 75 Marks

### Part A    (10 × 2 = 20)

Answer **all** questions.

1. Define Cryptography.

2. What do you mean by Data Leakage?

3. Differentiate symmetric and asymmetric encryption.

4. What are the different modes of operation in DES?

5. What are the operations used in AES?

6. What is Modification of messages?

7. What is meant by Message Authentication?

8. Define Digital signature.

9. What are two common techniques used to protect a password file?

10. Define virus.

**Part B**                    (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11.  (a)  What is Cyber Security and How it is different from Information Security in detail?

Or

(b)  Explain Firewall and working of Firewall.

12.  (a)  Perform encryption and decryption using RSA Algorithm, for the following.

P = 7 ; q = 11 ; e = 17 ; M = 8.

Or

(b)  With suitable sketches, explain the working of DES algorithm.

13.  (a)  Explain with examples the various classical encryption schemes.

Or

(b)  Discuss any three cryptographic tools and their significance in information security.

14.  (a)  Discuss about detailed note on Digital signatures.

Or

(b)  Explain in detail about firewalls.

15.  (a)  Describe in detail the designing of new security architecture.

Or

(b)  Explain the difference between Virus, Worms and Trojan horse.

**R6063**

Answer any **three** questions.

16. Explain the concept of cryptography by using the diagrammatical approach of it? Define the transformation method of it.

17. Draw the general structure of DES and explain the encryption decryption process.

18. Explain about OSI Security architecture model with neat diagram.

19. Write and explain the digital signature algorithm. Explain in detail Hash Functions.

20. Elaborate Cyber-crime play a vital role against person, property and govt. to protect all valuable information and rights.

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| R6064 | | Sub. Code |
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# M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021

## Third Semester

## Computer Applications

## BIG DATA ANALYTICS

## (CBCS – 2020 onwards)

Time : 3 Hours                                    Maximum : 75 Marks

### Part A                              (10 × 2 = 20)

#### Answer **all** questions.

1. What is MapReduce?

2. What are the characteristics of big data?

3. What do you mean by data stream?

4. What is the definition of real time data?

5. How will you solve a classification problem using Decision Tree?

6. What is classification?

7. Define k-means clustering.

8. Differentiate between true positives and false positives.

9. How will you avoid overfitting in decision tree?

10. Write short notes on support vector machines.

**Part B** $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) How will you evaluate a decision tree? Explain in detail.

Or

(b) Explain about Classification of Decision trees in detail.

12. (a) Explain about k-means Clustering in detail.

Or

(b) What is Hadoop? Explain its components.

13. (a) Explain how you analyze the data in Hadoop in detail.

Or

(b) What is Cluster? Explain the setting up a Hadoop cluster.

14. (a) What are the different types of Hadoop configuration files? Discuss.

Or

(b) What is a neural network? How can it be used in analytics?

15. (a) What is HDFS? How does it handle Big Data?

Or

(b) Write R function to check whether the given number is prime or not?

2      R6064

Answer any **three** questions.

16. What are the benefits of Big Data? Discuss challenges under Big Data. How Big Data Analytics can be useful in the development of smart cities.

17. Discuss about the Applications of Machine Learning algorithms in detail.

18. List various application of big data. How it can be used to improve business for a superstore.

19. What are the various stages in big data analytics life cycle? Illustrate with a figure, explaining each of them.

20. Discuss why is big data analytics important in detail with suitable example.

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| R6065 | | Sub. Code |
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# M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021

## Fifth Semester

## DIGITAL IMAGE PROCESSING

### (CBCS – 2019 onwards)

Time : 3 Hours                    Maximum : 75 Marks

**Part A**                    (10 × 2 = 20)

Answer **all** the questions.

1. Mention the elements of digital image processing.

2. What is sampling?

3. List out the important properties of 2-D Fourier transform.

4. Define the term reverse Discrete Cosine Transform (DCT).

5. How do I stop my photos form clipping?

6. What is image enhancement in spatial domain?

7. Outline the two properties in linear operator.

8. Why the restoration is called as unconstrained restoration?

9. What is the need for compression?

10. Write down the limitation of wavelet coding.

**Part B** (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the procedure of converting colors from RGB to HSI.

Or

(b) Discuss about image sampling and quantization.

12. (a) Define 2-D DFT. Explain any four properties of 2-D DFT.

Or

(b) Write a short note on singular value decomposition transform.

13. (a) Explain the histogram equalization technique for image enhancement.

Or

(b) With necessary equations? explain about Homomorphic filtering.

14. (a) What are the different ways to estimate the degradation function? Explain.

Or

(b) What is color image smoothing? Explain how smoothing will done by neighborhood averaging.

15. (a) Explain about the Bit Plane Coding in Error Free Compression.

Or

(b) What is block transform coding? Explain.

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**Part C**   $(3 \times 10 = 30)$

Answer any **three** questions.

16. With the help of block diagram, describe in detail fundamental steps in image processing.

17. Define two dimensional unitary transform. Check whether the unitary DFT matrix is unitary or not for N=4.

18. Explain the various enhancement techniques performed in spatial domain.

19. Elaborate the procedure for image restoration using inverse filtering. Write the drawbacks of this method.

20. With the neat sketch explain about Lossy compression techniques.

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**R6065**

| R6066 | | Sub. Code |
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| | | 541502 |

## M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021

### Fifth Semester

### MOBILE COMMUNICATIONS

### (CBCS – 2019 onwards)

Time : 3 Hours          Maximum : 75 Marks

**Part A**        (10 × 2 = 20)

Answer **all** the questions.

1. What are the challenges in mobile communication?

2. List cut the differences between mobile communication and wireless communication.

3. Mention the three important features of GSM security.

4. What are the main elements of UMTS?

5. Define IEEE8O2.11.

6. Inspect the advantages of WLANS.

7. Relate the term tunneling and mobile IP.

8. Compare MANET and VANET.

9. Outline the components of Android application.

10. Expand the term MIMO-OFDM.

Answer **all** questions, choosing either (a) or (b).

11. (a)    Write short notes on signals.

Or

(b)    What is Multiplexing? Explain.

12. (a)    Explain the security services of GSM.

Or

(b)    What is an orbit? List the different types of satellite orbits.

13. (a)    Discuss the difference between IEEE 802.11 and IEEE 802.11b.

Or

(b)    What do you mean by Bluetooth? Illustrate the Role of Piconets in Bluetooth.

14. (a)    Describe in detail the registration procedure in Mobile IP.

Or

(b)    With neat sketch, discuss the Wireless Application Protocol architecture in detail.

15. (a)    What is android virtual devices? How can you create and manage android virtual devices.

Or

(b)    Summarize the functions of Cognitive Radio(CR).

**R6066**

**Part C** (3 × 10 = 30)

Answer any **three** questions.

16. Describe the architecture of mobile computing.

17. Explain in detail about UTMS architecture and its services.

18. Discuss in detail about the Link manager protocol.

19. Briefly discuss about agent discovery in Mobile IP

20. Write short notes on Android SDK.

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R6066

| R6067 | Sub. Code |
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# M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021

## Fifth Semester

## PYTHON PROGRAMMING

### (CBCS – 2019 onwards)

Time : 3 Hours                                   Maximum : 75 Marks

**Part A**                              (10 × 2 = 20)

Answer **all** the questions.

1. Identify the types of data supported by Python programming.

2. Determine the usage of type () function in Python programming.

3. Mention the importance of List

4. State the use of Recursive function.

5. Write down the string handling functions in Python programming.

6. Outline the process of concatenation and in operators.

7. How the values in a tuple are accessed?

8. What do you mean by Exception?

9. List down the features of object-oriented programming.

10. Define the term data encapsulation.

**Part B**                    $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11.  (a)  Discuss about the Iteration statements available in python programming with example.

Or

(b)  Discuss the usage of control statement in python programming.

12.  (a)  Create a python program to display Fibonacci sequence for N terms using Function.

Or

(b)  Write short notes on the following.

(i)   String

(ii)  List

(iii) Tuple

(iv)  Dictionary

13.  (a)  List out string built-in functions in python.

Or

(b)  What is a list? How the list elements can be accessed and stored into a list? Show it with simple python program.

14.  (a)  What are exceptions? Show how the exceptions are handled in python programming?

Or

(b)  Write a python program to count the number of characters in a file.

2                        R6067

15. (a) Write short notes on the following-with example program.

   (i) Objects as arguments

   (ii) Objects as return values.

Or

   (b) Explain the following with example.

   (i) Method overriding.

   (ii) Data hiding.

**Part C**                    $(3 \times 10 = 30)$

Answer any **three** questions.

16. Summarize the role of operators in python programming.

17. (a) Write a python program to demonstrate built-in functions.                                        (5)

   (b) Write a recursive function in python to find the factorial of a given number.            (5)

18. Summarize the utilization of string slices and string traversal with an example.

19. Show how to create a tuple and how the values are accessing in a tuple? Give an example.

20. Explain about the concept of Inheritance with suitable example.

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| R6068 | | Sub. Code |
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**M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021**

**Fifth Semester**

**Computer Application**

**MACHINE LEARNING**

**(CBCS – 2019 onwards)**

Time : 3 Hours                              Maximum : 75 Marks

**Part A**                         $(10 \times 2 = 20)$

Answer **all** questions.

1.   Define Machine Learning.

2.   What is supervised learning? Give examples.

3.   Define neural networks?

4.   What is gradient descent?

5.   Define entropy.

6.   What is information gain?

7.   List the limitations of machine learning.

8.   What is instance-based learning?

9.   When we will use bagging method in machine learning?

10.  Define loss function in SVM.

**Part B** $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss in detail about linear regression.

Or

(b) Why feature selection in machine learning is important? Discuss.

12. (a) Describe in detail the perceptron learning algorithm.

Or

(b) Explain the working of gradient descent.

13. (a) Elucidate the pros and cons of decision trees.

Or

(b) Why we need pruning in decision trees? Explain.

14. (a) Write a short note on nearest neighbour error probability.

Or

(b) Describe VC dimension of a classifier in brief.

15. (a) Write a short note on statistical model selection in machine learning.

Or

(b) What is the role of kernel function in SVM? Discuss.

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**Part C** (3 × 10 = 30)

Answer any **three** questions.

16. Describe various machine learning classification approaches with examples and discuss all their pros and cons?

17. Explain in detail widrow-hoff learning algorithm.

18. Discuss decision tree algorithm in detail.

19. Explain k-nearest neighbour in detail.

20. Describe SVM algorithm in detail.

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# M.C.A. DEGREE EXAMINATION, NOVEMBER – 2021

## Fifth Semester

## Computer Application

## INTERNET OF THINGS (IOT)

### (CBCS – 2019 onwards)

Time : 3 Hours  Maximum : 75 Marks

**Part A**  (10 × 2 = 20)

Answer **all** questions.

1. How Wireless Sensor Networks related to IoT?

2. List various protocol used in application layer.

3. List out the steps involved in IoT design methodology.

4. Why IoT integration phase is important?

5. Define sensors.

6. What is RFID?

7. What are the interfaces in Raspberry-pi?

8. Differentiate Raspberry and Arduino.

9. Define cloud computing.

10. Why sensors are required in IoT?

**Part B** $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a)  Discuss various IoT enabled technologies in brief.

Or

(b)  Demonstrates and explain the IoT Components with neat diagram.

12. (a)  Discuss the principles of IoT Design.

Or

(b)  Write a short note on IoT design methodology specifications.

13. (a)  Write a short note on IoT devices Wi-Fi power sources.

Or

(b)  Discuss in detail about Zigbee protocol and its stack.

14. (a)  Write a short note on Intel Galileo IoT platform.

Or

(b)  Discuss in detail about Arduino with neat sketch.

15. (a)  Explain in brief about software management tools in IoT.

Or

(b)  Discuss smart cities real time applications in IoT.

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Answer any **three** questions.

16. Explain in detail IoT Vs.M2M.

17. Describe in detail the various steps involved in IoT design methodology.

18. Describe various communication modules in IoT.

19. Discuss in detail about various hardware platforms.

20. Why we need to connect IoT to cloud? Discuss in detail about any two IoT cloud platform.

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