

**R6070**

**Sub. Code**

**546101**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Information Technology**

**MATHEMATICS FOR COMPUTING**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. What is TF statement?
2. Define quantifiers.
3. Illustrate Venn diagram.
4. What is relation?
5. Define combination.
6. Write a note on product rule.
7. What is covariance?
8. Discuss about sampling distribution.
9. Define loop.
10. What is subgroup?

**Part B**

(5 × 5 = 25)

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

11. (a) Show that the propositions  $p \rightarrow q$  and  $\neg(p \vee q)$  are logically equivalent.

Or

- (b) Demonstrate that  $R$  is a valid inference from the premises  $P \rightarrow Q$ ,  $Q \rightarrow R$  and  $P$ .
12. (a) Two sets  $A$  and  $B$  are disjoint iff  $A \cap B = \phi$  that is  $A$  and  $B$  have no elements in common. Prove.

Or

- (b) Illustrate the properties of Hasse diagram.
13. (a) How many one-to-one functions are there from a set with  $m$  elements to one with  $n$  elements?

Or

- (b) State the diagram in counting problem.
14. (a) Discuss in detail about Bayes theorem.

Or

- (b) Explain about Goodness of fit.
15. (a) In a simple digraph,  $G = (V, E)$  every node of the digraph lies in exactly one strong component. Prove.

Or

- (b) How to represent binary trees? Explain with example.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the types of connectives with truth table.
  17. Describe the characteristic function of a set.
  18. Write a detailed note on Mathematical Induction with example.
  19. Discuss the concept Chi Square test.
  20. Explain in detail about spanning tree with suitable example.
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**R6071**

**Sub. Code**

**546102**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Information Technology**

**DISTRIBUTED OPERATING SYSTEM**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. What are the two primary tasks of an Operating System?
2. State: Kernel.
3. Define Mutual Exclusion.
4. What is Affinity Scheduling?
5. What is Name service?
6. What is Seek operation?
7. Define Thrashing.
8. What is Tuple space?
9. Define Simple name.
10. What is Integrity?

**Part B**

(5 × 5 = 25)

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

11. (a) Describe the functionalities of different layers of the ATM protocol reference model.

Or

- (b) Explain the mechanism used in the VMTP protocol for each of the following:
- (i) Group communication
  - (ii) Flow control
  - (iii) Transparent communication.

12. (a) Illustrate the centralised approach for Mutual Exclusion with a diagram.

Or

- (b) What is Synchronization? Write a note on clock synchronization.

13. (a) Discuss the features of a good distributed file system.

Or

- (b) Write a note on File sharing semantics and its types with an example.

14. (a) Write a detailed note on Thrashing.

Or

- (b) Write about the advantages of DSM.

15. (a) Discuss about Web Proxy Caching.

Or

- (b) Explain about Context binding and its strategies.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. What is meant by internetworking? What are the main issues in Internetworking? Explain the following terms:
  - (a) Bridge
  - (b) Router
  - (c) Gateway
17. Explain about Deadlock handling in distributed system with a diagram.
18. Explain the design issues of file caching scheme with an example.
19. Discuss in detail about the replication and migration for implementing the sequential consistency model.
20. Discuss about Passive and Active attack on a computer system.

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**R6072**

**Sub. Code**

**546103**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Information Technology**

**WEB TECHNOLOGY**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define Microdata.
2. What does css3 mean?
3. In what way DTD works in XML?
4. Why XSLT is important for XML?
5. What is PHP web server?
6. What is the basic syntax of PHP?
7. Define sorting array in PHP.
8. What is an Array? Explain it with an example.
9. Which function is used to delete a file in PHP?
10. What is hidden field?

**Part B**

(5 × 5 = 25)

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

11. (a) Differentiate CSS and CSS3.

Or

- (b) What is Canvas and Why Canvas is used in HTML5?

12. (a) Discuss about well-formed and valid XML.

Or

- (b) Define XSLT. How does it work with XML?

13. (a) Bring out the software and hardware requirements of PHP.

Or

- (b) Explain the role of Break and Continue statement in PHP.

14. (a) What is casting? Write about Associative array with an example.

Or

- (b) What is function? List out the differences of Static and Normal function calls.

15. (a) What are the types of directories? Explain with example.

Or

- (b) How does Browser redirect helps in PHP programming?



**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Write a detailed note on
  - (a) Canvas
  - (b) Audio and Video.
17. Describe the overview of Document Object Model with proper sketch.
18. Discuss about various types of control structures with example.
19. Explain in detail about File handling in PHP.
20. Write a brief note on
  - (a) File Creation
  - (b) File Deletion
  - (c) File Opening
  - (d) File Reading
  - (e) File Writing.

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**R6073**

**Sub. Code**

**546104**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Information Technology**

**PYTHON PROGRAMMING**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. What are Literals?
2. What are Tuples?
3. Define parameter.
4. What is break statement?
5. How do you access the values in List?
6. What does <sp> symbol in string mean?
7. How can you delete an element from a dictionary?
8. Write a program to join two topics using zip ( ) function.
9. Write an example code for drawing a square by using turtle.
10. How does binary files work in Python?

**Part B**

(5 × 5 = 25)

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

11. (a) Discuss about Python Operators with an example program.

Or

- (b) State and explain Boolean type with an example.

12. (a) What is Continue statement in python? Explain with a program.

Or

- (b) Differentiate Local and global scope of a variable with an example.

13. (a) Discuss about List operators in detail.

Or

- (b) List the types of Sorting with a sample code.

14. (a) What is Nested dictionary in python? Explain its importance.

Or

- (b) Write about the set and its operations with neat diagram.

15. (a) Write a program using turtle for draw a square inside another square box.

Or

- (b) Discuss the following methods associated with the file objects (i) Write () (ii) read () (iii) Seek () (iv) Open () (v) Close ()

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about Tokens in brief
  17. Discuss about Functions in python programming.
  18. Briefly discuss about Built-in list Functions and Methods.
  19. Write a note on Tuples and its Operations with an example.
  20. Explain in detail about file handling in python programming.
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**R6074**

**Sub. Code**

**546501**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Information Technology**

**OBJECT ORIENTED SOFTWARE ENGINEERING**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. What is Spiral model?
2. Write a note on project.
3. Discuss about requirement elicitation.
4. Define analysis.
5. Write about object oriented design.
6. What are the principles of design?
7. What is Reuse concept?
8. Define interface.
9. What is walkthrough?
10. Define Database schema.

**Part B**

(5 × 5 = 25)

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

11. (a) Write a detailed note on object oriented paradigm.

Or

- (b) Briefly explain the various phase of project management.

12. (a) Discuss the techniques available in domain analysis.

Or

- (b) Write in detail about the overview of requirement elicitation.

13. (a) What are the different types of views captured by UML diagram? Explain.

Or

- (b) State the features of object oriented design approaches.

14. (a) Write a detailed note on Bloopers.

Or

- (b) How to manage object design? Explain.

15. (a) Discuss about the challenges in software implementation.

Or

- (b) Write about the standard and metrics in software quality.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about SDLC.
  17. Describe about the phases in structural analysis.
  18. How to address and manager the goals in system design? Explain.
  19. Describe in detail about the activities of interface specification.
  20. Explain the different types of testing methods adopted during software development.
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**R6075**

**Sub. Code**

**546301**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Information Technology**

**INTERNET OF THINGS**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define IOT.
2. What is SNMP?
3. Write the standards of ETSI.
4. What is information view in IOT reference?
5. Write a note on protocol.
6. Define modulus.
7. What is Raspberry Pi?
8. Define SOC.
9. Write a note on Asset tracking.
10. How is IOT used in health care?



**Part B**

(5 × 5 = 25)

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

11. (a) Differentiate between IOT and  $M_2M$ .

Or

- (b) Discuss in detail about the functional blocks of IOT.

12. (a) Write the key characteristics of  $M_2M$ .

Or

- (b) Describe about IOT reference model.

13. (a) Explain about  $M_2M$  and WSN protocols.

Or

- (b) Write a detailed note on BAC Net protocol.

14. (a) Illustrate the physical devices in IOT.

Or

- (b) Discuss the concept Linux on Raspberry Pi.

15. (a) What is Industrial IOT. Explain in detail.

Or

- (b) Describe about cloud for IOT.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about SDN for IOT.
17. Discuss about IETF working groups and specification scope.

18. Describe in detail about IEEE 802.15.4.
  19. How to build IOT with Arduino? Explain with neat diagram.
  20. Explain the various emerging IOT applications.
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**R6076**

**Sub. Code**

**546302**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Information Technology**

**BIG DATA ANALYTICS AND R PROGRAMMING**

**(CBCS – 2019 onwards)**

Time : Three Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. What is Big data Eco system?
2. What is Data Preparation?
3. Define Dirty data.
4. List out the commands in Data Import and Export.
5. Give the different types of regression.
6. List out the Association rules Applications.
7. What is Bayes theorem?
8. List out the types of ARIMA model.
9. What is Data Visualization?
10. What is NoSQL?

**Part B**

(5 × 5 = 25)

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

11. (a) Differentiate between BI and Data Science.

Or

- (b) Discuss about Data Repositories.

12. (a) List the commands in R to create Graphical User Interface.

Or

- (b) What is Hypothesis Testing and explain it with an example.

13. (a) What are the importances of clustering in data analytics?

Or

- (b) What is Linear Regression? Explain.

14. (a) Describe the Decision Tree in R.

Or

- (b) What do you mean by Text Analysis? Explain.

15. (a) List out the usages of Pig, Hive and Hbase.

Or

- (b) Write short Notes on

(i) Apache Hadoop

(ii) Hadoop Ecosystem.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the role of big data analytics.
17. Explain the difference of means in statistical method with an example.
18. Explain in detail about k-mean clustering.
19. Briefly explain the ARIMA Model.
20. Discuss the role of analytical tools in Big data.

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**R6077**

**Sub. Code**

**546303**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Information Technology**

**MACHINE LEARNING**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. Write any two examples of classifier
2. Define Pattern recognition
3. What are the Layers in Multi-layer perceptron?
4. Define Neural Network
5. What is entropy?
6. Define Nearest Neighbor classification.
7. Define Learning Theory.
8. Define target class.
9. What is a perceptron kernel function?
10. List out the advantages of bagging over boosting.

**Part B**

(5 × 5 = 25)

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

11. (a) What are the applications of Pattern recognition?  
Explain with an example.

Or

- (b) Discuss about regression and feature selection.

12. (a) Explain in detail about linear separability.

Or

- (b) Discuss about the Hoff Learning Algorithm.

13. (a) Explain the ID3 algorithm with an example.

Or

- (b) Explain Nearest Neighbour Classification with an example.

14. (a) What are the limitations of inference Machines?  
Explain.

Or

- (b) Describe the sample complexity.

15. (a) What is boots trapping? Explain.

Or

- (b) Discuss about implicit non-linear feature space.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about error-learning classification approaches.
17. Write short Notes on
  - (a) Linear discriminants
  - (b) Back propagation algorithm.
18. Explain symbolic decision tree and its use. How does it trained?
19. Explain the following.
  - (a) Learning in Zero-Bayes
  - (b) Inductive Bias.
20. Define Support Vector Machine (SVM) and explain the Maximum margin classifier concept.



**R6078**

**Sub. Code**

**546509**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Information Technology**

**WIRELESS AD HOC AND SENSOR NETWORKS**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Write down the issues of designing a MAC protocol for Adhoc Networks.
2. Differentiate between Adhoc Network and Cellular Network.
3. Define Hybrid protocols.
4. Define DREAM.
5. What is transceiver task?
6. Define Data centric.
7. How will you manage a Sensor Network,
8. List out all the Sensor Network simulators.
9. How will you secure nodes in Adhoc Network?
10. Define SPINS.

**Part B**

(5 × 5 = 25)

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

11. (a) Describe the WLAN.

Or

- (b) What are the responsibilities of TCP over Adhoc wireless network?

12. (a) Differentiate Proactive, Reactive and Hybrid Protocols.

Or

- (b) What are the issues and challenges in QoS?

13. (a) What are the protocols in WSN and explain it.

Or

- (b) Describe the Contention based Network in Sensor.

14. (a) Describe Time Synchronization.

Or

- (b) Explain Localization and position in Sensor Network.

15. (a) Describe the TESLA and Biba.

Or

- (b) Discuss the key distribution Management.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Brief explain about contention based MAC protocols.

17. Write Short Notes on (a) Greedy Packet forwarding  
(b) Hierarchical Routing.

18. Explain the Energy efficient Design principles for WSN'S.
  19. How to manage sensor nodes? Explain.
  20. Write short notes on (a) Anti tamper techniques (b) Water marking techniques.
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