



K.G.R.L. COLLEGE OF PG COURSES (A), BHIMAVARAM

Re-accredited by NAAC with 'B+' Grade

DEPARTMENT OF MCA

(W.e.f. 2021 – 2022 Admitted Batch)

THIRD SEMESTER MODEL QUESTION PAPERS

02301: INFORMATION SECURITY AND CRYPTOGRAPHY

Time: 3Hours

Max.Marks:75

SECTION- A

(4 X 15 = 60 M)

Answer ALL Questions

1. (a) Explain Principles of Security 7M
(b) Discuss Substitution and Transportation techniques? 8M
(OR)
(c) What is Modulo Arithmetic and discuss its properties? 8M
(d) What is Totient Function and explain how to calculate Totient Function with an example 7M
2. (a) Show that DES decryption is the inverse of DES encryption? 8M
(b) Discuss different block cipher modes of operation? 7M
(OR)
(c) Explain RSA algorithm with an example? 8M
(d) Explain how to generate digital signatures? 7M
3. (a) What is authentication and discuss different authentication mechanisms? 7M
(b) Explain SHA1? 8M
(OR)
(c) What is Virus? And discuss different types of Viruses? 5M
(d) Write short notes on Intruders and Trusted Systems? 10M
4. (a) Briefly explain SSL protocol? 7M
(b) Explain SET in detail? 8M
(OR)
(c) Explain about IP Security architecture? 8M
(d) What is Firewall and discuss different types of Firewalls? 7M

SECTION – B

(5X3=15 Marks)

Answer any FIVE Questions

5. (a) Explain any five Security attacks?
(b) What is Key and what are different types of keys?
(c) Briefly discuss Differential cryptanalysis?
(d) Define Prime number and explain relatively prime numbers with an example?
(e) Differentiate between Symmetric and Asymmetric key cryptography?
(f) What are the requirements of Hash Functions?
(g) Explain SHTTP?
(h) Briefly discuss Virtual Private Network?



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THIRD SEMESTER MODEL QUESTION PAPERS

02302: BIG DATA ANALYTICS

Time: 3Hours

Max.Marks:75

SECTION- A

(4 X 15 = 60 M)

Answer ALL Questions

- 1.(a) Explain the Characteristics of Big Data. How the data is different in Warehouse and in Hadoop 15M

(OR)

- (b) Explain the building blocks of Hadoop with a neat Architecture. 15M

2. (a) What is Apache Spark and explain the Eco System of it. What are the main data structures used in Spark 15M

(OR)

- (b) What is key-value pair. Write a Mapreduce program to count the number of words in a given text 15M

3. (a) Discuss any three machine learning algorithms which will use the features of MLlib in Spark. 15M

(OR)

- (b) How do you join data from different sources in Mapreduce programming? Show with Matrix Multiplication example. 15M

4. (a) What are Resilient Distributed Dataset. Explain how to create pairs in RDDs and transformations that are carried in them. 15M

(OR)

- (b) Explain Page Rank and Bloom Filter Algorithms. 15M

SECTION B

(5 X 3 = 15M)

Answer any FIVE Questions

- 5.(a) What is Big Data and explain its importance and applications

(b) Explain Spark components

(c) Explain the working of Spark Architecture

(d) Explain streaming in Spark

(e) Explain the concept of Dimensionality Reduction

(f) Explain Friends-of-Friends Algorithm

(g) Explain the features of Spark SQL

(h) How to add schemas on RDD



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THIRD SEMESTER MODEL QUESTION PAPERS

02303:OBJECT ORIENTED SOFTWARE ENGINEERING

Time: 3Hours

Max.Marks:75

SECTION-A

(4 X 15=60M)

Answer ALL Questions

1. (a) Explain Nature of the Software and Types of Software? 15M
(OR)
(b) What is Requirements Engineering? Explain types of Requirements? 15M
2. (a) What is UML Diagram? Explain types of UML Diagrams? 15M
(OR)
(b) Explain about State, Activity, Component diagrams? 15M
3. (a) Define Software Architecture? Explain Architecture Patterns? 15M
(OR)
(b) Write and Explain about Design patterns? 15M
4. (a) What is Software Project management? Explain about Software Engineering teams? 15M
(OR)
(b) Explain about Waterfall, Phased Released, Spiral models? 15M

SECTION-B

(5 X 3=15)

Answer any FIVE of the following

5. (a) Polymorphism
(b) Software Quality
(c) Use case diagram
(d) Generalization
(e) Design Process
(f) Read-Only Interface
(g) Software Testing
(h) Tracking



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THIRD SEMESTER MODEL QUESTION PAPERS

02304: WEB TECHNOLOGIES

Time: 3Hours

Max.Marks:75

SECTION – A

(4X15=60 Marks)

Answer ALL Questions

1. (a) (i) Explain the different layers and their roles in protocols of Computer Communication. 10M
(ii) What are the types of Bridges? Explain Simple Bridge? 5M
(OR)
(b) Explain the concepts of data fragmentation and reassembly in detail. 15M
2. (a) (i) How does the three way Handshake technique help in creating a TCP connection? 8M
(ii) Explain the concept of FTP (File Transfer Protocol)? 7M
(OR)
(b) (i) Describe the steps involved when a web browser request for and obtains a web page from a Web server? 7M
(ii) What are the three approaches for e-Commerce application Development and Explain Main features of a product such as IBM's Net. Commerce? 8M
- 3 (a) (i) Describe how static Web pages are made dynamic? 8M
(ii) Create web pages for MOOCs with relevant fields. 7M
(OR)
(b) (i) What are the advantages of Client - side scripting? 7M
(ii) Describe ADO and how it can be used to interact with Databases? 8M
- 4 (a) (i) Describe the typical operation involving a middleware such as CORBA? 7M
(ii) Explain the concept of EDI? 8M
(OR)
(b) (i) Describe the anatomy of an XML Document? 7M
(ii) Explain WAP Architecture? 8M

SECTION – B

(5X3=15 Marks)

Answer any FIVE Questions

5. (a) What is ICMP?
(b) Describe Spooling in brief?
(c) What is Resolver?
(d) What are Java Beans?
(e) What is the need for XSL? Illustrate this with the help of an example?
(f) Explain GPRS and UMTS?
(g) Life cycle of JAVA applet.
(h) JAVA Remote Method Invocation.



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THIRD SEMESTER MODEL QUESTION PAPERS

02305: CLOUD COMPUTING (ELECTIVE-II)

Time: 3Hours

SECTION- A

Max.Marks:75
(4 X 15 = 60 M)

Answer ALL Questions

- 1.(a) Explain Cloud computing delivery models and Services. 8M
- (b) Discuss Communication Protocols and Process Coordination in Distributed Systems. 7M
- (OR)
- (c) Briefly explain Cloud Computing at Microsoft Azure. 8M
- (d) Explain Responsibility sharing between user and cloud service provider. 7M
- 2.(a) What is the need of virtualization? Explain Full virtualization and Para virtualization. 7M
- (b) Discuss Virtual Machine Monitors and Virtual Machines. 7M
- (OR)
- (c) Explain Start-Time Fair Queuing Scheduling Algorithm for Computing Clouds. 5M
3. (a) Explain Network File System (NFS), Andrew File System (AFS) and Sprite Network File System (SFS) of Distributive File Systems. 8M
- (b) Discuss Google File System. 7M
- (OR)
- (c) Explain the Security of Virtualization 8M
- (d) Discuss the Xoar: Breaking the monolithic design of the TCB. 7M
4. (a) How do we connect clients to cloud instances through Firewalls? 8M
- (b) Explain the Security rules for application and transport layer protocols in EC2. 7M
- (OR)
- (c) How to install Hadoop on Eclipse on a Windows system 8M
- (d) Explain the Case Study: Xen, a VMM based on para virtualization 7M

SECTION-B

(5 X 3 =15 Marks)

Write a Short Note on any FIVE of the following

5. (a) Challenges for Cloud Computing
- (b) The Zoo Keeper
- (c) Mechanisms for Resource Management
- (d) Two-Level Resource Allocation Architecture
- (e) Locks and Chubby.
- (f) VM Security
- (g) Cloud-based simulation of a distributed trust algorithm.
- (h) The GrepTheWeb Application.



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02306: Foundations of Data Science (Elective-III)

Time: 3Hours

Max.Marks:75

SECTION- A

(4 X 15 = 60 M)

Answer ALL Questions

- 1.(a) Explain concepts of relational database in data science with examples. 15M
(OR)
(b) Explain the concept of managing data in data science with examples. 15M
2. (a) Explain modeling methods in data science with examples. 15M
(OR)
(b) Explain linear and logistic regression in data science with examples? 15M
3. (a) Explain R language operations with examples. 15M
(OR)
(b) Explain probability distribution in R language with examples. 15M
- 4.(a) Explain concept of documentation and deployment in data science with examples. 15M
(OR)
(b) Explain the graphical analysis in data science with examples. 15M

SECTION-B

(5 X 3 =15 M)

Answer any FIVE Questions

- 5.(a) Explain stages in data science with examples.
 - (b) Explain spotting problems in data science
 - (c) Explain machine learning tasks on modeling.
 - (d) Explain k-means algorithms.
 - (e) Explain types of data items in R Language
 - (f) Explain Normal distribution in Data Science
 - (g) Explain Graphics parameters in R language.
 - (h) Explain Matrix plots in delivering data science



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