Total No. of Questions : 12]

SEAT No. :

PC2932

[Total No. of Pages : 2

[6356]-01
S.Y.M.C.A. (Engineering)
DATA SCIENCE
(2020 Pattern) (Semester - III) (410901)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Assume Suitable data if necessary.***

Q1) a) Elaborate the terms Data preparation, Data exploration, Data modeling. **[6]**

b) Differentiate between Structured vs. Unstructured Data and Nominal vs Ordinal Data. **[6]**

OR

Q2) a) Compare between Business Intelligence (BI) and Data Science. **[6]**

b) Write a short note on Big data & Data Science. **[6]**

Q3) a) Briefly explain the significance of data preprocessing. What is the problem associated with data processing. **[6]**

b) Explain components of Data Warehouse in detail. **[6]**

OR

Q4) a) Explain the need of Data preprocessing. **[6]**

b) Explain Tools of Data warehouse. **[6]**

Q5) a) Describe the Naive Bayes classifier with algorithm. **[6]**

b) Compare Classification and Regression. **[5]**

OR

Q6) a) What is Logistics Regression? Explain with the help of Example? **[6]**

b) Explain Neural networks classifiers in detail. **[5]**

P.T.O.

Q7) a) Explain Eclat algorithm in detail. **[6]**

b) Define FP growth and it's advantages over Apriori Agorithm. **[6]**

OR

Q8) a) Explain the different steps and purpose of Apriori algorithm. **[6]**

b) What is the association rule? What are the applications of association rule mining? **[6]**

Q9) a) Explain evaluation methods for clustering algorithm in detail. **[6]**

b) Apply K-means Clustering algorithm to cluster iris type of plants by using iris dataset. **[6]**

OR

Q10)a) Explain the term : Density based Clustering. **[6]**

b) Differentiate hierarchical clustering and K-Means Clustering. **[6]**

Q11)a) How can color of an object be defined? Explain how color is important in Visualization Design. **[6]**

b) Explain techniques of Data Visualization. **[5]**

OR

Q12)a) Explain Waterfall Chart, Scatter Plot, Box plot. **[6]**

b) What are the challenges for visualizing data? **[5]**



Total No. of Questions : 12]

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[6356]-02

S.Y. M.C.A. (Engineering)

WEB TECHNOLOGIES

(2020 Pattern) (Semester- III) (410902)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Differentiate between HTML and HTML5. **[6]**

b) Define CSS. How it can be used in designing a web page? Explain with a suitable example. **[6]**

OR

Q2) a) Develop a code in HTML5 to design a web page of a career counselling firm. **[6]**

b) Write short notes on **[6]**

i) Web Servers

ii) CSS Selectors

Q3) a) What are XML Namespaces, and why are they important in XML documents? Provide an example to illustrate their usage. **[6]**

b) Explain the purpose and usage of XML Document Type Definitions (DTDs). How do DTDs ensure document validity? **[6]**

OR

Q4) a) Discuss the importance of well-formed and valid XML documents in data exchange and interoperability. **[6]**

b) Describe XML Schema and compare it with DTD. What are the advantages of using XML Schema? **[6]**

P.T.O.

Q5) a) Explain the concept of events in JavaScript. Provide examples of common events and their handlers. **[6]**

b) Discuss the limitations of JavaScript in terms of browser compatibility and security. **[5]**

OR

Q6) a) What are the advantages and drawbacks of JavaScript? How it can be used in developing a web page? **[6]**

b) Develop a code in JavaScript to validate the fields of a web page having User Registration. **[5]**

Q7) a) Discuss the concept of expression in AnjularJS. **[6]**

b) Provide an overview of AnjularJS. Why it is preferred for Web development. **[6]**

OR

Q8) a) Discuss Model view controller architecture. **[6]**

b) How to create a table using ng-repeat directive in AngularJS? **[6]**

Q9) a) Write a PHP script to read content from a text file and display it on the web page. **[6]**

b) Explain PHP sessions. How are sessions initiated, maintained, and destroyed? **[6]**

OR

Q10)a) Develop a code for generating a form in PHP for online movie ticket booking. **[6]**

b) What is file handling in PHP. Explain various file operations in it. **[6]**

Q11)a) Provide examples illustrating the usage of ASP.NET controls such as buttons, textboxes, and dropdown lists in web forms. **[6]**

b) Explain the key components of ASP.NET. Discuss the role of each component in the web development process. **[5]**

OR

Q12)a) What is a web service? How to create a web service in ASP.NET? **[6]**

b) Explain the basic controls in ASP.NET. **[5]**

Total No. of Questions : 12]

SEAT No. : [ ]

PC-2934

[Total No. of Pages : 2

[6356]-03

S.Y. M.C.A. (Engineering)

CLOUD COMPUTING

(2020 Pattern) (Semester - III) (410903)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Answer Q.1 or.Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) Discuss the Cloud Computing Architecture with neat Diagram? **[6]**

b) Explain the Client-Server model in Cloud Computing. **[6]**

OR

Q2) a) What is Grid Computing? Explain Advantages and Disadvantages of Grid Computing? **[6]**

b) Discuss the P-to-P Computing in brief? **[6]**

Q3) a) Elaborate the Infrastructure as a Service (IaaS) with suitable diagram? **[6]**

b) Describe the Software as a Service (SaaS) in detail? **[6]**

OR

Q4) a) Define and Explain the Platform as a Service(PaaS). **[6]**

b) Explain the Layers in cloud architecture. **[6]**

Q5) a) Demonstrate Full Virtualization & Host-Based Virtualization. **[6]**

b) Explain Type 1 and Type 2 Hypervisors. **[5]**

OR

P.T.O.

Q6) a) Explain the Virtual Clusters and Resource Management. **[6]**

b) What is Memory Virtualization ? Discuss in brief? **[5]**

Q7) a) Differentiate between AWS, Microsoft Azure and Google Cloud Platform. **[6]**

b) Explain the types of Resource Provisioning. **[6]**

OR

Q8) a) What is Inter Cloud Resource Management? **[6]**

b) Explain different Cloud application with Suitable Examples. **[6]**

Q9) a) Explain the Service-Level Agreements (SLA) in Cloud Security. **[6]**

b) Write a note on : **[6]**

i) Digital Signature

ii) Public Key Infrastructure (PKI)

OR

Q10) a) Describe the Stability and Partner Quality issues in cloud. **[6]**

b) Write a note on : **[6]**

i) Identity and Access Management (JAM).

ii) Single Sign-On (SSO).

Q11) a) What is Docker in Cloud Computing? How does the Docker work. **[6]**

b) How the Cloud Will Change Operating Systems? **[5]**

OR

Q12) a) What is the future of Cloud-Based Smart Devices? **[6]**

b) Write a note on : **[6]**

i) The Future of Cloud TV.

ii) Energy Aware Cloud Computing.

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Total No. of Questions : 12]

SEAT No. : [ ]

PC-2935

[Total No. of Pages : 2

[6356]-04

S.Y. MCA (Engineering)

ELECTIVE II - BIG DATA ANALYTICS

(2020 Pattern) (Semester - III) (410904 A)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Neat diagram must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) Explain in detail about the challenges of conventional system? How its overcome in Big data analytics? **[6]**

b) How would you show your understanding of the tools, trends and technology in big data? **[6]**

OR

Q2) a) What are the best practices in Big Data analytics? **[6]**

b) Describe in detail about 5v"s? **[6]**

Q3) a) Briefly discuss the major difference between Classification and Clustering. List one real application for each of them respectively. **[6]**

b) Briefly explain how k-means analysis is used in image processing. List the steps of K- means algorithm. **[6]**

OR

Q4) a) List the three tes of classifiers. **[6]**

b) Elaborate briefly about decision tree. **[6]**

P.T.O.

Q5) a) Explain the paradigm of recommendation system with diagram? **[6]**

b) Explains Item — based collaborative filtering with example? **[5]**

OR

Q6) a) Compare the pros and cons of collaborative based recommendation system and content based recommendation system along with its applications. **[6]**

b) Explain user- based Collaborative filtering with example. **[5]**

Q7) a) What is a scatter plot and in which application to use it? Explain with example. **[6]**

b) What is data validation? Name several data validation techniques? **[6]**

OR

Q8) a) What makes good data visualization? What is Tableau? **[6]**

b) How do you use color in your data visualizations and why? How to handle the missing data? **[6]**

Q9) a) Explain use of Map reduce in Big data with its limitations? **[6]**

b) Discuss in brief about the basic building blocks of Hadoop? **[6]**

OR

Q10) a) What are value proposition offered by HDFS from perspective of Information Technology? **[6]**

b) Explain the role of Job Tracker, Task tracker and Name node? **[6]**

Q11) a) Explain Hadoop Distributed File System? **[6]**

b) What makes Hadoop Fault tolerant? **[5]**

OR

Q12) a) Explain Map Reduce paradigm with example. **[6]**

b) How can you Configure Hadoop cluster in Local mode? **[5]**



Total No. of Questions : 12]

SEAT No. : ____

PC-2936

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[6356]-05

S.Y. MCA (Engineering)

Elective - II: Machine Learning

(2020 Pattern) (Semester - III) (41090 B)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) Define machine learning and Explain supervised machine learning with example. **[6]**

b) Describe in detail about cross validation and dimensionality reduction role in machine learning. **[6]**

OR

Q2) a) Define Machine Learning and mention any 4 applications of machine learning. **[6]**

b) Describe in detail about the role of features in Machine Learning. **[6]**

Q3) a) Explain binary classification for supervised machine learning. **[6]**

b) Illustrate the use SVM (support vector machine) classifier model with neat diagram. **[6]**

OR

Q4) a) Explain confusion matrix, Accuracy, precision, recall and F-I Score for Classification Model. **[6]**

b) Discuss in detail about Soft Margin SVM. **[6]**

Q5) a) Illustrate a machine learnin model using Linear regression algorithm (Assume any dataset). **[6]**

b) Explain about the Least-Squares method? **[5]**

P.T.O.

OR

Q6) a) Illustrate a machine learning model using Logistic regression algorithm (Assume any dataset). **[6]**

b) Describe the measures to be taken to avoid the overfitting and underfitting. **[5]**

Q7) a) Differentiate between Kmeans and K- medoids clustering. **[6]**

b) Summarize Association rule and Use Cases for Association rule. **[6]**

OR

Q8) a) Discuss in detail about Distance Based Clustering. Write its importance in machine learning. **[6]**

b) Summarize Tree Based Models Decision Trees and criteria to decide decision node for split. **[6]**

Q9) a) Explain Conditional probability and joint probability, what is role of conditional probability in machine learning? **[6]**

b) Mention the working and use of Naïve Bayes classifier. **[6]**

OR

Q10) a) Discuss about the Normal Distribution and its Geometric interpretations. **[6]**

b) Explain the Naive Bayes Algorithm in Probabilistic Models. **[6]**

Q11) a) Discuss the role of Activation functions and what are relu, sigmoid and Tanh activation functions in Deep learning? **[6]**

b) Explain in detail about neural networks and back propagation algorithm. **[5]**

OR

Q12) a) Describe in detail about neural networks role in Machine Learning. **[6]**

b) Illustrate Feed forward neural network. **[5]**



Total No. of Questions : 12]

SEAT No. :

PC-2937

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[6356]-06

S.Y. MCA (Engineering)

OBJECT ORIENTED ANALYSIS & DESIGN

(2020 Pattern) (Semester - III) (410904 C) (Elective - II)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) Draw Use case diagram for Online Banking Management system. **[6]**

b) Explain the 4+1 View Architecture. **[6]**

OR

Q2) a) Discuss on requirement and analysis in software development. **[6]**

b) Explain UML -Basic building blocks. **[6]**

Q3) a) Explain the concept of adornments on Associations in Class Diagrams. **[6]**

b) How does Aggregation differ from Composition in terms of the relationship between classes? Explain with example. **[6]**

OR

Q4) a) Explain different types of relationships in class diagram with examples. **[6]**

b) Write a short note on Object Diagram. **[6]**

Q5) a) Explain the role of component diagram in software modeling with the help of an example. **[6]**

b) Write a short note on Deployment diagram. **[5]**

P.T.O.

OR

Q6) a) Explain the concept of Package diagrams in UML with example. **[6]**

b) Write a short note on Applications of UML. **[5]**

Q7) a) Explain the role of Interaction diagrams in modeling the dynamic behavior of a system. **[6]**

b) Explain the use of fork and join in activity diagram with an example. **[6]**

OR

Q8) a) By assuming suitable data, draw activity diagram for online shopping system. **[6]**

b) Write a short note on sequence diagram. **[6]**

Q9) a) What is architectural design in software development,explain its role in shaping the structure and behavior of complex software systems. **[6]**

b) Explain the principles of object-oriented software architecture along with its advantages and challenges. **[6]**

OR

Q10)a) Explain the characteristics and requirements of real-time software architecture. **[6]**

b) Write a short note on Service Oriented Architecture. **[6]**

Q11) a) Explain Singleton Pattern and Adapter design pattern briefly. **[6]**

b) Explain Abstract Factory Pattern in brief. **[5]**

OR

Q12) a) Explain Behavioural design pattern and Iterator design pattern. **[6]**

b) Write a short note on Observer design pattern. **[5]**



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[6356]-07

S.Y. M.C.A. (Engineering)

INTERNET OF THINGS

(2020 Pattern) (Elective-II) (Semester - III) (410904 D)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) What is IoT & write the Characteristics of IoT? **[6]**

b) Differentiate Physical design of IoT, Logical design of IoT? **[6]**

OR

Q2) a) Explain the Functional blocks of IoT? **[6]**

b) Explain the Communication models & API of IoT. **[6]**

Q3) a) Explain the Software define Network in M2M. **[6]**

b) Explain the Network Function Virtualization in M2M. **[6]**

OR

Q4) a) What is Machine to Machine also write its key features. **[6]**

b) Write the Difference between IoT and M2M. **[6]**

Q5) a) What is Wireless medium access issues in IoT. **[6]**

b) What is MAC protocol survey in IoT. **[5]**

P.T.O.

OR

Q6) a) What is Sensor deployment & Node discovery in IoT. **[6]**

b) What is Data aggregation & dissemination in IoT. **[5]**

Q7) a) Differentiate between M2M and WSN protocols. **[6]**

b) Explain the concept of protocol standardization. **[6]**

OR

Q8) a) Differentiate between SCADA and RFID protocols. **[6]**

b) Explain Zigbee architecture in detail. **[6]**

Q9) a) Explain smartie approach of IoT. **[6]**

b) Write short note on smart cities via data aggregation. **[6]**

OR

Q10) a) Explain BACNet protocol in details. **[6]**

b) Explain security, privacy and trust in IoT-data platforms for smart cities. **[6]**

Q11) a) Explain future factory concepts of IoT. **[6]**

b) Explain use IoT enabled systems in health sector. **[5]**

OR

Q12) a) How home automation can be carried out with IoT. **[6]**

b) Explain IoT based smart parking system. **[5]**

Total No. of Questions : 12]

SEAT No. : [ ]

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[6356]-09

S.Y. M.C.A. (Engineering)

SOFTWARE TESTING AND QUALITY ASSURANCE

(2020 Pattern) (Semester - III) (410905)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) Explain the distinction between Quality Assurance (QA) and Quality Control (QC) in software development? **[6]**

b) Explain the significance of inspections and walkthroughs in the context of software quality assurance? **[6]**

OR

Q2) a) What is the difference between product quality and process quality in software development, and why are both important? **[6]**

b) What are the 7 QC Tools and how are they used in software quality assurance processes? **[6]**

Q3) a) What is defect? Explain different categories of defects. **[6]**

b) Explain the testing life cycle and its various stages in detail. **[6]**

OR

Q4) a) What is software testing, and what are its primary objectives in the software development process? **[6]**

b) What is Test Case? Explain in detail with an example. **[6]**

P.T.O.

Q5) a) Explain the concept of static testing and its significance in software development along with its advantages and limitations. **[6]**

b) What is white-box testing and how does it differ from black-box testing in software testing methodologies? **[5]**

OR

Q6) a) What is compatibility testing, and explain why is it important in software development? **[6]**

b) What is equivalence partitioning, and how is it applied in black-box testing? **[5]**

Q7) a) What is integration testing? Explain different approaches to integration testing. **[6]**

b) What is ad hoc testing and explain the advantages and limitations of ad hoc testing? **[6]**

OR

Q8) a) Describe scenario testing and its significance in software testing? How are scenarios developed and executed during testing? **[6]**

b) Write a short note on Database Testing. **[6]**

Q9) a) Explain the design and architecture considerations for building an effective automation testing framework. **[6]**

b) Explain in detail any two popular UI automation tools. **[6]**

OR

Q10) a) What are the common challenges encountered in automation testing, and how can they be addressed? **[6]**

b) What is software test automation? Explain the essential skills required for automation testing. **[6]**

Q11) a) What is Selenium? Explain a brief history of the Selenium project, highlighting its evolution and key milestones? **[6]**

b) Write a short note on Selenium Grid. **[5]**

OR

Q12) a) What is Selenium WebDriver? What are its key features and advantages. **[6]**

b) Explain Selenium RC (Remote Control) and its role in automated testing? **[5]**

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Total No. of Questions : 12]

SEAT No. : ____

PC-5022

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[6356]-11
F.Y. M.C.A. (Engineering)
DISCRETE MATHEMATICS AND STATISTICS
(2020 Pattern) (Semester - I) (310901)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q. 9 or Q.10 and Q. 11 or Q. 12.***
2) ***Neat diagram must he drawn wherever necessary.***
3) ***Figures to the riqht indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Define Set? Explain the Different types of Sets with suitable Example? **[6]**

b) Among 50 students in a class,26 got an 'A' in the first Examination & 21 got an 'A' in Second Examination. How many Students got an 'A' in both the Examinations ? **[5]**

OR

Q2) a) Prove that - 1] (p - $\rightarrow$(q$\rightarrow$r)) => (p$\rightarrow$q) $\rightarrow$ (p$\rightarrow$r)

Prove that - 2] p $\leftrightarrow$ q and (p $\wedge$ q) $\vee$ (~p $\wedge$~q) are logically equivalent. **[6]**

b) By Mathematical Induction prove that -

1+2+3+ -------+ n = n(n+1)/2. **[5]**

Q3) a) A= {1,2,3} & R = {(1,1), (2,2),(3,3),(1,2),(2,1)). Prove that if it is Reflexive, Symmetric & Transitive. **[6]**

b) Let R={(1,2),(1,3),(2,2),(2,4),(4,3)} on set A = {1,2,3,4}. Represent Symmetric Closure. **[6]**

OR

Q4) a) Given a relation R = { (a,b),(a,c),(a,e),(b,a),(b,c).(c,a),(c,b),(d,a),(e.d)} on A = {a,b,c,d,e}. Find the transitive closure of R by Warshall algorithm. **[6]**

b) Let $f(x) = x+2$, $g(x) = x-2$, & $h(x) = 3x$, for x is subset to R, where R is set of real numbers. Find gof, fog, fof, gog. **[6]**

P.T.O.

Q5) a) In how many different ways the letter of words - **[6]**

i) LEADING can be arranged in such a way that vowels always come together.

ii) CORPORATION be arranged that vowels always come together.

b) How many integer 1 to 1000- **[6]**

i) How many are not visible by 3 nor by 7?

ii) How many are not divisible by 5 & 7 but divisible by 3 ?

OR

Q6) a) A box contain 6 white ball. Find the numbers of ways that,4 balls can be drawn from the box, if **[6]**

i) 2 baIls must be White.

ii) All of them must have same colour.

b) Define with suitable example : **[6]**

i) Probability

ii) Sample Space

iii) Event

Q7) a) In a class there are 15 boys & 10 girls.3 students are selected at randomly. Find the probability that 1 girl and 2 boys are selected. **[6]**

b) Showroom has 3 new cars A,B,C. It contains 20%,30%, & 35% discount for each new car and the probability of defective piece of cars is 0.60,0.85,0.40 respectively. Find out probability that the new product that is based on type B. **[5]**

OR

Q8) a) How many arrangement of word INSTRUCTOR are there in which there arc exactly two consonants between successive pair of vowels.. **[6]**

b) Repetition are not permitted then how many ways of 4 digits it can be formed from 6 digits 1,2,3,5,7,8 ? **[5]**

Q9) a) Define Sampling Techniques? Explain types of Sampling in brief? **[6]**

b) Find Mean, Median, Mode, Variance and Standard Deviation for the following Data : **[6]**

57,64,43,67,49,59,44,47,61,59.

OR

Q10)a) Find the Coefficient of Correlation of following data : **[6]**

X	9	8	7	6	5	4	3	2	1
Y	15	16	14	13	11	12	10	8	9

b) Explain Regression? also define types of Regression. **[6]**

Q11)a) Calculate Mean,Median,Mode from the table given below : **[6]**

Marks	0-10	10-20	20-30	30-40	40-50
No. of Student	3.	8	12	7	2

b) Describe Hypothesis testing in details? **[6]**

OR

Q12)a) Find Mean, Variance & Standard Deviation for the following PMf P(Xi) = $X^2/30$. Where X = 0,1,2,3,4 ------ **[6]**

b) Describe Random Variable and their types in details? **[6]**

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Total No. of Questions : 12]

SEAT No. :

PC5023

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[6356]-12
First Year M.C.A. (Engineering)
DATA STRUCTURES & ALGORITHMS
(2020 Pattern) (Semester - I) (310902)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Explain dynamic programming algorithm strategy with suitable example. **[6]**

b) Explain a sparse matrix in triplet format. List out applications of sparse matrix. **[6]**

OR

Q2) a) Explain multidimensional arrays concepts? Explain row major and column major representation of 2-D array storage. **[6]**

b) Write short notes on : **[6]**

i) Time complexity of algorithm

ii) Space complexity of algorithm

Q3) a) Explain Linked List Data structure with diagram and its applications. **[6]**

b) Write C/C++ code for insert operations in singly linked list? Explain steps of programs with diagram. **[6]**

OR

Q4) a) Explain Doubly Linked List ADT with diagram. **[6]**

b) How circular list are advantageous than singly linked list? Explain working of circular linked list with diagram. **[6]**

P.T.O.

Q5) a) Write C/C++ code to implement stack using sequential organization. Explain steps. **[6]**

b) How stacks are useful to implement using recursion process? Explain with application **[5]**

OR

Q6) a) Write different types of Queue data structures with its applications. **[6]**

b) What is priority queue? Explain its array implementation. **[5]**

Q7) a) Write a recursive algorithm for Inorder, Preorder and Postorder traversal of binary tree. **[6]**

b) Explain application of tree as expression tree with example. **[6]**

OR

Q8) a) Build the AVL tree for the following data. Show the step by step construction 25, 12, 17, 30, 15, 14, 37, 27, 40, 29, 28. **[6]**

b) Define following terms : **[6]**

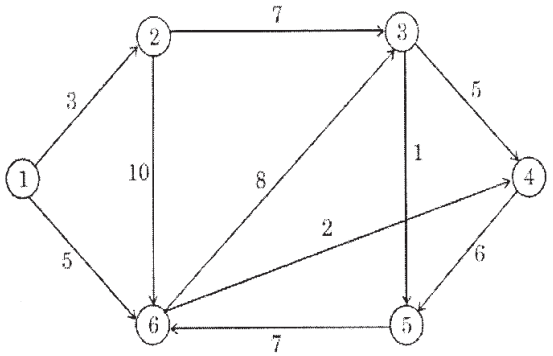
i) Binary Search Tree

ii) Degree of a node

iii) Height of a node

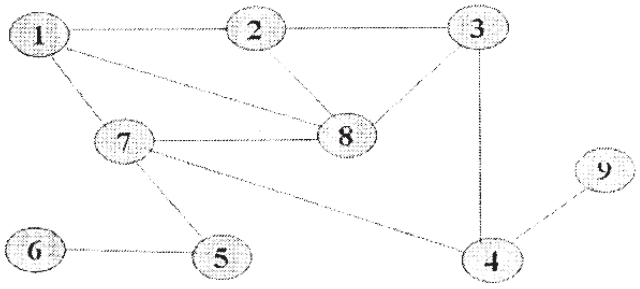
Q9) a) Explain representation of Graph using Adjacency matrix and Adjacency list. **[6]**

b) Use Dijkstra's algorithm to find the shortest path from node 2 to all nodes in the graph. **[6]**



OR

Q10)a) Define DFS and BFS for a graph. Show BFS and DFS for the following graph with starting vertex as 1. **[6]**



b) Explain Prim's Algorithms with suitable example. **[6]**

Q11)a) Explain quick sort and sort the given list using quick sort : **[6]**

39, 09, 81, 45, 90, 27, 72, 18

b) Write a C/C++ non recursive function for binary search. **[5]**

OR

Q12)a) Show the stepwise execution of the insertion sort algorithm for the following list. **[6]**

17, 24, 49, 7, 8, 67, 23

b) Explain Fibonacci search with suitable example. **[5]**

Total No. of Questions : 12]

SEAT No. : ____

PC-5024

[Total No. of Pages : 2

[6356]-13

F.Y. M.C.A. (Engineering)

OBJECT ORIENTED PROGRAMMING

(2020 Pattern) (Semester - I) (310903)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) Describe the features of Object-oriented programming. **[6]**

b) Explain Structure of C++ Programming and comments with example. **[6]**

OR

Q2) a) Explain the need of Object-Oriented Programming (OOP) **[6]**

b) What are header files? Explain the use and function of any one header file. **[6]**

Q3) a) What is copy constructor? Explain with suitable example. **[6]**

b) Explain different access specifiers used in C++. **[6]**

OR

Q4) a) Write a program to explain use of constructor and destructor. **[6]**

b) Explain use of inline function with example. **[6]**

Q5) a) What is the difference between overloading and overriding?, explain with suitable example. **[6]**

b) Explain multiple inheritance with suitable example. **[5]**

P.T.O.

OR

Q6) a) Write a program to overload increment and decrement operator. **[6]**

b) Differentiation between compile time polymorphism and run time polymorphism. **[5]**

Q7) a) What is Friend Class? Explain with example. **[6]**

b) What is Dynamic Binding? **[5]**

OR

Q8) a) What is the use of this pointer . **[5]**

b) Explain the concept of Virtual Function. **[6]**

Q9) a) Why templates are used in C++? How many types of templates are there in C++? **[6]**

b) Write a Program to find Largest among two numbers using function template. **[6]**

OR

Q10) a) Write a program to handle invalid email id entry error. **[6]**

b) Explain four kinds of relationships between classes and their friends when templates arc involved? **[6]**

Q11) a) Discuss the various forms of get() function supported by the input stream. How are they used? **[6]**

b) What is a file mode? Describe the various file mode options available. **[6]**

OR

Q12) a) Write a C++ program to open text file and store students' records (name, roll no, address, percentage) in it. **[6]**

b) Explain different input / output objects of fstream library? **[6]**

Total No. of Questions : 12]

SEAT No. : ____

PC-5025

[Total No. of Pages : 2

[6356] - 14
F. Y. M.C.A. (Engineering)
Software Engineering & Project Management
(2020 Pattern) (Semester - I) (310904)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6,Q.7 or Q.8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary***

Q1) a) What is software process? List its activities. **[6]**

b) List the process maturity levels in SEIs CMM. **[6]**

OR

Q2) a) Describe how incremental process models are better than water fall model. **[6]**

b) What is Quality Assurance and Software quality Assurance? List out various activities of SQA **[6]**

Q3) a) Draw sequence diagram for online order of Pizza. **[6]**

b) Explain Elicitation, specifications & validation in details. **[6]**

OR

Q4) a) Explain data modeling, data and control flow model. **[6]**

b) Explain use case diagram and class diagram. **[6]**

P.T.O.

Q5) a) Explain terms sprint backlog and sprint review and retrospective. **[6]**

b) What is Extreme programming (XP)? Explain XP values in detail? **[5]**

OR

Q6) a) What is scrum? Explain Scrum Cycle in detail. **[6]**

b) Explain Agile Development? Explain agility and cost of change? **[5]**

Q7) a) Explain program evaluation and review techniques (PERT) with example? **[6]**

b) What is project scheduling? What basic principles are of project Scheduling? **[6]**

OR

Q8) a) Explain how breakdown structure is used in software engineering. Discuss how Software project scheduling helps in timely release of a product.**[6]**

b) Explain project initiation and project scope management. **[6]**

Q9) a) Discuss major steps in the Risk management process. **[6]**

b) Write short note on - Tools for project Management. **[6]**

OR

Q10)a) Explain importance of Risk monitoring and Mitigation process in software project development process. **[6]**

b) What is need for software quality? Explain Six Sigma quality control technique. **[6]**

Q11)a) What are the ethical issues in the software development? **[6]**

b) What is an Ethical Dilemma? How to Solve an Ethical Dilemma? **[5]**

OR

Q12)a) Explain steps in Ethical Decision Making Process. **[6]**

b) What is ethical leadership? How do you bring ethical leadership to your organization? **[5]**

Total No. of Questions : 12]

SEAT No. :

PC-5026

[Total No. of Pages : 2

[6356]-15
F.Y. M.C.A. (Engineering)
INFORMATION SYSTEMS AND ENGINEERING ECONOMICS
(2020 Pattern) (Semester - I) (310905)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) Discuss Management and activities of Management. **[6]**

b) Tabulate Memorandum of Association (MOA) and Articles of Association (AOA). **[6]**

OR

Q2) a) Tabulate Functional Organization and Product Organization. **[6]**

b) Explain In-house and Cloud-based ERP implementation. **[6]**

Q3) a) Differentiate Business Process Integration and Business Process Management. **[6]**

b) What is E-Governance? Explain its models. **[6]**

OR

Q4) a) Discuss Management Information System (MIS) and Role of MIS. **[6]**

b) What is Customer Relationship Management (CRM)? Explain in detail. **[6]**

Q5) a) Discuss Project Management. Explain its types. **[6]**

b) What is a Knowledge Management System? Explain its types. **[5]**

OR

Q6) a) Explain the merits and demerits of Matrix and the Project structure. **[6]**

b) What are the benefits of Business Intelligence? **[5]**

Q7) a) Discuss implementation of Information Technology Infrastructure in a Bank. **[6]**

b) Define the structure of MIS based on management activity and functions. **[6]**

OR

P.T.O.

Q8) a) Write Case Studies on - "Information Systems in an E-Commerce Organization". **[6]**

b) What are the roles and challenges of Information Systems in Organizations? **[6]**

Q9) a) What is Supply chain management (SCM)? Explain in detail. **[6]**

b) Tabulate Structured decisions and Unstructured decisions. **[6]**

OR

Q10) a) Discuss Herbert Simpson's Model. **[6]**

b) Explain the decision-making environment. **[6]**

Q11) a) Determine the Golden Rules of Accounting: **[6]**

b) You are required to pass a Journal Entry. **[5]**

On Feb 4, 2019, I Purchased material worth $50,000
On Feb 10, 2019, Sold Pens worth $80,000.
On Feb 28, 2019, Incurred Expenses worth $5,000.
On Feb 28, 2019, Purchased furniture worth $7,000.
On Mar 20, 2019, Goods worth $600 owner withdrew.

OR

Q12) a) Discuss the Bookkeeping System and its types. **[5]**

b) Prepare Trading and Profit and Loss accounts. and balance sheet on M/s Royal Traders from the following balances as of March 31, 2011. **[6]**

Debit Balances	Amount (Rs.)	Credit Balances	Amount (Rs.)
Stock	20,000	Sales	2,45,000
Cash	5,000	Creditors	10,000
Bank	10,000	Bills Payable	4,000
Carriage on purchases	1,500	Capital	2,00,000
Purchases	1,90,000		
Drawings	9,000		
Wages	55,000		
Machinery	1,00,000		
Debtors	27,000		
Postage	300		
Sundry Expenses	1,700		
Rent	4,500		
Furniture	35,000		

Total No. of Questions : 12]

SEAT No. :

PC5027

[Total No. of Pages :2

[6356]-16

First Year M.C.A. (Engineering)

DATA BASE MANAGEMENT SYSTEM

(2020 Pattern) (Semester- II) (310912)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) What is DBA? Describe various functions of DBA? **[6]**

b) What is DDL and DML statements and explain with example. **[6]**

OR

Q2) a) A bank has many branches, the bank has many customers. A customer can open many different kinds of accounts with the bank. Any customer of the bank can take a loan from the bank. All branches can give loans. Bank has also installed automatic teller machines, from which a customer can withdraw from his/her bank. Draw an ER diagram for the bank. **[6]**

b) Explain the concept of data abstraction. **[6]**

Q3) a) Solve the following queries by using tables EMP & DEPT. **[6]**

EMP(Empno,Ename,Job,Mgr,Hiredate,Sal,Comm,Deptno)

DEPT(Deptno,Dname,Location)

i) Display the details of all employees who report to BLAKE

ii) Find out department in which no employee is working.

iii) Find out in which century JAMES joined.

iv) Display the department name which has more than 3 employees in it.

v) Find out details of employees where commission is greater than 7% of salary.

b) Write a cursor which will update the employee salary by 5000 and display the count of employees received the increment. **[6]**

OR

P.T.O.

Q4) a) Solve the following queries by creating tables with proper constraints. **[6]**

STUDENT (Membership_No , Name , Course)

BOOK (Book_ID, Category , Title, Author, Price ,Status)

BOOK_STATUS (Book_ID , Membership_No, Issue_Date, Return_Date, Fine_Charger, Fine_Paid)

i) Display the books under the category "Networking" currently available in library.

ii) Find the member who has paid maximum fine.

iii) Display all book details which are returned today.

b) Write an explicit cursor which will display employee number and name of all employees make use of the EMP table **[6]**

EMP (Empno , Ename, Job, Mgr, Hiredate, Sal, Comm, Deptno)

Q5) a) What are constraints? Explain Different types of constraints in detail? **[6]**

b) Explain any 5 CODD's rules in detail? **[5]**

OR

Q6) a) What is normalization Explain all types of normalization. **[6]**

b) Explain Database Design Methodology. **[5]**

Q7) a) Explain the concept of deadlocks with proper example. **[6]**

b) Explain transaction management. **[5]**

OR

Q8) a) Explain two types of Log based protocol. **[8]**

b) Explain Shadow Paging. **[3]**

Q9) a) Explain Parallel databases with its types. **[6]**

b) Write a short note on Speed up and scale up **[6]**

OR

Q10)a) Explain Data server architecture. **[8]**

b) Differentiate between client - server and centralized architecture. **[4]**

Q11)a) Explain how to deal with massive datasets using Map Reduce and Hadoop. **[6]**

b) Explain working of different nodes in HDFS. **[6]**

OR

Q12)a) Explain CRUD operation in Mango DB. **[6]**

b) Explain the concept of Indexing in Mango DB. **[6]**

Total No. of Questions : 12]

SEAT No. : ____

PC5028

[Total No. of Pages : 2

[6356]-17
F.Y.M.C.A. (Engineering)
COMPUTER NETWORK
(2020 Pattern) (Semester - II) (310913)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Illustrate TCP/IP model for Layer Communication. **[6]**

b) Explain FHSS. **[6]**

OR

Q2) a) Discuss the various Transmission Mediums. **[6]**

b) Explain IEEE 802.11 standards in detail. **[6]**

Q3) a) What is Error control? Explain any one error detection technique with example. **[6]**

b) Differentiate between PPP and HDLC. **[6]**

OR

Q4) a) What is flow control? Explain working of stop and wait protocol. **[6]**

b) Explain how Hamming code can be used to detect and correct the error with example. **[6]**

Q5) a) Summarize performance of Slotted Aloha against Pure Aloha. **[6]**

b) Discuss IEEE 802.3 frame format. **[5]**

OR

Q6) a) Explain in detail CSMA/CD. **[6]**

b) Differentiate between IEEE 802.11 a/b/g/n. **[5]**

P.T.O.

Q7) a) Identify and define the primary network layer services provided to upper layers in the OSI model. **[6]**

b) Explain the different switching techniques used in data communication networks. **[6]**

OR

Q8) a) Discuss the various routing protocols. **[6]**

b) Explain IPv4 addressing scheme which include hierarchical addressing, Subnetting, and allocation of address blocks. **[6]**

Q9) a) List and explain Transport Layer services. **[6]**

b) Discuss Real Time Transport Protocol in detail. **[6]**

OR

Q10)a) Differentiate between TCP services and UDP Services. **[6]**

b) Explain TCP Congestion controlling mechanism. **[6]**

Q11)a) Discuss MIME and POP3. **[6]**

b) Explain FTP protocol. **[5]**

OR

Q12)a) Explain SMTP and POP3. **[6]**

b) Explain how DNS works in detail. **[5]**

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Total No. of Questions : 12]

SEAT No. :

PC5029

[Total No. of Pages : 2

[6356]-18
First Year M.C.A. (Engineering)
JAVA PROGRAMMING
(2020 Pattern) (Semester - II) (310914)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) What is meant by package? List out the advantages of packages. **[6]**

b) What is inheritance? Explain the use of extends keyword in it. **[6]**

OR

Q2) a) Explain the concept of Interfaces in Java with example. **[6]**

b) Explain the concept of static Members and member function of Java. **[6]**

Q3) a) Describe thread Synchronization concept in details. **[6]**

b) What is the utilization of file class? Explain different constructors associated with file class. **[6]**

OR

Q4) a) What is meant by multithreading? Explain different priority can be set in it. **[6]**

b) What are the reader and writer classes available in java? **[6]**

Q5) a) Write a note on Adapter classes in Java. **[6]**

b) Illustrate different types of containers in AWT. **[5]**

OR

Q6) a) Write the similarities and dissimilarities between swing and AWT. **[6]**

b) Explain lifecycle of an applet with diagram. **[5]**

P.T.O.

Q7) a) Explain with diagram of all drivers in JDBC. **[6]**

b) Explain the interfaces used in JDBC with example. **[6]**

OR

Q8) a) Explain with example types of statements in JDBC. **[6]**

b) Write a program to create connection in JDBC. **[6]**

Q9) a) Explain various Java Networking Terminologies. **[6]**

b) What is URL? Explain various URL connection Class Methods. **[6]**

OR

Q10)a) What is Datagram? Write a note on Datagram Server & Client. **[6]**

b) Explain any three classes in java.net package. **[6]**

Q11)a) Write a note on Life cycle of Servlet. **[6]**

b) Explain the architecture of JSP. **[5]**

OR

Q12)a) Write a difference between Servlet & JSP. **[6]**

b) Explain the architecture of Servlet. **[5]**

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Total No. of Questions : 12]

SEAT No. :

PC5030

[Total No. of Pages : 2

[6356]-19
First Year M.C.A. (Engineering)
OPERATING SYSTEMS
(2020 Pattern) (Semester - II) (310915)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) What is an Operating System? Explain functions of operating system. **[6]**

b) What is BASH Scripting. List advantages and disadvantages of BASH scripting. **[6]**

OR

Q2) a) Describe evolution of Operating System. **[6]**

b) What is Virtual machine? Give benefits of virtual machines. **[6]**

Q3) a) What is a process? Explain Process life cycle with various states. **[6]**

b) What are the types of schedulers? Explain them with suitable diagram. **[6]**

OR

Q4) a) Differentiate between Preemptive scheduling and Non Preemptive Scheduling. Give one example of preemptive scheduling. **[6]**

b) What is Thread? List down benefits of using Thread. Also define concept of Multithreading. **[6]**

Q5) a) Explain Deadlock Prevention methods with example. **[6]**

b) Explain Readers / writers problem. **[5]**

OR

Q6) a) Write Bankers algorithm and explain by using suitable example. **[6]**

b) Describe Mutual Exclusion and its requirements. **[5]**

P.T.O.

Q7) a) Explain Memory Partitioning Techniques in details. **[6]**

b) Explain page replacement policy. Explain LRU algorithm with example. **[6]**

OR

Q8) a) Write short notes on: **[6]**

i) Contiguous memory allocation

ii) Non-contiguous memory allocation

b) Write working of Buddy memory allocation system in operating system? State it's advantages over fixed memory blocks. **[6]**

Q9) a) Explain Disk management system for following algorithms. **[6]**

i) FIFO

ii) C-SCAN

iii) LOOK

b) What is directory? What are the operations that can be performed on a directory? **[6]**

OR

Q10)a) Consider a disk system with 100 cylinders the request to access the cylinder occur in the following sequence: 14, 35, 9, 6, 19, 76, 3, 19, 8, 25. Assuming the head is at cylinder at 45, what is the total distance that disk moves to satisfy all the pending requests for the following disk scheduling algorithm: **[6]**

i) SSTF

ii) SCAN

b) What is a file? List various file attributes. **[6]**

Q11)a) What is basic components of Linux operating system? **[6]**

b) Describe process scheduling in Linux operating system? **[5]**

OR

Q12)a) List and explain features of Linux operating system? **[6]**

b) Explain Inter Process Communication (IPC) mechanism in Linux? **[5]**

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Total No. of Questions : 12]

SEAT No. :

PC5031

[Total No. of Pages : 2

[6356]-20
First Year M.C.A. (Engineering)
MOBILE COMPUTING
(2020 Pattern) (Semester - II) (Elective - II) (310916A)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) What is a channel? How are channels allocated in a cellular scenario? **[6]**

b) List out the advantages of SQLite? And explain List out the areas where SQLite works well? **[6]**

OR

Q2) a) What are the main disadvantages of Mobile Computing? **[6]**

b) Explain the GSM System Protocol Architecture. **[6]**

Q3) a) Explain WAP protocol. **[6]**

b) Explain MAC issues in wireless networking. **[6]**

OR

Q4) a) Explain WAP Architecture. **[6]**

b) Explain WAP protocol stack. **[6]**

Q5) a) Explain File system of mobile data management system. **[6]**

b) Explain adaptive clustering for mobile wireless networks. **[5]**

OR

Q6) a) What is data replication for mobile computers. **[6]**

b) Explain Disconnected operations in mobile data management. **[5]**

P.T.O.

Q7) a) Explain Features of android. **[6]**

b) Why Develop for Android? **[6]**

OR

Q8) a) Explain Android development in detail. **[6]**

b) Architecture of Android. **[6]**

Q9) a) Explain file structure in android O.S. **[6]**

b) Explain the location-based services. **[6]**

OR

Q10)a) Explain Android Application: Introducing Intents, Adapters, Introducing Dialogs. **[6]**

b) What is J2ME? **[6]**

Q11)a) Write a short note on Blue tooth? How it can access in android? **[6]**

b) Explain in brief Peer to Peer to communication. **[5]**

OR

Q12)a) Explain Testing Methodologies for Mobile Applications. **[6]**

b) Explain GTalk Service using, binding & Making connection. **[5]**

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Total No. of Questions : 12]

SEAT No. : [ ]

PC5032

[Total No. of Pages : 2

[6356]-21

First Year M.C.A. (Engineering)
ARTIFICIAL INTELLIGENCE
(2020 Pattern) (Semester - II) (Elective - I) (310916B)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Describe the Application of AI. **[6]**

b) Explain the Advantage & Disadvantage of AI. **[6]**

OR

Q2) a) What is Agent? Explain the Role of Agent in AI? **[6]**

b) Explain the Features of Environment. **[6]**

Q3) a) Explain the Properties of Search Algorithms. **[6]**

b) Explain the Uniform Cost Search Algorithm. **[6]**

OR

Q4) a) Explain the Best First Search Algorithm. **[6]**

b) Describe the Optimality of A* Algorithm. **[6]**

Q5) a) Explain the predicate calculus connectives in AI. **[6]**

b) Explain the variables and quantification in AI. **[5]**

OR

Q6) a) Differentiate between Statistical and Probabilistic Reasoning. **[6]**

b) Explain the properties for knowledge representation system. **[5]**

P.T.O.

Q7) a) What is the Role of Planning in Artificial Intelligence? Explain Types of planning in detail. **[6]**

b) Explain the Hierarchical planning in details. **[6]**

OR

Q8) a) Explain the Forward Planning in details. **[6]**

b) What do you mean by Sussman's Anomaly? Explain with Example how it is solve with Nonlinear planning using constraint posting. **[6]**

Q9) a) Describe Backpropogation Algorithm. **[6]**

b) Describe the Applications of Neural Networks. **[6]**

OR

Q10)a) Explain the Feedforward Networks in AI. **[6]**

b) List out the ANN applications and explain any two applications in detail. **[6]**

Q11)a) What is expert system? Explain components of expert system in detail. **[6]**

b) Explain Utilization and Functionality in expert system of AI. **[5]**

OR

Q12)a) Explain the steps for building expert system. **[6]**

b) Can a human doctor be replaced by an expert system? Explain your View in detail. **[5]**

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Total No. of Questions : 12]

SEAT No. :

PC-5033

[Total No. of Pages : 2

[6356]-22
F. Y. M.C.A. (Engineering)
Cyber Security
(2020 Pattern) (Semester - II) (310916C) (Elective - I)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10 and Q.11 or Q.12***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary***

Q1) a) What is Vulnerability in Cyber Security? Give few examples of it. **[6]**

b) How would you apply biometric authentication methods in a real- world scenario to enhance security. **[6]**

OR

Q2) a) Write short note Cyber terrorism and Cyber Espionage. **[6]**

b) Explain CIA and AAA principles. **[6]**

OR

Q3) a) Describe various challenges and constraints of cyber security. **[6]**

b) Explain Denial of Service (DDOS) attack with example in detail. **[6]**

OR

Q4) a) How would you explain the differences between various cyber threats and their potential impacts on individuals and organizations? **[6]**

b) What is software vulnerabilities? Explain in detail with examples. **[6]**

P.T.O.

Q5) a) Differentiate between NIDS and HBIDS. **[6]**

b) Explain with diagram Network based IDS and Host based IDS. **[5]**

OR

Q6) a) Write short note on SIM, Anti malware software. **[6]**

b) Discuss about various IPS techniques in detail with diagram. **[5]**

Q7) a) Write short note on SSL and TLS. **[6]**

b) Differentiate between Public Key Cryptography and Private Key Cryptography **[6]**

OR

Q8) a) Explain various types of firewall in detail. **[6]**

b) Explain Digital Signature in detail with the help of neat diagram. **[6]**

Q9) a) What is National Cyber Security Policy 2013? **[6]**

b) Illustrate various cyber security regulations and standards in detail. **[6]**

OR

Q10)a) State and explain the role of private sector in cyberspace. **[6]**

b) Explain the following terms: **[6]**

i) Indian Cyber Space ii) Roles of International Law

Q11)a) Write short note on cyber forensics. **[6]**

b) What are different types of information hiding? Explain in detail. **[5]**

OR

Q12)a) Discuss about conduction of disk based analysis. **[6]**

b) Illustrate about how the E-mails are scrutinized and validated. **[5]**

Total No. of Questions : 12]

SEAT No. : [ ]

PC-5034

[Total No. of Pages : 2

[6356]-23

F.Y. M.C.A. (Engineering)

BLOCK CHAIN

(2020 Pattern) (Elective - I) (Semester - II) (310916 D)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) What is DFS? Explain how Hadoop uses DFS. **[6]**

b) What are steps in fault tolerance. **[6]**

OR

Q2) a) Explain distributed databases vs centralized databases. **[6]**

b) Explain secure Hash algorithm. **[6]**

Q3) a) Explain technical overview & business use case of blockchain. **[6]**

b) Explain how to find whether two different nodes have same data or not using merkle tree. **[6]**

OR

Q4) a) Explain fork formation with difference between hard fork and soft fork. **[6]**

b) Elaborate properties of block chain. **[6]**

Q5) a) Explain Distributed consensus. **[6]**

b) Explain: proof of stake vs proof of work. **[5]**

P.T.O.

OR

Q6) a) Explain sybil attacks in peer-to-peer network. **[6]**

b) Explain energy efficiency of blockchain technologies. **[5]**

Q7) a) Explain the terms: **[6]**

i) Transaction ii) Timestamp server

b) Explain distributed ledger. **[6]**

OR

Q8) a) What is namecoin and what is it used for? **[6]**

b) Explain Ethereum with its features and applications. **[6]**

Q9) a) What are virtual currencies? Should they be banned in India. **[6]**

b) How does bitcoin achieve decentralization. **[6]**

OR

Q10) a) Will block chain disrupt banks? How **[6]**

b) Explain IoT with protocols. **[6]**

Q11) Explain : Hyperledger, its applications, advantages. **[11]**

OR

Q12) Explain : Membership service provider and chaincode in hyper ledger fabric. **[11]**