Course Name: **Cloud Computing**

Course Outcome

CO1: Describe importance of virtualization along with their technologies like system, network, andstorage virtualizations.
CO2. Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, XaaS, Public Cloud, Private Cloud, Hybrid Cloud and the core issues of cloud computing such as security, privacy, and interoperability.
CO3: Justify the need of new technology of Virtualization & Cloud Computing and its ecological impact.
CO4: Identify the known threats, risks, vulnerabilities and privacy issues associated with Cloud based IT services
CO5: Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost
CO6: Identify the Challenges in managing heterogeneous clouds.
CO7: Analyze various cloud programming models and apply them to solve problems on the cloud.
CO8: Describe the key components of Amazon web Service

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End Term Examination, Odd Semester 2022-23
MCA/MSC, 2nd Year, 3rd Semester
MCAE0306 - Cloud Computing

Time: 3 Hours **Maximum Marks: 50**

Instruction for students: Attempt all Questions of a section at one place

Section – A

Attempt All Questions 4 X 5 = 20 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	Suggest with proper reasons a cloud computing solution to the following: a. A company would like to leverage cloud computing to provide advanced collaboration services (i.e. video, chat, and web conferences) for its employees but does not have the IT resources to deploy such an infrastructure. Which cloud computing model would best fit the company needs? b. A company is considering a cloud environment to improve the operating efficiency for their data and applications. The company is part of an industry where strict security and data privacy issues are of the highest importance. Which type of cloud would be a good choice?	4	2	A	M
2	Explain the differences between cloud & virtualization. Also, explain the fields where cloud and virtualization overlap.	4	1	U	C
3	A company has decided to leverage the web conferencing services provided by a cloud provider and to pay for those services as they are used. The cloud provider manages the infrastructure and any application upgrades. This is an example of what type	4	1	E	D

	of cloud delivery model? Explain this service model in Detail.				
4	Differentiate Between: a. Authentication and Authorization b. SaaS and OpenSaaS c. Web and Web 2.0 d. ERP vs CRM	4	4	E	P
5	Discuss SCM architecture in Cloud Computing. Why we are using cloud based SCM? What are the Benefits of Cloud based SCM	4	6	An	M

Section – B

Attempt All Questions 3 X 5 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
6	What are Abuse and Nefarious use of Cloud Computing? Explain in Details.	3	6	E	M
7	How Cloud Computing Fits into the CRM? Discuss Types of CRM.Enlist the example of CRM.	3	5	An	M
8	How many Types of Attackers in Cloud Computing? What are the Characteristics of Attackers?	3	4	U	C
9	What is the use of multi-cloud management? What are the Key Features and Challenges of multi – cloud management in Cloud?	3	6	R	F
10	Discuss a. Network-Level Mitigation b. Rogue Hypervisors c. Microservices	3	6	R	F

Section – C

Attempt All Questions 5 X 3 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
11	How many key security elements should be carefully considered as an integral part of the SaaS application development and deployment process:	5	4	An	M
12	What is SOA? Explain the process of services offered by service provider to service consumer in SOA Architecture.	5	6	R	P
13	a. What are the areas for security concerns in cloud computing? Explain each in brief. b. What is Service Hijacking? Why Service Hijacking happens? What are the remedies to avoid it?	5	4	R	P

Course Name: Machine Learning

CO1- Understand the basic concepts of machine learning.
CO2- Apply the concepts of regression, classification, and re-sampling methods.
CO3- Design supervised and re-enforcement learning based solution.
CO4- Apply the ensemble methods for improving classification.
CO5- Identify the ways of feature extraction, reduction, and selection.

Printed Pages: 4 **University Roll No. .....**

End Term Examination, Odd Semester 2022-23
MCA/MSc (Maths), II-Year, III-Semester
MCAE 0202, Machine Learning

Time: 3 Hours **Maximum Marks: 50**

Instruction for students: ----------

- *This paper is divided into three sections: **A, B and C**. All the sections are **compulsory**.*
- *Write down the Serial Number of the question before attempting it and do all questions of a section at one place.*

Section – A

Attempt All Questions 4 X 5 = 20 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	What is 'Overfitting' in Machine learning? Why does overfitting happen?	4	1	U	C
2	The values of independent variable X and dependent value Y are given below: (X) 0 2 1 3 2 (Y) 5 3 4 4 6 a) Find the least square regression line Y=a.X+b. b) Estimate the value of Y when X is 9.	4	2	A	P

<table>
<tr><td>3</td><td>What are Support Vectors in SVM? What are Different Kernels in SVM?</td><td>4</td><td>5</td><td>R</td><td>F</td></tr>
<tr><td>4</td><td>Consider the following set of training examples:
<table><tr><th>Instance</th><th>Classification</th><th>A1</th><th>A2</th></tr><tr><td>1</td><td>+</td><td>T</td><td>T</td></tr><tr><td>2</td><td>+</td><td>T</td><td>T</td></tr><tr><td>3</td><td>-</td><td>T</td><td>F</td></tr><tr><td>4</td><td>+</td><td>F</td><td>F</td></tr><tr><td>5</td><td>-</td><td>F</td><td>T</td></tr><tr><td>6</td><td>-</td><td>F</td><td>T</td></tr></table>What is the information gain of A2 relative to these training examples? Provide the equation for calculating the information gain as well as the intermediate results.</td><td>4</td><td>3</td><td>A</td><td>P</td></tr>
<tr><td>5</td><td>Given the confusion matrix, find: Classification Accuracy, Recall, Precision, F-measure.
<table><tr><td>N=165</td><td>Predicted: No</td><td>Predicted: Yes</td><td></td></tr><tr><td>Actual: No</td><td>Tn=50</td><td>Fp=10</td><td>60</td></tr><tr><td>Actual: Yes</td><td>Fn=5</td><td>Tp=100</td><td>105</td></tr><tr><td></td><td>55</td><td>110</td><td></td></tr></table></td><td>4</td><td>2</td><td>A</td><td>P</td></tr>
</table>

Section – B

Attempt All Questions 3 X 5 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
6	Write down the differences between feature selection and feature extraction.	3	5	U	C
7	What is clustering? How to select optimal value of cluster?	3	5	R	F
8	What is Bias-Variance Trade-Off?	3	3	U	C
9	How Agglomerative Hierarchical clustering algorithm works?	3	4	U	P
10	What is regularization? Give some examples of regularization techniques?	3	2	R	F

Section – C

Attempt All Questions 5 X 3 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
11	Cluster the following eight points (with (x, y) representing locations) into three clusters A1(2, 10), A2(2, 5), A3(8, 4), A4(5, 8), A5(7, 5), A6(6, 4), A7(1, 2) and A8(4, 9). Initial cluster centers are A1(2, 10), A4(5, 8) and A7(1, 2). Use k-means algorithm to find the three cluster centers after the second iteration.	5	2	A	P

12	What are ensemble methods? Differentiate between bagging and boosting ensemble methods	5	4	R	F
13	Suppose you have given a dataset of weather conditions and corresponding target variable "Play". So, using this dataset you need to decide whether we should play or not on a particular day according to the temperature using Naïve Bayes Classifier. Problem statement: "If the temperature is Hot, then the Player should play or not?"	5	2	A	P

Temperature	Play
Hot	No
Hot	No
Mild	Yes
Cool	Yes
Cool	No
Cool	Yes
Cool	Yes
Mild	Yes
Hot	Yes
Mild	No

Course Name: **MCA, 2 nd Yr., III Sem**

Course Outcome

CO1- Understanding architecture of visual studio.net.

CO2- Understand object oriented concept with exception handling using c# language.

CO3- Understand multithreading, file handling and concept generic classes.

CO4- Understand structure of assembly with built in attributes

CO5- Develop window services and web service as advance concept

CO6 -Understand graphics based programming and image processing.

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End Term Examination, Odd Semester 2022-23
MCA, 2nd Yr, III Sem

MCAE0402: .NET FRAMEWORK by using C#

Time: 3 Hours **Maximum Marks: 50**

Section – A

Attempt All Questions 4 X 5 = 20 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	Explain the components and benefits of .Net framework with the help of architecture diagram.	4	CO1	U	C
2	What is an exception? Explain User-defined exceptions with example.	4	CO2	An	P
3	Explain MultiThreading in C# with example. What is Generic class? WAP to explain Generic class.	4	CO3	R	C
4	What is an assembly? Explain each component of an assembly.	4	CO4	U	F
5	Write a short note on the following: i)Indexer ii)Properties	4	CO2	R	M

Section – B

Attempt All Questions 3 X 5 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
6	What are the different types of Assemblies? Explain them in details.	3	CO4	An	C
7	Write difference between connected mode and disconnected mode?	3	CO5	U	F
8	Write step to access database using ADO.Net. Write the difference between ADO and ADO .Net.	3	CO5	R	C

9	WAP to design a simple calculator in C#.	3	CO2	A	F
10	What is Web application? Explain Web Application architecture.	3	CO5	R	C

Section – C

Attempt All Questions 5 X 3 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
11	What is a Window Service? Explain window service architecture and Explain SCM.	5	CO5	R	F
12	Explain ADO .Net architecture with diagram.	5	CO4	U	C
13	Write difference between ExecuteNonQuery(), ExecuteReader() and ExecuteScalar() with example.	5	CO5	R	C

Course Name: Internet of Things

Course Outcome

CO1: Explain the principles of operation of the main types of sensors.

CO2: Understand the main characteristics of sensors.

CO3: Select appropriate sensors for a given application and design simple electronic sensor interface systems.

CO4: Utilize the merits of various types of sensors for a wide range of applications

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End Term Examination, Odd Semester 2022-23
MCA, II year, III Semester
MCAE 0305 Internet of Things

Time: 3 Hours **Maximum Marks: 50**

Section – A

*Attempt **All** Questions* 4 X 5 = 20 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	What can be best said about rain sensor, temperature sensor, humidity sensor and smoke sensor.	4	2	R	D
2	Differentiate Arduino UNO and Node MCU? Draw a pin diagram for Node MCU.	4	3	U	F
3	Is machine to machine architecture converges to Internet of Things. What are the features of IoT that makes machine smart?	4	1	E	C
4	Is a smart watch an application of IoT? Discuss	4	3	U	C
5	Write a sketch in Arduino Uno to switch on even position LED and the switch off it then switch on odd position LED and the switch off it in 6 LED environment.	4	2	R	P

Section – B

*Attempt **All** Questions* 3 X 5 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
6	Justify the type of sensor needed, architectural diagram and flow diagram in case of fire caught in a building.	3	2	R	C

7	<table><tr><th>Processes</th><th>Execution Time (C)</th><th>Time period (T)</th></tr><tr><td>P1</td><td>3</td><td>20</td></tr><tr><td>P2</td><td>2</td><td>5</td></tr><tr><td>P3</td><td>2</td><td>10</td></tr></table> Apply Rate Monotonic Scheduling and draw the scheduling chart.	3	4	U	F
8	<table><tr><th>Tasks</th><th>Release time(ri)</th><th>Execution time(Ci)</th><th>Deadline (Di)</th><th>Time period(T</th></tr><tr><td>T1</td><td>0</td><td>0.5</td><td>3</td><td>3</td></tr><tr><td>T2</td><td>0</td><td>1</td><td>4</td><td>4</td></tr><tr><td>T3</td><td>0</td><td>2</td><td>6</td><td>6</td></tr></table> Apply Dynamic scheduling algorithm and draw the scheduling chart.	3	4	R	C
9	Explain any application of IoT in healthcare field.	3	3	U	C
10	How raspberry pi is different from other microcontroller. Write their features.	3	3	R	P

Section – C

*Attempt **All** Questions* 5 X 3 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
11	What are communication protocol in IOT? Differentiate MQTT and MQTT-S?	5	3	R	C
12	How Node MCU is connected with Arduino UNO? Explain Step by Step procedure.	5	3	R	P
13	What can you say about the cloud environment think speak and blynk.	5	4	E	C

Course Name:

Course Outcome

CO1: Understands the basic concepts of cryptography.
CO2: Apply the symmetric key concepts of DES and AES for securing data.
CO3: Apply the concepts of number theory of Asymmetric key cryptosystem.
CO4: Understand the concepts of hash function, MAC and digital signature for data integrity.
CO5: Explain the symmetric and asymmetric key distribution techniques.
CO6: Understand the concepts of security mechanism at TCP/IP layer.

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End Term Examination, Odd Semester 2022-23
MCA, II Year, III Semester
MCAE0003, Cryptography & Network Security

Time: 3 Hours **Maximum Marks: 50**

Instruction for students: Attempt All Questions

Section – A

Attempt All Questions 4 X 5 = 20 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	Show that the number 97 is prime or not by using Miller-Rabin test. (Assume the value of a=2). Also find all the multiplicative key pairs in Z_{10}.	4	1	A	P
2	Explain the different ITU-T services and mechanisms in detail.	4	1	U	C
3	For the group $G=<Z_{11}^*, X>$, find the order of the group, order of each element of the group, number of primitive roots and all the primitive roots of the group.	4	2	A	P
4	What do you mean by IPSec? Explain how authentication header (AH) and encapsulating security payload(ESP) can be used to provide security by using Tunnel and Transport mode of IPsec.	4	6	U	C
5	What is the importance of key distribution? How symmetric key distribution is different with asymmetric key distribution. Discuss the Needham-Schroeder protocol for key distribution. Or	4	5	U	C

	What is the difference between direct and arbitrated digital signature? Give the steps of signing and verifying of DSS algorithm.				

Section – B

*Attempt **All** Questions* 3 X 5 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
6	Explain the working of RSA digital signature scheme.	3	4	A	P
7	What do you mean by payment gateway? Discuss in detail the working of SET protocol.	3	6	U	C
8	What do you mean by image hashing with respect to any security system? How one can achieve message authentication and privacy by using Message Authentication Code(MAC).	3	4	U	C
9	Explain the format of X.509. How it is different from X.509 certificate revocation? What is the role of PKI in asymmetric-key distribution?	3	5	U	C
10	Discuss the various S/MIME security functionalities. What is the role of Radix64 conversion in S/MIME or PGP?	3	6	U	C

Section – C

*Attempt **All** Questions* 5 X 3 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
11	Discuss how one can achieve privacy and authentication in PGP. Explain the purpose of Owner Trust field, Key Legitimacy field, and Signature Trust field maintained in the Public key ring of PGP.	5	6	U	C
12	In what ways security can be provided over different layers of TCP/IP layer? What is the difference between SSL connection and SSL session? Discuss SSL protocol architecture in brief.	5	6	U	C
13	Explain the working of Packet-filter firewall? How circuit-level gateway is different from an application-level gateway? What is Stateful inspection firewall?	5	6	A	P

Course Name: B. Sc. (H) Physics / B. Tech. Civil

Course Outcome

After studying this course students will be able to.

CO1. Students will be able to understand the environmental issues pertaining to day-to-day living; gain awareness for the need of environmental education vis-à-vis education for sustainable development.

CO2. Students will acquire knowledge in ecological perspective and value of environment, biotic components, ecosystem process: energy, food chain, water cycle etc.

CO3. Students will be able to understand water quality standards and parameters, assessment of water quality, air pollution, pollutants, acid rain, global climate change and greenhouse gases.

CO4. Students will learn to understand variety of social issues associated with environmental deterioration involving human components such as population, ethics and urban settlements.

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End Term Examination, Odd Semester, Session 2022-23

B. Sc. (H) Physics, II Year (III semester)

&

B. Tech. Civil, III Year (V Semester)

Environmental Studies: BCHS 0201

Time: 03 Hours **Max. Marks: 50**

Section – A

Note: Attempt All Questions. (4 x 5 = 20)

No.	Detail of Question	Marks	CO	BL	KL
1	Write functions of lithosphere and hydrosphere.	4	CO2	A	C
2	Explain any two methods of disposal of solid waste.	4	CO2	An	C

3	Define: (i) Food chain and food web (ii) herbivores and carnivores	4	CO1	U	C
4	Draw the vertical structure of atmosphere.	4	CO3	C	M
5	Discuss the consequences of fluoride problems?	4	CO2	A	C

Section – B

Note: Attempt All Questions **3 x 5 = 15**

No.	Detail of Question	Marks	CO	BL	KL
6	What is an EIA? Discuss the various steps involved in EIA process.	3	CO2	A	C
7	What is an Ecosystem? How an ecosystem can be classified? Explain with examples.	3	CO1	U	C
8	Write an explanatory note on mineral resources of India.	3	CO1	A	M
9	Discuss the case study of: **i)** Bhopal Gas tragedy **ii)** Photochemical Smog of London	3	CO3	C	M
10	What do understand by Environmental Ethics? What are its objectives?	3	CO4	A	C

Section – C

Note: Attempt All Questions. **5 x 3 = 15 marks**

No.	Detail of Question	Marks	CO	BL	KL
11	Enumerate and discuss the objectives of Environment (Protection) Act, 1986. Also, discuss the power and functions of state and central pollution control board.	5	CO2	A	C
12	Discuss the causes, effects, and preventive measures of Water pollution.	5	CO2	An	M
13	What do you understand by the term 'legal aspects of environmental protection'? What is the objective and problems associated with implementation of these legal aspects?	5	CO4	U	M

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