University of Mumbai

Examination Second Half 2022 under cluster (Lead College:)

Examinations Commencing from 25th July 2022 to 3rd August 2022

Program: **MCA**

Curriculum Scheme: 2 YR

Examination: M.C.A Semester II

Course Code: MCA21 and Course Name: Mathematical Foundation for Computer Science 2

Time: 2-hour 30 minutes Max. Marks: 80

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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks.
1.	Objective function of an LP problem is
Option A:	A constant
Option B:	A function to be optimized
Option C:	An inequality
Option D:	A quadratic equation
2.	Customers arrive at a reception counter at an average interval rate of 10 minutes. The receptionist takes an average of 6 minutes for one customer. Determine the average queue length.
Option A:	9/10
Option B:	7/10
Option C:	11/10
Option D:	3/10
3.	For finding an initial feasible solution in transportation problem _____ method is used
Option A:	Simplex
Option B:	Big-M
Option C:	Least Cost Method
Option D:	Hungarian
4.	Monte Carlo simulation gets its name from which of the following?
Option A:	Data collection
Option B:	Model formulation
Option C:	Analysis
Option D:	Random number assignment
5.	Dummy row or column is added in an assignment problem
Option A:	To increase the profit function
Option B:	To balance total activities and total resources
Option C:	To prevent a solution from becoming degenerate
Option D:	To reduce the total cost of assignment
6.	A person who leaves the queue by losing his patience to wait is said to be
Option A:	Jockeying
Option B:	Balking
Option C:	Reneging
Option D:	Collusion

7.	A feasible solution to an LP problem,
Option A:	Must satisfy all of the problem's constraints simultaneously.
Option B:	Need not satisfy all of the constraints, only some of them
Option C:	Must be a corner point of the feasible region
Option D:	Must optimize the value of the objective function
8.	What is the value of the following game?

	B1	B2	B3	B4
A1	20	15	12	35
A2	25	14	8	10
A3	40	2	10	5
A4	-5	4	11	0

Option A:	20
Option B:	-5
Option C:	12
Option D:	0
9.	The solution to a transportation problem with 'm' supplies & 'n' destinations is basic feasible if number of positive allocations are
Option A:	m+n
Option B:	m+n+1
Option C:	m*n
Option D:	m+n-1
10.	Feasible region formed by the constraints $x+4y \leq 4$, $3x+3y \geq 18$, $x \geq 0$ and $y \geq 0$ is:
Option A:	bounded
Option B:	unbounded
Option C:	lies first and second quadrant
Option D:	does not exist

Q2.
(20 Marks Each)

Solve any two questions out of three **10 marks each**

A

Two manufacturing firms A and B are competing for an increased market share. These are their strategies:
A1,B1 – Give coupons
A2,B2 – Decrease Price
A3,B3 – Increase Advertisement
A4,B4 – Maintain Present Strategy

Pay-off matrix below shows the increase in market share for Firm A. Find the optimum strategies for A and B and the value of the game.

		Firm B			
		B1	B2	B3	B4
Firm A	A1	35	65	25	5
	A2	30	20	15	0
	A3	40	50	0	10
	A4	55	60	10	15

B

A television company operates two assembly lines Line1 and Line2. Each line is used to assemble components of three types of televisions – LCD, LED and QLED. The expected daily production on each line is as follows:

TV Model	Line	
	Line1	Line2
LCD	3	1
LED	1	1
QLED	2	6

The daily running cost for 2 lines is Rs.6000 for Line1 and Rs.4000 for Line2. It is given that the company must manufacture at least 24 LCD, 16 LED and 48 QLED TV sets for an order. Formulate this problem as an LPP taking the objective function as minimization of cost. Also determine the number of days that the 2 lines should be run to meet the requirements.

C

At a booking window, customers arrive at the rate of 10 per minute approximated to Poisson's distribution. If service time is exponentially distributed with a mean of 15 per minute, determine:

a) Probability that the booking clerk waits for the customer
b) Probability that there are at least 3 customers in the queue
c) Average number of customers in the system
d) Average time spent in the queue

Q3. (20 Marks Each)

Solve any two questions out of three **10 marks each**

A

A cement factory manager is considering the best way to transport cement from 3 manufacturing centres P,Q and R to depots A,B,C,D,E.

The transportation cost per ton are given below. The availability at the centres P,Q,R are 60,35 and 40 respectively. The demand at the depots are 22, 45, 20, 18 and 30 respectively. Find the optimum distribution schedule.

		Depot				
		A	B	C	D	E
Manufacturing Centres	P	4	1	3	4	4
	Q	2	3	2	2	3
	R	3	5	2	4	4

B

Solve the following LPP using Big-M Method

Minimize $Z = 12x_1 + 20x_2$

subject to

$$6x_1 + 8x_2 \geq 100$$

$$7x_1 + 12x_2 \geq 120$$

and

$$x_1, x_2 \geq 0$$

C

The owner of a bakery shop has observed the following demand pattern for a particular brand of cakes.

Daily Demand	0	10	20	30	40	50
Probability	0.02	0.08	0.15	0.40	0.30	0.05

Every morning he receives fresh cakes and places an order for the next day. The order quantity for next day is equal to the number of cakes he demanded the previous day. Assuming that he receives 30 cakes on the first day and places an order for 30 cakes for the next day, simulate the system for the next 10 days to determine:

a) Average number of cakes sold per day

b) Probability of stock out on any day

c) Average number of unsold cakes per day if he does not sell stale cakes

d) Average profit per day if he earns a profit of Rs.20 per cake and returns unsold cakes the next day with a loss of Rs.10

Random Numbers: 3244, 8857, 9516, 8058, 6047, 9504, 4554, 3172, 8699, 3584

Q4. (20 Marks Each)

Solve any two questions out of three **10 marks each**

A

A transport company has 5 buses and 5 routes. There are certain technical restrictions which do not allow certain buses to ply on certain routes as shown in the table below. The cost of assigning buses to routes is shown in the matrix below. Determine the optimal assignment of buses to routes.

		Routes				
		R1	R2	R3	R4	R5
Buses	B1	80	40	-	70	40
	B2	-	80	60	40	40
	B3	70	-	60	80	70
	B4	70	80	30	50	-
	B5	40	40	50	-	80

B

Solve the following LPP using Simplex Method

Maximize $Z = 7x_1 + 5x_2$

subject to

$$x_1 + 2x_2 \leq 6$$

$$x_1 + 3x_2 \leq 12$$

and

$$x_1, x_2 \geq 0$$

C

The research department of XYZ Company has recommended to the marketing department to launch a shampoo of three different types. The marketing manager has to select one of the types depending on the following estimated payoffs for various levels of sales.

What will be the marketing manager's decision if (a) Maximax (b) Maximin (c) Minimax (d) Regret and (e) Laplace criterion is applied

Type of Shampoo	Estimated Level of Sales		
	15000	10000	5000
Tulsi	30	10	10
Amla	40	15	5
Green Apple	55	20	3

University of Mumbai

Program: Master of Computer Applications

Curriculum Scheme: MCA 2 YEAR COURSE

Examination: MCA First Year Semester - II

Course Code: _MCA22 and Course Name: Artificial Intelligence and Machine Learning

Time: 2 Hrs 30 Mins **Max. Marks: 80**

Section I - MCQS (20 Marks)

Section II – Subjective (60 Marks)

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Section I

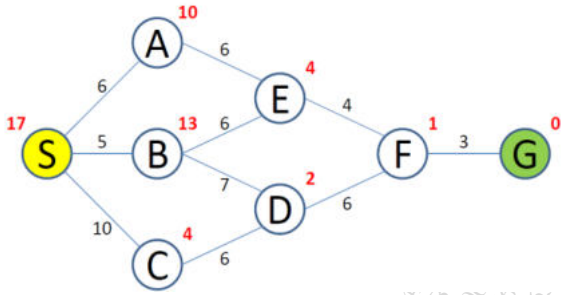
Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	The effectiveness of an SVM depends upon:
Option A:	Selection of Kernel
Option B:	Kernel Parameters
Option C:	Soft Margin Parameter C
Option D:	All of the above
Q2.	Choose the correct option regarding machine learning (ML) and artificial intelligence (AI)
Option A:	ML is a set of techniques that turns a dataset into a software
Option B:	AI is a software that can emulate the human mind
Option C:	ML is an alternate way of programming intelligent machines
Option D:	All of the above
Q3.	Which of the following is not supervised learning?
Option A:	Naive Bayesian
Option B:	PCA
Option C:	Linear Regression
Option D:	Decision Tree
Q4.	Which of the following is a widely used and effective machine learning algorithm based on the idea of bagging?
Option A:	Decision Tree
Option B:	Regression
Option C:	Classification
Option D:	Random Forest
Q5.	Which of the following can improve the performance of an AI agent?
Option A:	Learning
Option B:	Perceiving
Option C:	Observing
Option D:	All of the above

	Which of the following can improve the performance of an AI agent?
Q6.	The network that involves backward links from output to the input and hidden layers is known as
Option A:	Recurrent neural network
Option B:	Self organizing maps
Option C:	Perceptrons
Option D:	Single layered perceptron
Q7.	A perceptron is
Option A:	Single layer feed-forward neural network with pre-processing.
Option B:	Double layer auto-associative neural network
Option C:	Auto-associative neural network
Option D:	Neural network that contains feedback
Q8.	Advantage of Decision Tree----------
Option A:	Possible Scenarios can be added
Option B:	Use a white box model, if given result is provided by a model
Option C:	Worst, best and expected values can be determined for different scenarios
Option D:	All of the above
Q9.	Which of the following search algorithms requires less memory?
Option A:	Depth First Search
Option B:	Linear Search
Option C:	Optimal Search
Option D:	Breadth-First Search
Q10.	The problem of finding hidden structure in unlabeled data is called
Option A:	Unsupervised Learning
Option B:	Supervised Learning
Option C:	Reinforcement Learning
Option D:	Rote Learning

Q2	**Solve any Two Questions out of Three** **10 marks each**
A	Explain K-Means clustering Algorithm with proper steps.
B	Describe Principal Component Analysis (PCA) with suitable example.
C	Explain any two types of agents with architecture.

Q3	**Solve any Two Questions out of Three** **10 marks each**
A	Use A* algorithm to find the path and cost from start state(S) to goal state (G).



B	Explain Logistic Regression in detail with suitable examples.
C	Explain the basic ID3 algorithm of the decision tree and find out which attribute is the best classifier from the following dataset for the target attribute **buys computer.**

age	income	student	credit_rating	buys_computer
<=30	high	no	fair	no
<=30	high	no	excellent	no
30…40	high	no	fair	yes
>40	medium	no	fair	yes
>40	low	yes	fair	yes
>40	low	yes	excellent	no
31…40	low	yes	excellent	yes
<=30	medium	no	fair	no
<=30	low	yes	fair	yes
>40	medium	yes	fair	yes
<=30	medium	yes	excellent	yes
31…40	medium	no	excellent	yes
31…40	high	yes	fair	yes
>40	medium	no	excellent	no

Q4	**Solve any Two Questions out of Three** **10 marks each**
A	Describe the support vector machine with advantages and disadvantages.
B	Describe Bayesian networks with suitable example.
C	Explain Random forest algorithm in detail with steps.

University of Mumbai

Examinations Commencing from 25th July 2022 to 3rd August 2022

Program: Master of Computer Applications

Curriculum Scheme: (MCA 2year) –(R-2020-21)

Examination: M.C.A Semester II

Course Code: MCA23and Course Name: Information Security

Time: 3Hours Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	The operation of a cipher usually depends on a piece of auxiliary information, called
Option A:	Plain text
Option B:	Cipher Text
Option C:	Key
Option D:	Cipher
2.	The mechanism used for authenticating a user only once is called as
Option A:	Single Sign On
Option B:	System Security Office
Option C:	Single Sign Off
Option D:	Single Security Opportunity
Q3.	Cryptanalysis is used _____
Option A:	To find some insecurity in a cryptographic scheme.
Option B:	To increase the speed.
Option C:	To encrypt the data.
Option D:	To make new ciphers.
4.	MD5 produces _____ bits hash data
Option A:	128
Option B:	150
Option C:	160
Option D:	112
5.	If the recipient of a message has to be satisfied with the identity of the sender, the principle _____ comes into picture.
Option A:	Integrity
Option B:	Access control
Option C:	Authentication
Option D:	Confidentiality
6.	PGP Key Management has the following functionality
Option A:	Every user is own CA
Option B:	Cannot forms a “web of trust”
Option C:	Users cannot revoke their keys
Option D:	Rely on certificate authorities

7.	To encrypt a message from Alice to Bob using public key cryptography, which of the following is needed?
Option A:	Alice's private key
Option B:	Alice's public key
Option C:	Bob's private key
Option D:	Bob's public key
8.	A _____ attack involves the passive capture of a data unit and its subsequent re-transmission to produce an unauthorized effect
Option A:	Release of message contents
Option B:	Replay
Option C:	Masquerade
Option D:	Traffic analysis
9.	A Substitution Box of DES provides
Option A:	Diffusion only
Option B:	Confusion only
Option C:	Both diffusion and confusion
Option D:	Neither diffusion nor confusion
Q10.	Intrusion detection approach that involves the collection of data relating to the behavior of legitimate users over a period of time.
Option A:	Statistical anomaly detection
Option B:	Rule-based detection
Option C:	Audit Records
Option D:	Penetration identification

Q2 (Total 20 Marks)	
A	**Solve any Two** **5 Marks Each**
i	Explain algorithm modes CBC uses for secret key cryptography.
ii	Explain Cross-Certification.
iii	Using Euclidean algorithm, find the greatest common divisor of the following: i. 300 and 42 ii. 88 and 220
B	**Solve any One** **10 Marks Each**
i	What is Message Digest? Explain the working of MD5 in detail.
ii	Discuss Inference. What are the various approaches to deal with it?

Q3 (Total 20 Marks)	
A	**Solve any Two** **5 marks each**
i	Explain the various Information Security principles.
ii	What is intrusion detection? What are the various systems used for detecting intrusions?
iii	In an RSA cryptosystem, a particular A uses two prime numbers p =

	13 and q =17 to generate her public and private keys. If the public key of A is 35. Then the private key of A is?
B	**Solve any One** **10 Marks Each**
i	Explain PGP to provide security? Discuss the concept of PGP keys and rings.
ii	What is Kerberos? Explain the working of Kerberos

Q4 (Total 20 Marks)	
A	**Solve any Two** **5 marks each**
i	Differentiate between Symmetric and Asymmetric Cryptography
ii	What are Firewalls? Discuss its types.
iii	Explain MAC in detail.
B	**Solve any One** **10 Marks Each**
i	Discuss SSL as an internet security protocol and three major protocol use at SSL?
ii	Explain one round structure of DES.

University of Mumbai
Examination First Half 2022

Program: MCA
Curriculum Scheme: MCA 2-year Course
Examination: M.C.A First Year Semester II
Course Code: MCAE242 and **Course Name:** Internet of Things
Time: 2 hours 30 mins **Max. Marks:** 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**	**2 Marks each**
1.	An M2M device in "ETSI architecture" connects to the Network Domain either directly or through an _____.	**2 Marks**
Option A:	M2M Area Network	
Option B:	M2M Router	
Option C:	M2M Gateway	
Option D:	M2M Switch	
2.	Which of the following is not the characteristics of IoT?	**2 Marks**
Option A:	No Unique Identity	
Option B:	Self-Configuring	
Option C:	Interoperable Communication Protocols	
Option D:	Dynamic & Self-Adapting	
3.	In IoT design methodology steps, Information Model specification focuses on which class of the domain model?	**2 Marks**
Option A:	Virtual Entity	
Option B:	Physical Entity	
Option C:	Services	
Option D:	Resource	
4.	The concept of using and adapting Web protocols to connect anything in the physical world and give it a presence on the World Wide Web is called _____.	**2 Marks**
Option A:	Internet of Things	
Option B:	Web of Things	
Option C:	Cloud of Things	
Option D:	Internet of Everything	
5.	Smart inventory management for retail uses which of the following?	**2 Marks**
Option A:	RFID tags	
Option B:	PIR Sensor	
Option C:	Ultrasonic sensor	
Option D:	LDR	
6.	The physical entity is considered in which sub-model of IoT reference model?	**2 Marks**
Option A:	IoT Communication Model	
Option B:	IoT Information Model	
Option C:	IoT Functional Model	
Option D:	IoT Domain Model	

7.	Modbus Protocol enables communication between approximately _____ devices connected to the same network.	**2 Marks**
Option A:	247	
Option B:	327	
Option C:	360	
Option D:	427	
8.	In which types of attack, the attacker has direct access to the IoT device or infrastructure?	**2 Marks**
Option A:	Software Attack	
Option B:	Chip Layer Attacks	
Option C:	Device Layer Attacks	
Option D:	Network Attack	
9.	Which of the following cloud computing services offers entire IT computing infrastructure, provisioned and managed over the internet.	**2 Marks**
Option A:	SAAS	
Option B:	PAAS	
Option C:	IAAS	
Option D:	NAAS	
10.	Which of the following IoT level has single node, data is stored and analyzed on cloud.	**2 Marks**
Option A:	Level-1 IoT System	
Option B:	Level-2 IoT System	
Option C:	Level-3 IoT System	
Option D:	Level-4 IoT System	

Q. 2	**Solve any Two Questions out of Three**	
A	Define IoT. State and explain various characteristics of IoT.	**10 marks**
B	Explain IoT Domain Model with the help of diagram.	**10 marks**
C	Explain need for IoT security.	**10 marks**

Q. 3	**Solve any Two Questions out of Three**	
A	Explain application of IoT in Smart City and Retail.	**10 marks**
B	Explain IoT system design methodology steps in detail?	**10 marks**
C	What are different State of Art Architectures and Reference Model? Explain Any two of them.	**10 marks**

Q. 4	**Solve any Two Questions out of Three**	
A	Illustrate the IoT level 1 and level 2 with diagram.	**10 marks**
B	Explain the Cloud of things architecture with suitable diagram.	**10 marks**
C	What are issues of IoT Standardization. Discuss SCADA Standardization Efforts.	**10 marks**

Program: Master of Computer Applications

Curriculum Scheme: CBCGS

Examination: MCA FIRST YEAR SEMESTER-II

Course Code: MCAE251 and Course Name: Natural Language Processing

Time: Max. Marks: 80

Section I - MCQS (20 Marks)

Section II – Subjective (60 Marks) Paper Code: 95985

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Section I

Note to the students: - All the Questions are compulsory and carry equal marks.

Q.1	The foundation of speech and language technology lie in?
Option A:	Electrical Engineering
Option B:	Mathematics
Option C:	Computer Science
Option D:	All of the above
Q.2	How the word "processing" is stemmed using porter stemmer?
Option A:	process
Option B:	processing
Option C:	processy
Option D:	None of the above
Q.3	Knowing the probability of whole sentence or strings of words is useful in
Option A:	Word-sense-disambiguation
Option B:	Parts-of-speech tagging
Option C:	Probabilistic parsing
Option D:	All of the above
Q.4	Context free grammar consists of
Option A:	Rules or production
Option B:	Lexicon of words and symbols
Option C:	All of the above
Option D:	None of the above
Q.5	A relation that holds between words that have the same form with unrelated meanings is called ----------
Option A:	hyponymy
Option B:	Polysemy
Option C:	homonymy
Option D:	homographs

Q.6	In which approach all the sense definitions of the word to be disambiguated are retrieved from the dictionary
Option A:	Bootstraping
Option B:	Dictionary-based
Option C:	Naïve bayes
Option D:	Decision list
Q.7	How many morphemes are present in the word "happiness"
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q.8	Which tagger uses probabilistic and statistical information to assign tags to words?
Option A:	Rule Based
Option B:	Statistical
Option C:	POS
Option D:	Stochastic
Q.9	CFG consist of
Option A:	Rules, productions, order of element
Option B:	Set of productions
Option C:	Set of rules
Option D:	Order of elements
Q.10	Which of the following is a kind of text summarization?
Option A:	History-based summarization
Option B:	Summarizing a text or article
Option C:	Topic-based summarization
Option D:	Abstraction-based summarization

SECTION II

Q2 Solve any two out of three (10 Marks each) 20 marks

A. What is Word Sense Disambiguation? Explain Dictionary-based approach.

B. What is Text Summarization? Explain different types of Text Summarization techniques with example.

C. What is POS? Explain Stochastic POS-tagging.

Paper Code: 95985

Q.3 Solve any two out of three (10 Marks each) **20 marks**

A. Describe Hidden Markov Model (HMM).

B. What are Lexical Semantics and lexemes? Explain relation between different lexemes.

C. Explain morphological parsing with FST.

Q.4 Write Short note on following (Any 4) **20 Marks**

A. Regular Expression

B. Inflectional and Derivational Morphology

C. Generic NLP system

D. Text Classification

E. Sentiment Analysis

F. Noun Phrases

University of Mumbai

Examination First Half (Summer-2022)

Program: MCA (2 Year Course)

Curriculum Scheme:(R-2021-22)

Examination: 1T00162 / MCA (Sem-II) (R-2021-22) (2 Year Course)

Course Code:70661 / Elective 2: Design & Analysis of Algorithm

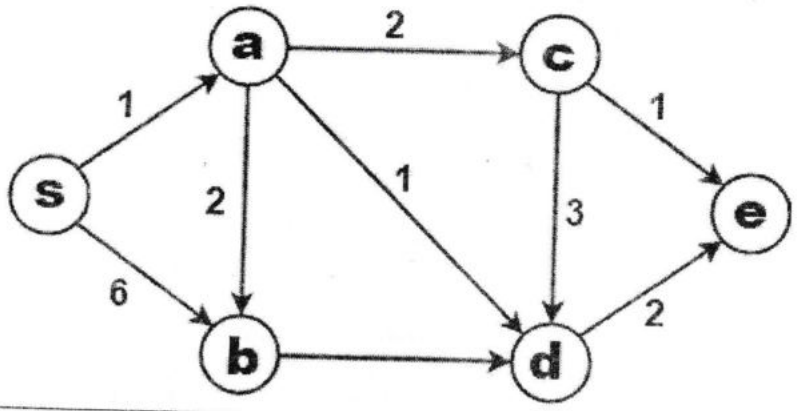
Time: 2 hours 30 minutes Max. Marks: 80

Paper Code 95989

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Dijkstra's algorithm is used to solve _____ problems?
Option A:	Network lock
Option B:	Single pair shortest path
Option C:	All pair shortest path
Option D:	Sorting
2.	Which of the following is used for solving the N Queens Problem?
Option A:	Greedy Algorithm
Option B:	Dynamic Programming
Option C:	Backtracking
Option D:	Sorting
3.	Hamiltonian path problem is _____ ?
Option A:	NP Problem
Option B:	P class Problem
Option C:	NP Complete Problem
Option D:	N class problem
4.	What is the time complexity of the binary search algorithm?
Option A:	O(n)
Option B:	O(1)
Option C:	O(log2n)
Option D:	O(n2)
5.	___ of an algorithm is the amount of time required for it to execute.
Option A:	Time complexity
Option B:	Space complexity
Option C:	Compiling time
Option D:	Best case

6.	The recursive versions of binary search use a ___ structure.
Option A:	Branch and bound
Option B:	Dynamic programming
Option C:	Divide and conquer
Option D:	Simple recursive
7.	If a problem can be broken into subproblems which are reused several times, the problem possesses _____ property.
Option A:	Overlapping subproblems
Option B:	Optimal substructure
Option C:	Memoization
Option D:	Greedy
8.	Which of the following problems should be solved using dynamic programming?
Option A:	Mergesort
Option B:	Binary search
Option C:	Longest common subsequence
Option D:	Quicksort
9.	Which of the following branch and bound strategy leads to breadth first search?
Option A:	LIFO branch and bound
Option B:	FIFO branch and bound
Option C:	Lowest cost branch and bound
Option D:	Highest cost branch and bound
10.	What is a Rabin and Karp Algorithm?
Option A:	String Matching Algorithm
Option B:	Shortest Path Algorithm
Option C:	Minimum spanning tree Algorithm
Option D:	Approximation Algorithm

Q2	**Solve any Two Questions out of Three** **10 marks each**
A	Explain MERGE sort using divide and conquer Methodology.
B	What do you mean by efficiency of a program? Calculate the efficiency of non recursive algorithms.
C	Solve given 0/1 Knapsack problem using dynamic programming approach. The maximum weight the knapsack can hold is W is 11. There are five items to choose from. Their weights and values are presented in the following table: W1=1 V1=1 W2=2 V2=6 W3=5 V3=18 W4=6 V4=22 W5=7 V5=28

Q3	**Solve any Two Questions out of Three** **10 marks each**
A	Explain Naïve string-matching algorithm with an example.
B	Find Single source shortest path/s from the source vertex 'S' using Dijkstra's algorithm by applying greedy approach. 
C	Define backtracking, explain 4 queen problems using backtracking technique and draw the state diagram.

Q4.	**Solve any Two Questions out of Three** **10 marks each**
A	Define NP Hard and NP –complete problem in detail.
B	What do you mean by Branch and Bound technique? Explain LIFO Search, FIFO search and least cost search with examples.
C	Solve given 15-puzzle problem using branch and bound technique. Given arrangement Goal arrangement

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

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

University of Mumbai

Program: Master of Computer Applications
Curriculum Scheme: MCA (2year – 2020 Course)
Examination: MCA First Year SEMESTER II
Course Code: MCAE254 and Course Name: Digital Marketing and Business Analytics
Time: 3 hour Paper code. -95992 Max. Marks: 80

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	**Which of the following items is not a component of Quality Score?**
Option A:	Ad relevance
Option B:	Maximum cost-per-click bid
Option C:	Landing page experience
Option D:	Expected click through rate
2.	**Digital marketing is often referred to as _____.**
Option A:	Online marketing
Option B:	Internet marketing
Option C:	Web marketing
Option D:	All of the above
3.	**Which of the following marketing based on very small, specific geographical locations like neighborhoods or even specific streets?**
Option A:	Hyperlocal marketing
Option B:	SMS marketing
Option C:	QR codes
Option D:	All of the above
4.	**Which of the following keyword choice help search engines to learn better on the web page?**
Option A:	Targeting synonyms and related keywords of the main keyword
Option B:	Targeting the highest searched keywords only
Option C:	Copying competitor keywords
Option D:	Inserting keywords in the text
5.	**Among the following, which is the best definition for a Twitter trend?**
Option A:	Most recent celebrity post that has a lot of followers
Option B:	Word, phrase or topic that is tagged at a greater rate
Option C:	The most recent news accompanied by media
Option D:	A recently fashionable idea that has gathered a lot of followers
6.	**The objectives for web analytics are likely to concern:**
Option A:	Facebook messages
Option B:	Personal Blog activity
Option C:	Social Media ROI
Option D:	Measurement of web site performance
7.	**Which factor among these doesn't influence the edge in the EdgeRank Algorithm?**

Option A:	Weight
Option B:	Time Decay
Option C:	Device
Option D:	Affinity score
8.	**Which of the following best explains bounce rate?**
Option A:	Percentage of single-page visits
Option B:	Percentage of secondary visits
Option C:	Percentage of people who exit the site
Option D:	Percentage of pages visited by a user
9.	**Which design approaches help in building sites that are optimized for various screen sizes?**
Option A:	Mobile optimized design
Option B:	Progressive enhancement
Option C:	Responsive web design
Option D:	Adaptive web design
10.	**Which of the following best describes LinkedIn?**
Option A:	A photo-sharing app
Option B:	A professional networking site
Option C:	A website to share videos of any length
Option D:	A social network used for connecting with family and friends

Q2.	**Solve any Two Questions out of Three. (10 marks each)** **20 marks**
A	What are the advantages of mobile advertising? Explain the various tools available in mobile marketing.
B	What is SEO? Explain the concept of on-page optimization in detail.
C	Explain the various buying models available in display advertising.

Q3.	**Solve any Two Questions out of Three. (10 marks each)** **20 marks**
A	How do you build a successful social media strategy as marketer?
B	What are the best practices in the content strategy for the Twitter platform? Explain its unique features.
C	What is web analytics? Explain the key metrics associated with web analytics.

Q4.	**Solve any Two Questions out of Three. (10 marks each)** **20 marks**
A	Explain LinkedIn analytics and LinkedIn targeting options for in detail.
B	What is multi channel attribution? Explain different multi channel attribution models in detail.
C	Explain Facebook Marketing Strategies in detail.

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