

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE

(CBCS/Non-CBCS)(CBCS)

<Programme Name _MCA_____ > <__ 3rd__ SEM>

(DEC, 2021)

(SET A)

Subject Code:< MCA-203 >

Subject: < Big Data and NoSQL >

Time : 1 Hour 15 minutes

Maximum Marks : 30

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1	(5*3=15)
	<p>First two rows of dataset about Netflix movies and TV shows in csv format , are shown below:</p> <p>- show_id, type, title, director, cast, country, date_added, release_year, rating, duration, listed_in, description</p> <p>s1,Movie,Dick Johnson Is Dead,Kirsten Johnson,,United States,"September 25, 2021",2020,PG-13,90 min,Documentaries,"As her father nears the end of his life, filmmaker Kirsten Johnson stages his death in inventive and comical ways to help them both face the inevitable."</p> <p>s2,TV Show,Blood & Water,,"Ama Qamata, Khosi Ngema, Gail Mabalane, Thabang Molaba, Dillon Windvogel, Natasha Thahane, Arno Greeff, Xolile Tshabalala, Getmore Sithole, Cindy Mahlangu, Ryle De Morny, Greteli Fincham, Sello Maake Ka-Ncube, Odwa Gwanya, Mekaila Mathys, Sandi Schultz, Duane Williams, Shamilla Miller, Patrick Mofokeng",South Africa,"September 24, 2021",2021,TV-MA,2 Seasons,"International TV Shows, TV Dramas, TV Mysteries","After crossing paths at a party, a Cape Town teen sets out to prove whether a private-school swimming star is her sister who was abducted at birth."</p>
	<p>Answer the following queries using MongoDB(based on the dataset).</p>
	<p>(a) Display all movies directed by "Suhas Kadav" after 2000</p>
	<p>(b) Display all "British TV shows" that have more than two seasons (three or more)</p>
	<p>(c) How many "Action" movies were released between 2000 and 2010?</p>
	<p>(d) Which actor(s) casted in most movies?</p>
	<p>(e) Which actor(s) involved in movies in the most consecutive years (i.e. The longest non-stop involvement every year during some period)</p>

Q2	(a) Why will you choose NoSQL over any RDBMS like ORACLE?	(7.5+7.5= 15)
	(b) There are many databases (RDBMS, NoSQL) in market. Why Neo4J developed?	
Q3	(a) Write a MAP REDUCE program using Mongo dB and explain.	(7.5+7.5= 15)
	(b) Explain CAP Theorem? How CAP theorem is different from ACID properties of traditional databases?	

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End-Term Examination- ONLINE MODE

(CBCS/Non-CBCS)(CBCS)

**<Programme Name _MCA_____ > <__ 3rd__ SEM>
(DEC, 2021)
(SET B)**

Subject Code:< MCA-203 >	Subject: < Big Data and NoSQL >
Time : 1 Hour 15 minutes	Maximum Marks : 30

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1	(5*3=15)
	First two rows of dataset about Netflix movies and TV shows in csv format , are shown below: show_id, type, title, director, cast, country, date_added, release_year, rating, duration, listed_in, description s1,Movie,Dick Johnson Is Dead,Kirsten Johnson,,United States,"September 25, 2021",2020,PG-13,90 min,Documentaries,"As her father nears the end of his life, filmmaker Kirsten Johnson stages his death in inventive and comical ways to help them both face the inevitable." s2,TV Show,Blood & Water,"Ama Qamata, Khosi Ngema, Gail Mabalane, Thabang Molaba, Dillon Windvogel, Natasha Thahane, Arno Greeff, Xolile Tshabalala, Getmore Sithole, Cindy Mahlangu, Ryle De Morny, Greteli Fincham, Sello Maake Ka-Ncube, Odwa Gwanya, Mekaila Mathys, Sandi Schultz, Duane Williams, Shamilla Miller, Patrick Mofokeng",South Africa,"September 24, 2021",2021,TV-MA,2 Seasons,"International TV Shows, TV Dramas, TV Mysteries","After crossing paths at a party, a Cape Town teen sets out to prove whether a private-school swimming star is her sister who was abducted at birth."
	Answer the following queries using PySpark(based on the dataset).
	(a) Display all movies directed by "Suhas Kadav" after 2000
	(b) Display all "British TV shows" that have more than two seasons (three or more)
	(c) How many "Action" movies were released between 2000 and 2010?
	(d) Which actor(s) casted in most movies?
	(e) Which actor(s) involved in movies in the most consecutive years (i.e.,the longest non-stop involvement every year during some period)

Q2	(7.5+7.5= 15)
	(a) Why you will choose to store unstructured data over structured data? Can we store unstructured data in ORACLE ? Explain with reason?
	(b) What are advantages of HADOOP over distributed network file systems
Q3	(7.5+7.5= 15)
	(a) Explain advantages of SPARK over HADOOP? If you want to detect online fraud during credit card transaction , which one will prefer(Hadoop or spark), Explain with reason?
	(b) Explain different index type in MongoDB? What are advantages of using index?

(Please write your Enrollment Number)

Enrollment No. _____

**End-Term Examination- ONLINE MODE
(CBCS/Non-CBCS)(SUBJECTIVE TYPE)
<Programme Name _MCA__> <3rd SEM>
(DEC, 2021)**

(SET A)

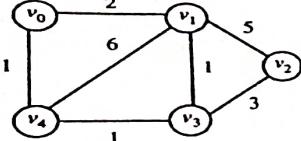
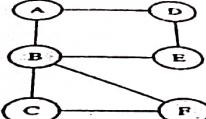
Subject Code:< MCA 201 >

Subject: < Design & Analysis of Algorithms >

Time : 1 Hour 15 minutes

Maximum Marks : 30

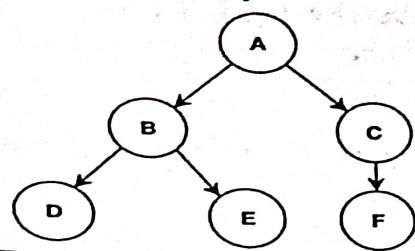
Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1	(5*3=15)								
<p>(a) Using Master's theorem find asymptotic bound for</p> <ol style="list-style-type: none">1. $T(n) = 2T(n/2) + n^3$2. $T(n) = 4T(n/4) + O(n^2)$3. $T(n) = 7T(n/2) + n^2$									
<p>(b) Find optimal parenthesization of matrix-chain product whose sequence of dimensions is (30, 140, 10, 25). Also find the complexity.</p> <p>(c) Obtain MST for the given graph using Prim's algorithm. Compute the complexity and show all the steps. (Algo NOT required).</p> 									
Q2	(7.5+7.5= 15)								
<p>(a) What is the optimal Huffman coding for the following set of frequencies: a-1, b-1, c-2, d-3, e-5, f-8, g-13, h-21. And,</p> <p style="text-align: center;">Find the Breadth First Search traversal for the following graph.</p> 									
<p>(b) Construct optimal BST using DP approach for a set of 4 keys with probabilities:</p> <table style="margin-left: auto; margin-right: auto;"><tr><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td></tr><tr><td style="text-align: center;">0.15</td><td style="text-align: center;">0.10</td><td style="text-align: center;">0.05</td><td style="text-align: center;">0.10</td></tr></table> <p>Find the minimum cost of searching also. Show all the steps and complexity along with the algorithm.</p>	1	2	3	4	0.15	0.10	0.05	0.10	
1	2	3	4						
0.15	0.10	0.05	0.10						
Q3	(7.5+7.5= 15)								
<p>(a) Find the text : IG in the pattern: MCAIGDTUW using Naïve string matching and Rabin-karp algorithms. (NEED NOT write the algs, DO show the steps). AND, Solve the Fractional Knapsack for a set of 4 items with weights : 1,2,5,6 and Price: 1,6,18,22. The capacity of the Knapsack is 11 units.</p>									

(B) Prove the NP-Completeness for Clique problem with the help of an example.

ALSO,

Find the Dijkstra's shortest path for the following graph, considering A as source.



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Enrollment No. _____

**End-Term Examination- ONLINE MODE
(CBCS/Non-CBCS)(SUBJECTIVE TYPE)
<Programme Name _MCA_> <3rd SEM>
(DEC, 2021)**

(SET **B**)

Subject Code:< MCA 201 >	Subject: < Design & Analysis of Algorithms >
Time : 1 Hour 15 minutes	Maximum Marks : 30

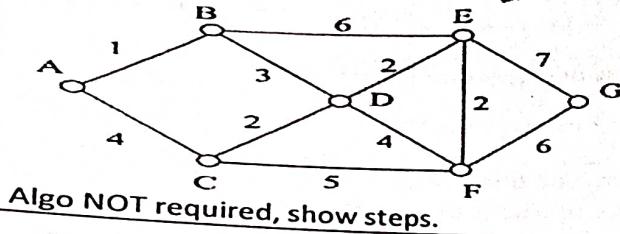
Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1	<p>(a) Using Recursive tree method, find the asymptotic bounds for 1. $T(n) = T(n-a) + T(a) + cn$ where $a \geq 1, C > 0$. 2. $T(n) = 3T(n/4) + cn^2$</p> <p>(b) Find the length of Longest Common Subsequence for the texts $X = \{ 1,0,0,1,0,1,0,1 \}$. $Y = \{ 0,1,0,1,1,0,1,1,0 \}$ ALGO NOT REQUIRED, show steps.</p> <p>(c) Obtain MST for the given graph using KRUSKAL'S algorithm. Compute the complexity and show all the steps. (Algo NOT required).</p> <pre>graph LR; v0((v0)) --- v1((v1)); v0 --- v4((v4)); v1 --- v2((v2)); v1 --- v3((v3)); v2 --- v3; v3 --- v4;</pre>	(5*3=15)
Q2	<p>(a) Let 11 activities are given with start times and finish times $(s_i, f_i) = \{ (1,4), (3,5), (4,6), (5,7), (3,8), (7,9), (10,11), (8,12), (8,13), (2,14), (13,15) \}$. Also, Give the Huffman coding for symbols (A,B,C,D) with frequency (40,20,30,10) respectively. Algo Not Required, show steps.</p> <p>(a) Find all pair shortest path using Floyd-Warshall's algorithm.</p> <pre>graph LR; 1((1)) -- 8 --> 2((2)); 1 -- 1 --> 3((3)); 2 -- 1 --> 3; 2 -- 2 --> 4((4)); 3 -- 9 --> 4; 3 -- 4 --> 1;</pre>	(7.5+7.5= 15)
Q3	<p>(a) Find the optimal parenthesization for the chain of matrices $(A - 2 \times 5, B - 5 \times 3, C - 3 \times 6, D - 6 \times 4)$. Show steps and algorithms. ALSO, Find the text: TU in the pattern: IGDTUW using KMP algorithm.</p>	(7.5+7.5= 15)

(B) Prove the NP-Completeness for 3CNF circuit satisfiability problem with the help of an example.

ALSO,

Find the shortest path for the following graph using Bellman Ford Algorithm from source A, considering A as source. 



Algo NOT required, show steps.

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE

(Non CBCS)(SUBJECTIVE TYPE)

<B.Tech > <7th SEM>

(DEC, 2021)

(SET A)

Subject Code:< BIT 415 >

Subject: <Cyber Security & Awareness>

Time : 1 Hour 15 minutes

Maximum Marks : 30

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1	(5*3=15)
	(a) Suppose a pen drive and a smartphone has been obtained from a crime scene and found infected from malware. Please suggest what steps should be followed in order to secure pen drive and Smartphone. (b) A network can be threatened using two different categories of security attacks. Explain in detail about these two categories. (c) For the following case define the type of security attack and discuss the possible security risks, and suggest security solutions: A female actress photos were misused by an unknown man and he claimed that they were married and they had a child together.
Q2	(7.5+7.5= 15)
	(a) To ensure the security of the critical infrastructure of IGDTUW we need to protect its data from cyberattackers. In view of this, discuss how can the IGDTUW servers, network, and Wi-Fi system be secured from attacks such as DDoS attack, malware infection, hacking etc. (b) Social media accounts of various Political leaders and Celebrities have been hacked in the past. In view of this what are the possible causes behind this and suggest ways how can a common man protect his/her social media account from getting hacked.
Q3	(7.5+7.5= 15)
	(a) Consider the case, "The Women's PC webcam was hacked using a Trojan malware and was used illegally to capture her private photos and videos and posted on an illicit website. The Women came to know about the incident when she appeared for a Job interview". For this case provide the possible ways a PC can be hacked, the involved security risks and appropriate solutions to avoid such case. (b) For the following case define the type of security attack and discuss the possible security risks, the amount of damage and suggest security solutions: A Cyberattacker hacked a user's Facebook account and sends a message to one of the user's friend, stating, "Hi Dear! I am in New York right now and unfortunately I lost my bag, along with 500\$ cash, a gold chain, my phone and passport. I need your urgent help and as soon as you get my message please wire me 500\$ so I can get some shelter. I will be highly grateful to you".

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE

(CBCS)(SUBJECTIVE TYPE)

< B.Tech > < 7th SEM >

(DEC, 2021)

(SET B)

Subject Code:< BIT 415 >

Subject Name:< Cyber Security & Awareness >

Maximum Marks : 30

Time : 1 Hour 15 minutes

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1		(5*3=15)
	Consider the cases: A. Logins and Password of 4200 websites stolen using Trojan attack B. DDoS attack against IGDTUW website C. Credit and Debit card numbers of 4 million people hacked from 35 financial institutions Based on the above cases, discuss the amount of damage and security risk it can cause, and what security measures should be adopted to prevent such cases?	
Q2		(7.5+7.5= 15)
	(a) Discuss the security implications and solutions for the following cyberattack cases: i. A Cyber attacker sits in between the communication happening among two parties and masquerades them. ii. An employee of the organization was convinced by a cyber attacker to transfer \$500,000 to a foreign investor and the cybercriminal knows the company CEO is traveling. (b) Every password has vulnerabilities and this makes it easy to hack. Explain in detail.	
Q3		(7.5+7.5= 15)
	(a) Explain in detail a popular fraud which comes under the category of Identity Theft. (b) To ensure the security of the critical infrastructure of IGDTUW we need to protect its data from attackers. In view of this, discuss how can the i) computer systems of the organization be secured, and ii) smart phones of the employees be secured.	

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE

(CBCS)

<MCA 3rd SEM>

(DEC-JAN, 2021)

(SET A)

Subject Code:MCA-205

Subject:Software Testing and Quality Assurance

Time : 1 Hour 15 minutes

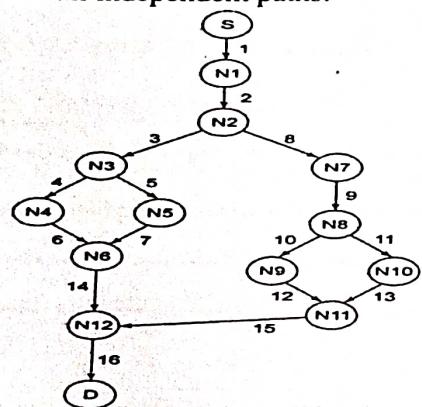
Maximum Marks : 30

Note:Q. 1 is compulsory. Attempt any one question from the rest.

Q1

(5*3=15)

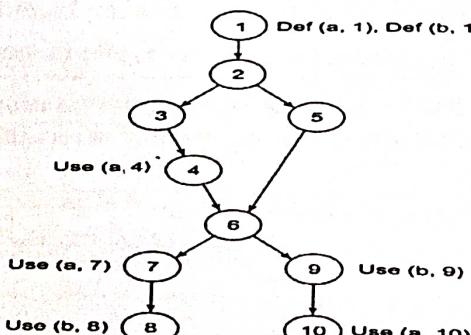
a) Consider the following graph and find cyclomatic complexity using all methods and find all independent paths:



ii) What is scaffolding?

b) What is Slice based testing? Consider the program for determination of day of the week. Generate possible slices as per guidelines and design at least one test case from each slice.

c) i) Consider the following graph and identify all du path, all uses path , all definition paths and



definition clear paths?

Q2	<p>a) Consider the following program and generate test cases to test every branch, every statement and every condition at least once.</p> <pre> 1. void main() 2. { 3. int n1=0,n2=0,n3=0; 4. int u=0,v=0; 5. cout<<"Pls enter any three numbers:"<<endl; 6. cin>>n1>>n2>>n3; 7. if((n1!=n2)&&(n2!=n3)){ 8. u=n1+n2+n3; 9. } 10. if(n2==n3){ 11. v=n2+n3; 12. } 13. cout<<"Output is"; 14. cout<<<u<<v<<endl; 15. }</pre> <p>ii) Difference between Quality Assurance and Quality Control.</p>	(7.5+7.5=15)
	<p>b) i) What is equivalent, live and kill mutants? Consider a program to determine whether a number is even or not and generates first and second order mutants. Explain why higher order mutants are not preferred?</p> <p>ii) Difference between Mean Time to Failure and Problems per User-Month (PUM) Quality Metrics.</p>	
Q3		(7.5+7.5=15)
	<p>a)i) What are constraints used in a cause effect Graph? Consider the example of keeping the record of marital status and number of children of a citizen. The value of marital status must be 'U' or 'M'. The value of the number of children must be digit or null in case a citizen is unmarried. If the information entered by the user is correct then an update is made. If the value of marital status of the citizen is incorrect, then the error message 1 is issued. Similarly, if the value of the number of children is incorrect, then the error message 2 is issued. Draw the cause-effect graph and generate test cases.</p> <p>ii) Explain the difference between Pareto chart and Control chart.</p>	
	<p>b)What is 'code coverage prioritization' technique? Explain modification algorithm which is used to minimize and prioritize test cases.</p>	

(Please write your Enrollment Number)

Enrollment No. _____

**End-Term Examination- ONLINE MODE
(CBCS)
<MCA 3rd SEM>
(DEC-JAN, 2021)
(SET B)**

Subject Code:MCA-205

Subject:Software Testing and Quality Assurance

Time : 1 Hour 15 minutes

Maximum Marks : 30

Note:Q. 1 is compulsory. Attempt any one question from the rest.

Q1	<p>a) Explain difference between: i) Modification traversing test cases and Modification revealing test cases ii) Unit and Integration testing</p> <p>b) Consider the following graph and find the incidence matrix and Adjacency matrix</p> <p>ii) Difference between verification and validation.</p> <p>c)i) Consider a program for the determination of the smallest amongst two numbers. Its input is a triple of positive integers (say x and y) and values are from interval [100, 200]. Design test cases using boundary value analysis and robustness testing techniques for this program. ii) Explain Defect removal effectiveness quality metrics.</p>	(5*3=15)												
Q2	<p>a) i) Consider an example of grading a student in a university. The grading is done as given below:</p> <table border="1" style="width: 100%;"><thead><tr><th style="width: 50%;">Average marks</th><th style="width: 50%;">Grade</th></tr></thead><tbody><tr><td>90 - 100</td><td>Exemplary Performance</td></tr><tr><td>75 - 89</td><td>Distinction</td></tr><tr><td>60 - 74</td><td>First Division</td></tr><tr><td>50 - 59</td><td>Second Division</td></tr><tr><td>0 - 49</td><td>Fall</td></tr></tbody></table>	Average marks	Grade	90 - 100	Exemplary Performance	75 - 89	Distinction	60 - 74	First Division	50 - 59	Second Division	0 - 49	Fall	(7.5+7.5=15)
Average marks	Grade													
90 - 100	Exemplary Performance													
75 - 89	Distinction													
60 - 74	First Division													
50 - 59	Second Division													
0 - 49	Fall													

The marks of any two subjects are considered for the calculation of average marks. Create equivalence classes and generate test cases.

ii) What are the steps to perform load testing?

b)i) Consider the following program and generate DD graph, identify all du path, all uses path and all definition path and definition clear paths:

```
1. void main()
2. {
3.     int n1=0,n2=0,n3=0;
4.     int u=0,v=0;
5.     cout<<"Pls enter any three numbers:"<<endl;
6.     cin>>n1>>n2>>n3;
7.     if((n1!=n2)&&(n2!=n3)){
8.         u=n1+n2+n3;
9.     }
10.    if(n2==n3){
11.        v=n2+n3;
12.    }
13.    cout<<"Output is";
14.    cout<<<u<<v<<endl;
15. }
```

ii) What is Weak Robust Equivalence Class Testing.

Q3

(7.5+7.5=15)

a)i) What is limited and extended entry decision table based testing? Consider the program for determination of day of the week. Generate test cases using extended entry decision table based testing.

ii) Who are key players in Total Quality Management.

b)i) Which is difficult to achieve 100% statement coverage or 100% condition coverage

ii) Difference between Cross-browser testing tool and bug tracking tool.

(Please write your Enrollment Number)

Enrollment No. _____

**End-Term Examination
(BBA-CBCS)(SUBJECTIVE TYPE)
(March, 2022)**

Subject Code: BMS 103	Subject: Financial Accounting
Time : 3 Hours	Maximum Marks : 60
Note: Q. 1 is compulsory. Attempt one question each from the Units I, II, III & IV.	

Q1.	<p>Attempt all the questions</p> <p>(a) Explain the primary objectives of accounting?</p> <p>(b) Distinguish between accrual basis and cash basis of accounting.</p> <p>(c) Classify the following into real, personal and nominal account: a) sales account b) Outstanding rent account c) Stationery account d) Cash account e) Discount account f) Carriage account</p> <p>(d) What do you mean by trade discount and cash discount?</p> <p>(e) A limited company offers new shares of rs 100 each at 20% premium to the existing shareholders in the ratio of every one share for every four shares held. The market price of share is rs 150. Calculate the value of right.</p> <p>(f) What are the factors affecting the decision of selection an accounting software? (Any 4)</p> <p>(g) Enter the following transactions in the sales day book: Nov 1: sold to M/s Rana and Co. 100 metres of cotton cloth A type @rs 130 per metre. 200 metres of cotton cloth type B @ 100 per metre. Trade discount @10% Nov 16: sold to cloth emporium, 100 pieces of jeans @rs 500 each. 50 pieces of woollen pullovers @ rs 1500 each. Trade discount @10%.</p> <p>(h) On 1.4.2020 a loan of Rs 10,000 was given to Ram at a rate of interest of 12%, per annum. During the year, interest was received for 11 months from April to February Interest for the month for March has not yet been received. Accounting year is financial year. Pass an adjusting entry and show how this will appear in final accounts.</p>	(2.5*8=20)
UNIT-1		
Q2.	<p>Explain any 4 principles of accounting. Also explain the difference between accounting concepts and conventions?</p>	(6+4)
Q3.	<p>i) What do mean by accounting? Also explain the branches of accounting? ii) Distinguish between Book keeping and Accounting.</p>	(5+5)
UNIT-2		

Q4.	<p>Attempt both the questions.</p> <p>(6+4)</p> <p>(10)</p>
	<p>Q.i) Journalise the following :</p> <ul style="list-style-type: none"> a) Goods worth rs 4,000 were given as charity out of business b) Received cash rs 6,000 of a bad debt written off last year for Shri Om Parkash. c) Interest charged on drawings @ 5% when the total drawings were rs 50,000 d) Received 1,975 from Hari Krishan in full settlement of his account of rs 2,000 e) Received a first and final dividend of 60 paise in a rupee from the official receiver of Mr. Ravi Shankar who owed us rs 2,000. f) Purchased from N goods worth rs 55,000 at 20% trade discount and 5% cash discount and paid him half the amount immediately. g) Goods worth rs 60,000 are insured against loss by fire. The policy is for rs 50,000. Actual loss caused by flood is rs 36,000. The insurance company admits the claim and pays cash proportionately. <p>Q.ii) Enter into N's (3 column) cash book the following transactions, which took place on 28 February 20X1, and balance the Cash Book:</p> <ul style="list-style-type: none"> a) Balance brought forward from the previous day: Cash in hand Rs 100 and at bank Rs 8,000. b) Instructed the bank to issue a bank draft for Rs 5,000 in favour of Suresh. The bank charged Rs 10 for issuing the draft. c) Received a bank draft for Rs 5,760 from Mahesh in full settlement of Rs 6,000 due from him. Sent the draft to the bank. d) Received a cheque from Rakesh for 2,000. Allowed him discount Rs 120. e) Endorsed Rakesh's cheque in favour of Harish f) Sent a cheque for Rs 50 in payment of school fees of N's son. g) Withdraw Rs 500 from the bank h) Placed an order with Vikas for goods of value of rs 1000 and sent cheque for rs 1000 with the order.

Q5.

The following is the trial balance of Mr Wise as at 31st March 20X2:

<i>Debit Balances</i>	<i>Rs</i>	<i>Credit Balances</i>	<i>Rs</i>
Fixed Assets		Creditors	1,00,000
Opening Stock	3,00,000	Bills Payables	5,600
Debtors	75,000	Loan From Bank	4,000
Bills Receivables	2,05,000	Capital Account	5,00,000
12% Investments (purchased on 1.7.20X1)	10,000	Sales	6,30,000
Cash in Hand	50,000	Purchases Returns	5,000
Cash at Bank	5,000	Discount Earned	1,000
Drawings	10,000	Bad Debts Recovered	3,500
Purchases	10,000	Interest	3,000
Sales Returns	5,25,000		
Carriage Inwards	10,000		
Carriage Outwards	5,000		
Rent	2,000		
Insurance	3,000		
Office & Administration Expenses	3,600		
Discount Allowed	13,200		
Bad Debts	2,000		
Interest	5,000		
Selling & Distribution Expenses	2,500		
	15,800		
	12,52,100		12,52,100

Additional Information

1. Closing Stock as on 31st March 20X2 was Rs 42,000.
2. Rent is payable at the rate of Rs 300 per month.
3. Insurance Premium was paid for the year ending on 30th June 20X2.
4. Write off further Rs 5,000 as bad.
5. Create Provision for discount on Debtors @ 2%.
6. Create a Provision for Doubtful debts @10%
7. Create a Reserve for discount on Creditors @ 2%
8. Provide for depreciation on fixed assets @10% p.a.

Prepare trading, profit and loss account for the year ending on 31st march 20X2 and balance sheet as at 31st march 20X2.

UNIT-3

Q6.

H Ltd issued a prospectus inviting applications for 20,000 shares of rs 10 each at a premium of rs 2 per share payable as follows: On application rs 2; on allotment rs 5 (including premium); on first call rs 3; on second and final call rs 2. Applications were received for 30,000 shares and pro rata allotment was made on the applications for 24,000 shares. Money overpaid on applications was employed on account of sum due on allotment. Ramesh, to whom 400 shares were allotted, failed to pay the allotment money and on his subsequent failure to pay the first call his shares were forfeited. Mohan, the holder of 600 shares, failed to pay the two calls and his shares were forfeited after the second call. Pass the necessary journal entries.	(10)
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Q7.	<p>Shagoon India Ltd. issued for public subscription 40,000 equity shares of rs 10 each, at a premium of rs 2 per share payable as under: On application rs 2 per share, on allotment rs 5 per share (including premium), on first call rs 2 per share and on second call rs 3 per share. Applications were received for 60,000 shares. Allotment was made on pro rata basis to the applicants for 48,000 shares, the remaining applications being refused. Money overpaid on application was applied towards sums due on allotment. A, to whom 1,600 shares were allotted, failed to pay the allotment money and B, to whom 2,000 shares were allotted, failed to pay the two calls. These were subsequently forfeited after the second call was made. Pass the Journal entries in the books of Shagoon India Ltd.</p>	
UNIT-4		
Q8.	<p>a) What do you mean human resource accounting and explain its methods? b) Write a note on social responsibility accounting? (5+5)</p>	(10)
Q9.	<p>a) Write a note on computer accounting. b) What do you mean by inflation accounting and explain its methods? (5+5)</p>	(10)

(Please write your Enrollment Number)

Enrollment No. _____

**End-Term Examination-- ONLINE MODE
(CBCS/ Non-CBCS)
<MCA> <3rd SEM>
(December, 2021)
(SET A)**

Subject Code: MCA 223

{ Subject: WEB BASED PROGRAMMING

Maximum Marks : 30

Time : 1 Hour 15 minutes

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1		(5*3=15)
	<p>(a) How DHTML is different from HTML?? Give suitable example.</p> <p>(b) Why javascript is called as an event driven programming? Write a java script code that displays an alert box saying "Hello Student..!" after submitting the values. (Use onclick event)</p> <p>(c) Detect the error(s) and correct the following code.</p> <p>a) <code>function add(x,y) return(x+y);</code></p> <p>b) <code>for (i=1; i<=5; i++) documents.write(i);</code></p> <p>c) <code><input type=button value="Click Me!" onclick="myFunction()" /></code></p> <p>d) <code>var userName = document.getAttribute(name).value;</code></p> <p>e) <code><script src="filename" type="text/javascript" /></code></p>	
Q2		(7.5+7.5= 15)
	<p>(a) Consider the following output as form.php</p> <p>REGISTRATION FORM</p> <p>name: <input type="text" value="enter your first name"/></p> <p>Email: <input type="text" value="enter your Email id"/></p> <p>password: <input type="text" value="enter password"/></p> <p>address: <input type="text" value=""/></p> <p>gender: <input type="radio"/> Male <input checked="" type="radio"/> Female</p> <p><input type="submit" value="Submit"/></p>	
	<p>Write a PHP code (and HTML wherever required) that takes input from the user and stores into the database. Database name: db1 Table name: user_info</p>	

(b) What are the differences between Get and post methods in form submitting, give the case where we can use get and we can use post methods?

Q3

(a) Write the html code for the following output screen.

(7.5+7.5=)

Name :

Gender : Male Female

City :

Choose subject(s) : Physics Chemistry Mathematics Biology

Phone : +91

Choose File :

Upload Image :

Submit

(b) Explain "Sessions" in PHP. Why they are useful? Create the login web page using session (Session variable only "username" in session variable).

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination-- ONLINE MODE
(CBCS/ Non-CBCS)
<MCA> <3rd SEM>
(December, 2021)
(SET B)

Subject Code: MCA 223

Subject: WEB BASED PROGRAMMING

Maximum Marks : 30

Time : 1 Hour 15 minutes

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1

		(5*3=15)
	<p>(a) Write a program in PHP to display name and roll no. of 5 students using associative array. (b) Explain nested HTML elements with example. Also explain the difference between HTML tags and HTML elements. (c) Detect the error(s) and correct the following code.</p> <p>a) Function mul(a,b) return(x*y);</p> <p>b) for (i=1; i<=10note; i++) documents.write(i);</p> <p>c) <input type=button value=Click Me onclick=myFunction() /></p> <p>d) var U_number = document.getAttribute(number).value;</p> <p>e) \$SESSION["name"] = Ram;</p>	

Q2

(a) Consider the following output as form.php	(7.5+7.5= 15)
---	---------------

—REGISTER YOURSELF—

First name:	enter your first name
Last name:	enter your last name
gender:	<input type="radio"/> Male <input checked="" type="radio"/> Female
Phone number:	enter your contact number
address:	
<input type="button" value="Submit"/>	

Write a PHP code (and HTML wherever required) that takes input from the user and stores into the database.

Database name: test_db

Table name: test_info

(b) What are the different ways to link to external CSS. Explain with example.

(7.5+7.5=15)

Q3

(a) Explain the use of mysqli_fetch_array() function in PHP. Consider the following output to write the example.

Sr. No.	Flower name	Colour
1.	Lotus	Pink
2.	Rose	Red
3.	Sunflower	Yellow

(b) Explain "Cookies" in PHP. Why they are useful? Create a cookie "Name" with a value "your name". The cookie will expire in 2 days.

(Please write your Enrollment Number)

Enrollment No. _____

**End-Term Examination- ONLINE MODE
(CBCS)(SUBJECTIVE TYPE)**

**<MCA > <3rd SEM>
(DEC, 2021)
(SET A)**

Subject Code:< MCA 207 >	Subject: <Cyber Security >	Maximum Marks : 30
Time : 1 Hour 15 minutes		

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1	<p>(a) Suppose a Laptop and a smartphone has been obtained from a crime scene and found infected from malware. Then, what steps should be followed in order to secure Laptop and Smartphone. Discuss in detail.</p> <p>(b) Purchasing products and services via mobile phone helps in making our life convenient. What are the key advantages associated with this and possible security threats involved?</p> <p>(c) Discuss two applications of cryptography in network security.</p>	(5*3=15)
Q2	<p>(a) Explain in detail about the network which is popularly accessed via The Onion Router.</p> <p>(b) Explain six different types of malicious software in detail.</p>	(7.5+7.5= 15)
Q3	<p>(a) The Security of a Network is of utmost importance and it is essential that we protect it from breaches, intrusions and other threats. Explain in detail about the different mechanisms which are applied (Hardware and Software) to ensure network security.</p> <p>(b) A network can be threatened using two different categories of attacks. Explain in detail these two categories.</p>	(7.5+7.5= 15)

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE
(CBCS)(SUBJECTIVE TYPE)
<MCA > <3rd SEM>
(DEC, 2021)
(SET B)

Subject Code:< MCA 207 >

Time : 1 Hour 15 minutes

Subject Code:< Cyber Security >

Time : 1 Hour 15 minutes

Note: Q. 1 is compulsory. Attempt any one question from the rest.

(5*3=15)

Q1	(a) Suppose a Pen Drive and a smart tablet has been obtained from a crime scene and found infected from malware. Then, what steps should be followed in order to secure Pen Drive and Smart tablet. Discuss in detail.	(5*3=15)
	(b) Consider a situation where the Facebook account of a person 'X' is hacked, then what steps should be followed by the user to ensure security and privacy of the social networking websites?	
	(c) MD5 hash function suffers from collision attack. What is the reason behind it? What necessary properties a hash function should have? Give examples of hash function.	
Q2	(a) In order to ensure the online privacy and anonymity while using Internet, what networks are popularly used? Explain in detail.	(7.5+7.5= 15)
	(b) Every password has vulnerabilities and this makes it easy to hack. Explain in detail its two primary forms and techniques used in detail.	
Q3	(a) Explain in detail a popular fraud which comes under the category of Identity Theft.	(7.5+7.5= 15)
	(b) Cryptography plays an important role in securing the communication. Discuss the various methods applied to secure the communication.	

(Please write your Enrollment Number)

Enrollment No. _____

**End-Term Examination- ONLINE MODE
(CBCS/Non-CBCS)(SUBJECTIVE TYPE)
<Programme Name _B.Tech__IT__> <_7th__ SEM>
(DEC, 2021)
(SET A)**

Subject Code:< BIT 403 >	Subject: < Big Data Analytics >
Time : 1 Hour 15 minutes	Maximum Marks : 30

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1	(a) Describe the OLAP and RTAP analysis over time and volume variants. (b) Explain Soft Margin optimization of MMH using its variants mathematically. (c) Define CAP theorem. Describe important categories of NoSQL system with an example.	(5*3=15)
Q2	(a) Explain the classification evaluation matrix with its types and examples. (b) If the stream consists of the integers 6, 1, 4, 1, 5, 8, 2, 3, 6. Our hash functions will all be of the form $h(x) = ax + b \bmod 32$ for some a and b . You should treat the result as a 5-bit binary integer. Determine the tail length for each stream element and the resulting estimate of the number of distinct elements if the hash function is: (a) $h(x) = 2x + 1 \bmod 9$. (b) $h(x) = 3x + 7 \bmod 9$.	(7.5+7.5= 15)
Q3	(a) Explain how to calculate the Margin of a hyperplane. And also explain searching of MMH using KKT constraint (b) Explain Hive architecture. What are the important steps for creating a cluster, Bucket, and Hive shell over HDFS?	(7.5+7.5= 15)

(Please write your Enrollment Number)

Enrollment No. _____

**End-Term Examination- ONLINE MODE
(CBCS/Non-CBCS)(SUBJECTIVE TYPE)
<Programme Name _B.Tech_IT_____> <_7th____ SEM>
(DEC, 2021)
(SET B)**

Subject Code:< BIT 403 >

Subject: < Big Data Analytics >

Time : 1 Hour 15 minutes

Maximum Marks : 30

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1		(5*3=15)
	(a) Define seven V's of Big Data.	
	(b) Explain hive data types. And also differentiate SQL and HiveQL	
	(c) Differentiate Pig and Pig Latin. What are the Pig Latin diagnostic operators?	
Q2		(7.5+7.5= 15)
	(a) Explain the statistical inference with its types and example.	
	(b) Define Bloom Filter. Also, explain how to calculate the probability of false-positive	
Q3		(7.5+7.5= 15)
	(a) Explain important components of Hadoop. And explain the important role of master and slave nodes in the HDFS cluster	
	(b) What are the important steps of data-preprocessing explained in diagrammatically.	

(Please write your Enrollment Number)

Enrollment No. _____

**End-Term Examination- ONLINE MODE
(CBCS) (SUBJECTIVE TYPE)
<MCA> <3rd SEM>
(DEC, 2021)**
SET A

Subject Code:<MCA 225>

Time: 1 Hour 15 minutes

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Subject: <FRONT END DESIGN TECHNIQUES>

Maximum Marks: 30

Q1	<p>(a) Describe HTML5's Internationalization Improvements. What is the importance of the HTML5 Document Structure Changes? Explain how semantics are being used in HTML5? (b) What are the benefits of utilizing CSS in a Html file? How may an external style sheet be linked to a Html code? Describe how a CSS file may be used to modify the color scheme of a web page. (c) What exactly do you understand by "DOM" in JavaScript? How does DOM function in JavaScript?</p>	(5*3=15)
Q2	<p>(a) Describe HTML5's handling of Client-Side Graphics with <canvas> tag? What is the distinction among conventional HTML and XHTML? Describe the key HTML5 elements and properties used to enable web apps. (b) Make a brief remark about CSS3 and the manner in which CSS 3 handles errors. Write any two differences between CSS and XHTML? Discuss the current CSS3 features.</p>	(7.5+7.5= 15)
Q3	<p>(a) Explain the use of Grid System in Bootstrap. What is the importance of Mobile First Strategy in Bootstrap? How pagination is used in Bootstrap? (b) What really is the primary objective of JavaScript? What are the benefits and drawbacks of JavaScript? Explain the use of jQuery User Interface & jQuery Mobile?</p>	(7.5+7.5= 15)

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE
(CBCS) (SUBJECTIVE TYPE)
<MCA > <3rd SEM>
(DEC, 2021)

SET B

Subject Code:<MCA 225>

Time: 1 Hour 15 minutes

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Subject: <FRONT END DESIGN TECHNIQUES>

Maximum Marks: 30

Q1	(5*3=15)	(a) Differentiate between traditional HTML & XHTML. What is the importance of the HTML5 Document Structure Changes? How Metadata changes can be done in HTML5? (b) How Error Handling is managed while utilizing CSS? How may an inline style sheet be linked to a Html code? Explain the emerging features of CSS. (c) What exactly do you understand by Global variables in JavaScript? How does DOM function in JavaScript?
Q2	(7.5+7.5= 15)	(a) Describe the use semantics in HTML 5? Discuss about the HTML5 Form Changes? Describe the key HTML5 elements and properties used to enable web apps. (b) Make a brief remark about CSS3 and the manner in which CSS 3 handles errors. Write any two differences between CSS and XHTML? Discuss the current CSS3 features.
Q3	(7.5+7.5= 15)	(a) Explain the use of Nesting Columns in Bootstrap. What is the importance of Mobile First Strategy in Bootstrap? How column ordering is used in Bootstrap? (b) What really is the primary objective of using JavaScript with HTML5? What are the benefits and drawbacks of JavaScript? Explain the use of plugins in jQuery & JavaScript?

(Please write your Enrollment Number)

Enrollment No. _____

END TERM EXAMINATION
(December, 2018)

Subject Code: MCA 303

Subject: Software Testing and Quality Management

Maximum Marks : 60

Time : 3 Hours

Note: Q1 is compulsory. Attempt one question each from the Units I, II, III & IV.

(5x4=20)

Q1

- (a) Compare: i) Waterfall and V Life Cycle Model ii) Stubs and Driver
- (b) What is Risk Matrix? How risk analysis used in Testing? How can we prioritize test cases using risk factor?
- (c) Explain difference between : i) Defect detection and Defect prevention
ii) Branch coverage and Condition Coverage
- (d) Consider a program to add, subtract, multiply and divide two numbers. The inputs may be two valid integers (a and b) and in the range of [0,100]. Generate test cases using equivalence and extended decision table based testing.

UNIT-I

(5,5)

Q2

- (a) What is cause-effect graph technique? What are basic notations used in cause-effect graph?
Consider the following problem:

The "Print message" is software that reads two characters and, depending on their values, messages must be printed. The first character must be an "A" or a "B". The second character must be a digit. If the first character is an "A" or "B" and the second character is a digit, the file must be updated. If the first character is incorrect (not an "A" or "B"), the message X must be printed. If the second character is incorrect (not a digit), the message Y must be printed.

Draw the cause-effect graph and generate test cases from it.

- (b) Write a program to find quadratic equation and draw program graph, DD path graph, and find independent paths. Also Find and write test cases for all definitions path, all uses path, all du path paths and dc paths.

(5,5)

Q3

- (a) What is equivalent, live and kill mutants? Consider a program to determine whether a number is prime or not and generate first, second and third order mutants. Explain why are higher order mutants not preferred?
- (b) What is Slice based testing? How can it improve testing? Consider the program for determination of day of the week. Generate possible slice as per guidelines and Design at least one test case from each slice.

UNIT-II

(5,5)

Q4

- (a) Explain: i) Regression Testing and Development Testing
ii) Prioritization Technique
- (b) Which one is the most important between verification, validation and testing? Design checklist for user documentation verification.

(5,5)

Q5

- (a) What is difference between inspection, walkthrough and peer review? Explain the issues which must be addressed by SRS document checklist.
- (b) Explain the 'code coverage prioritization' technique. What are the test cases selection criteria? Write the modification algorithm which is used to minimize and prioritize test cases.

UNIT-III

(5,5)

Q6

- (a) Explain i) Purpose of preparing checklist ii) Selective retest Technique
- (b) Design a use case and use case diagram for ATM System and generate test case for any two use cases.

P.T.O

- Q7** (5,5)
- (a) Explain the following :
i)Object Oriented Testing ii) Software Testing Activities
- (b) What is primary and secondary actor? What are the components of a use case diagram?
Explain the steps for generating test case from use case.
- UNIT-IV**
- Q8** (5,5)
- (a) Explain the following terms:
i) Load and Stress Testing ii) Coupling and Cohesion based metrics
- (b) What is Debugging? Why Debugging is so difficult? Explain the steps of Debugging in detail.
- Q9** Write Short notes on: (4,4,2)
- i) Quality Assurance and Quality Control
 - ii) Product and Process Metrics
 - iii) Software Testing Tools

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE
(CBCS/Non-CBCS)(SUBJECTIVE TYPE)

<Programme Name><SEM>

(DEC, 2021)

(SET A)

Subject Code:< HMC – 203 >

Time : 1 Hour 15 minutes

Note:Q. 1 is compulsory. Attempt any one question from the rest.

Subject: < Financial Reporting and Analysis>

Maximum Marks : 30

Q1	(a) From the following balances extracted from the books of M/s Luxmi & sons, prepare a trading account for the year ending 31 st March 2021 Opening stock - 6500 Purchases – 45000 Sales – 72000 Purchases returns – 500 Sales returns – 1500 Carriage – 1200 Wages – 4800 Fuel & Power – 3200 Closing stock – 8000	(5*3=15)
	(b) From the following information, calculate the gross profit ratio for M/s Sunanda Ltd. Gross sales – 20,00,000 Sales returns – 1,80,000 Opening stock – 4,00,000 Purchases – 11,80,000 Purchase returns – 1,40,000 Closing stock – 90,000	
	(c) As a finance manager what objectives will you be focused on while preparing the financial reports of the company?	
Q2	(a) Consider yourself as the Managing director of an MNC and enlist the benefits of harmonization of accounting standards so that there is equality in accounting standards being followed at global level.	(7.5+7.5= 15)
	(b) From the following information, prepare the profit & loss account of M/s Sarthak Traders for the year ending 31.3.2020: Gross profit – 43000 Discount allowed to customers – 7000 Salaries – 45000 Interest paid on loan – 13000 Postage – 2400 Discount received from creditors – 6000 Commission received – 1000 Sales expenses – 10,000	
Q3	(a) As a chartered accountant of Bombay Dyeing Ltd. What are the three accounting assumptions that you will keep in mind while preparing the financial reports of the company for the year ending	(7.5+7.5= 15)

31st March, 2021?

- (b) ABC Ltd. had an accountant who left the work in between, a month after misappropriating the funds of the concern. So, the firm decided to hire a professional CA for recording its transactions into the journal and post them into appropriate ledger accounts while balancing them as on 31st July, 2020. You are required to step into the shoes of the CA and do that work for the firm:
- 01 Ram started business with a capital of Rs. 10,000
 - 12 He purchased goods from Mohan on Credit Rs. 2000
 - 13 He paid cash to Mohan Rs. 1000
 - 24 He sold goods to Suresh Rs. 2000
 - 25 He received cash from Suresh Rs. 3000
 - 26 He further purchased goods from Mohan Rs. 2000
 - 27 He paid cash to Mohan Rs. 1000
 - 28 He further sold goods to Suresh Rs. 2000
 - 29 He received cash from Suresh Rs. 1000

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE
(CBCS/Non-CBCS)(SUBJECTIVE TYPE)
<Programme Name _____><SEM>
(DEC, 2021)
(SET B)

Subject Code:< HMC – 203 >

Time : 1 Hour 15 minutes

Subject: < Financial Reporting and Analysis>

Maximum Marks : 30

Note:Q. 1 is compulsory. Attempt any one question from the rest.

Q1

(5*3=15)

Surendra and Sushil were two brothers who worked together since last five years in a company named Synergy Ltd. together. However, after a misunderstanding, Surendra took over all the shares from Sushil and dismissed him from the business. So Sushil with all his experience thought of starting his own business of timber and ventured into the same in July, 2019.

Following are the balances extracted from the books of M/s Sushil Kumar Bhatia & Co., prepare the Trading and Profit & Loss A/c and a balance sheet for the year ending 31-December, 2019.

Particulars	Amt	Particulars	Amt
Opening stock	1250	Plant & Machinery	6230
Sales	11800	Returns Outwards	1380
Depreciation	667	Cash in hand	895
Commission (Cr.)	211	Salaries	750
Insurance	380	Debtors	1905
Carriage Inwards	300	Discount (Dr.)	328
Furniture	670	Bills Receivable	2730
Printing Charges	481	Wages	1589
Carriage outwards	200	Returns Inwards	1659
Capital	9228	Bank Overdraft	4000
Creditors	1780	Purchases	8679
Bills Payable	541	Petty Cash in hand	47
		Bad debts	180

Closing stock is valued at Rs. 3700. Prepare:

(a) Trading Account

(b) Profit and Loss Account

(c) Balance Sheet

Q2

(7.5+7.5= 15)

(a) Step into the shoes of a finance manager and list the qualitative characteristics of the financial reports that you will maintain for your concern.

(b) Sunanda, a Pathologist by profession, started off her own Path Lab by the name - AyurvigyanSansthan Ltd. She hired you as her Chartered Accountant for preparing and managing the accounts of her concern. For the purpose of conducting the audit, the accounts of the concern are required for the year ended 31.12.2020.

Particulars	Dr. (Rs.)	Cr. (Rs.)
Stock on 01.01.2020	2000	

Purchases	20,000	
Sales		30,000
Returns inwards	2000	
Returns outwards		1000
Carriage inwards	2000	
Rent paid	1000	
Interest Received		2000
Salaries	2000	
General Expenses	1000	
Discount Received		500
Insurance	500	

Closing stock is valued at Rs. 5000. From the above given information, you are required to prepare:

Prepare Trading and Profit and Loss Account for the year ending 31.12.2020

Q3	(a) All the companies indulge into financial reporting, in order to get the financial position of the concern at the end of a particular financial year. What according to your understanding might be the benefits of preparing such financial reports to the companies as they spend a lot in its preparation? (b) ABC Ltd. had an accountant who left the work in between, a month after misappropriating the funds of the concern. So, the firm decided to hire a professional CA for recording its transactions into the journal and post them into appropriate ledger accounts while balancing them as on 31-July, 2020. You are required to step into the shoes of the CA and do that work for the firm: 01 Ram started business with a capital of Rs. 10,000 12 He purchased goods from Mohan on Credit Rs. 2000 13 He paid cash to Mohan Rs. 1000 24 He sold goods to Suresh Rs. 2000 25 He received cash from Suresh Rs. 3000 26 He further purchased goods from Mohan Rs. 2000 27 He paid cash to Mohan Rs. 1000 28 He further sold goods to Suresh Rs. 2000 29 He received cash from Suresh Rs. 1000	(7.5+7.5= 15)

(Please write your Enrollment Number)

Enrollment No. _____

**END TERM EXAMINATION
(December, 2018)**

Subject Code: MCA 209

Time: 3 Hours

Subject: Design and Analysis of Algorithms

Maximum Marks: 60

Note: Q1 is compulsory. Attempt one question each from the Units I, II, III & IV.

Q1. Explain the following in brief:

(2x10=20)

- (a) Consider the notation that can be extended to the case of two parameters n and m that can go to infinity independently at different rates. For a given function $g(n,m)$ is denoted by $\mathcal{O}(g(n,m))$ the set of functions
 $\mathcal{O}(g(n,m)) = \{f(n,m) : \text{there exist positive constants } c, n_0 \text{ and } m_0 \text{ such that } 0 \leq f(n,m) \leq cg(n,m) \text{ for all } n \geq n_0 \text{ or } m \geq m_0\}$
Give corresponding definitions for $\Omega(g(n,m))$ and $\Theta(g(n,m))$
- (b) Prove that $\omega(g(n)) \cap \omega(g(n))$ is the empty set
- (c) Why is only fractional knapsack possible with the greedy approach?
- (d) Why "prefix-free" codes would be a better name for huffman codes? However, the term "prefix codes" is standard in the literature? Explain with suitable example.
- (e) Enlist the properties of strongly connected components in a given graph $G=(V,E)$.
- (f) Differentiate between Bellman-Ford algorithms and Dijkstra's Algorithm.
- (g) Explain how Knuth-Morris-Pratt algorithm provides better results in the worst case and is an optimal procedure as compared to NAIVE-STRING-MATCHING algorithm.
- (h) What do you understand by spurious hits in the Rabin-Karp-Algorithm?
- (i) Explain the task scheduling algorithm as a matroid. Give the running time of the task scheduling algorithm using greedy approach
- (j) What are NP algorithms? Explain briefly 2-CNF and 3-CNF satisfiability.

UNIT-I

Q2. Explain in detail the Strassen's method of matrix multiplication. Why is Strassen's matrix multiplication better than the traditional methods of matrix multiplication? (10)

Q3.

(5,5)

- (a) Describe briefly the master's theorem
- (b) Write the algorithm for maximum subarray problem. Also analyse its running time complexity.

UNIT-II

Q4. Enlist the step by step procedure of performing matrix chain multiplication using dynamic programming on the following matrices-

Matrix	A1	A2	A3	A4
Index	5*4	4*6	6*2	2*8

Write the algorithm and also analyse its running time complexity.

(10)

Q5. Write the optimal binary search tree algorithm using dynamic programming. Also deduce the optimal binary search tree using the following key entries- (10)

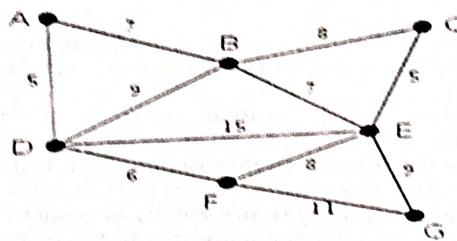
Key	10	20	30	40
Frequency	6	2	4	3

P.T.O

UNIT-III

Q6. Analyse all pairs shortest path algorithm with suitable example. (10)

Q7. Calculate the cost of the minimum spanning tree for the following graph (using the algorithm of your choice). Also write its algorithm analysing its running time complexity- (10)



UNIT-IV

Q8.

(5,5)

- (a) Prove clique problem is NP complete.
- (b) Prove travelling salesman problem is NP complete

Q9. Give the string matching algorithm with finite automata analysing its pre-processing time and matching time. Perform the string matching automata on the following- (10)

Text	a	b	a	b	a	b	a	c	a	b	a
Pattern	a	b	a	b	a	c	a				

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE
PhD
Jan,2022

Subject Code: PhD 068

Time : 1 Hour 15 minutes

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Subject: Cyber Security

Maximum Marks : 30

Q1	<p>a) How ML will help for profiling of Criminals in cyber space. Explain with certain example (b) List down some vulnerabilities related to Cloud Computing (C) List 2/3 open research problems in Social Media Security (d) What are the various security vulnerabilities associated with Virtual platform like Google meet, zoom etc (e) Write down the attack methodologies of the following (i) Virus (ii) Trojan Horse (iii) Worm</p>	(5*3=15)
Q2	<p>(a) Explain the various latest cyber crimes /financial frauds happened in last 5 years. Explain the modus operandi of 3 cyber financial fraud</p>	(15)
	<p>(b) What are the basic Standard Operating Procedures for Digital Forensics / Digital Crime Investigation</p>	
Q3	<p>(a) In case of a Cyber incident in your University, how do you approach to handle the Cyber Incidence (b) Explain the mathematics behind block chain Technology. Give two applications of Block Chain Technology</p>	(7.5+7.5= 15)