MCA. sem II (CBGS).

28/5/15

Financial Acounting

QP Code : 19494

(3 Hours) Total Marks: 80

N.B. 1. Question No.1 is compulsory
2. Attempt any four questions out of the remaining
3. Answer to the questions should be grouped and written together
4. Figures to the right indicates full marks assigned to the question

Q1 a What is Ratio Analysis? Explain the need of Ratio Analysis. Enumerate any two ratios classified under Profitability ratios related to Investment (10)

b From the Following Trial Balance of Shri V.N. Chitale , Prepare Trading & Profit & Loss A/c for the year 31st March 2015 and Balance Sheet as on that date. (10)

Trial Balance as on 31/03/2015

Particulars	**Debit (₹)**	**Credit (₹)**
Capital		1,80,000
Loan		1,50,000
Drawings	14,450	
Land and Building	2,00,000	
Opening Stock	35,500	
Cash in hand	25,000	
Purchases	3,75,000	
Sales		4,00,000
Bills Payable		60,000
Return Inward	5,000	
Return Outward		4,500
Plant & Machinery	1,00,000	
Vehicles	25,000	
Sundry Debtors	1,25,000	
Sundry Creditors		2,40,000
Cash at bank	77,550	
Wages	19,000	
Salaries	17,500	
Rent	7,000	
Insurance	3,000	
Printing & Stationery	2,000	
Power and Fuel	3,500	
Total	**10,34,500**	**10,34,500**

Adjustments:

i. Depreciate Plant & Machinery by 5% and Vehicles by 5%
ii. Provide for RDD at 5% on Sundry Debtors
iii. Prepaid Insurance ₹ 250 and Outstanding Salary ₹ 2,500 , Outstanding Wages ₹ 1,000 , Outstanding Printing & Stationery ₹ 500
iv. Closing Stock , Cost Price ₹ 1,30,000 and Market Price ₹ 1,50,000
v. Shri V.N. Chitale has taken goods worth ₹ 3,000 for personal use. No entry has been passed in the books

Q2 a Journalise the following transactions in the Journal of Shri Godbole for the month of April 2015 (10)

1	Started business with cash ₹ 40,000, Furniture ₹ 40,000
2	Paid rent of building ₹ 2,000 used by proprietor for residential use
5	Purchased goods ₹ 5000
7	Purchased machine for ₹ 2000 and paid installation charges ₹ 200
10	Opened an account with bank by depositing ₹ 5,000
13	Sold goods ₹ 3000
15	Purchased goods from Ms. Urvashi for ₹ 10,000
20	Returned goods to Urvashi ₹ 2,000
25	Paid to Urvashi ₹ 7880 by cheque, discount allowed by her ₹ 120
30	Paid Salary to Mr. Sevakram an Employee ₹ 500

b Differentiate between Journal and Ledger (05)

Q3 a Explain the following Accounting Principles: (10)
i)Concept of Entity ii) Concept of Going Concern iii) Matching Concept iv) Dual Aspect Concept

b Explain the types of Accounts .Give two examples of each and also state the rules of debit and credit for each type of account (05)

Q4 a From the following particulars prepare a Three Columnar Cash Book with Cash, Bank and Discount columns for the month March 2015 in the books of Naresh. (10)

March 2015	
1	Cash Balance ₹ 100 and at Bank ₹ 8,000
2	Instructed the bank to issue a bank draft for ₹ 5,000 in favour of Suresh. The bank charged ₹ 10 for issuing the draft.
3	Received a crossed cheque for ₹ 5,760 from Mahesh in full settlement of ₹ 6,000 due from him.
8	Received a bearer cheque from Rakesh for ₹ 2,000 and allowed him discount ₹ 120
15	Paid to Harish ₹ 2,000 by cash
18	Issued a cheque of ₹ 50 in payment of school fees of Naresh's Son
20	Received ₹ 500 from Mr. Patil
22	Issued a cheque for goods purchased ₹ 1000
27	Purchased goods from Rajesh ₹ 2,000 on credit
30	Paid to Mr. Patel by cheque ₹ 500

b How is contra Entry distinguished from other entries in three columnar cash book Explain with an example? (05)

Q5 i) Calculate Current Ratio and Quick ratio for Company X and Company Y from the following information: (10)

Particulars	Company X (₹)	Company Y (₹)	Particulars	Company X (₹)	Company Y (₹)
Equity Share Capital	8,00,000	12,00,000	Fixed assets	10,00,000	10,20,000
Retained Earnings	2,44,000	2,54,000	Debtors	2,74,000	4,24,000
Long Term Loans	8,00,000	10,00,000	Inventories	9,00,000	13,50,000
Current Liabilities	5,00,000	6,40,000	Cash	1,70,000	3,00,000
	23,44,000	30,94,000		23,44,000	30,94,000

ii) Calculate Gross Profit Ratio and Net Profit Ratio from the following information :

Particulars	(₹)
Sales	25,00,000
Opening Stock	50,000
Purchases	16,50,000
Wages	80,000
Carriage Inward	20,000
Closing Stock	1,00,000
Rent	50,000
Advertisement	1,80,000
Salary	2,00,000
Interest	80,000
Printing & Stationery	50,000

b Explain any five limitations of Financial Accounting (05)

Q6 a From the following prepare cash budget for the period from March to August (10)

Month	Sales (₹)	Selling Expenses (₹)	Purchases (₹)	Wages (₹).	Factory Overhead (₹)	Administration Overhead (₹)
January	17,000	700	8,000	1,500	1,500	700
February	16,000	750	8,400	1,600	1,650	750
March	18,200	650	8,300	1,680	1,250	510
April	15,500	680	8,300	1,200	1,525	480
May	16,500	740	7,600	1,800	1,740	546
June	20,000	700	6,800	1,600	1,530	465
July	18,000	600	7,000	1,800	1,300	495
August	22,000	550	5,800	1,600	1,510	600

Additional Information:

i. Opening Cash balance for the month of March ₹ 12,000/-

ii. Period of credit allowed by suppliers is one month

iii. Lag in Payment: Selling Expenses is 1 month, Wages is 1/8th month, Factory overheads is 1 month.

iv. Administration overhead are paid in the month when they are incurred

v. Vehicle to be purchased in the month of March for ₹ 5,000/-

vi. Furniture to be purchased in the month of April for ₹ 15,000 payable in two equal installments in May and July

vii. Period of credit allowed to customers is one month

viii. All Purchases and sales are on credit basis

b Explain the importance of cash budget (05)

Q7 a Explain Operating Activities, Investing Activities and Financing Activities in a cash flow statement (10)

b Write a note on Accounting Standards (05)

MCA-SEM II (CBSGS) 20 May-2015

E.N.

Q.P. Code : 19488

(3 Hours) [Total Marks : 80

N.B: (1) Q.1 is **compulsory.**
(2) Solve any **four** questions from remaining **six** questions.
(3) Each question carries **equal** marks
(4) Figures to right indicate marks.
(5) Use of calculator is allowed.

1 (a) Explain the IEEE 802.11 Protocol Architecture and its Services. 10
(b) An organization is granted a block of address starting with 10
143.87.49.53/18 Find the following
(i) Subnet mask in dotted decimal:
(ii) Number of networks & Number of hosts
(iii) Subnet address
(iv) First usable host & Last usable host
(v) Broadcast address

2 (a) Explain the Domain Naming System. Explain its all rule and components. 8
(b) Explain the ISO-OSI Reference Model in details. 7

3 (a) Explain the Unicast Routing Protocol and Explain OSPF and RIP 8
(b) What is the difference between distance vector and link state routing protocol. Explain any link state routing algorithm. 7

4 (a) Explain 2-layer, 3-layer Switch and Bridge, Gateway. 8
(b) Explain the concept of Redundancy used by Data Link Layer for Error Detection? Calculate the VRC for 11101011011001110101011010 7

5 (a) What do you mean by ARP and PPP over the Internet Standard? Explain its features in details. 8
(b) Explain the IP Addressing System along its classes. What do you mean by Subnet Masking? 7

6 (a) Explain the CRC and Checksum Error detecting algorithm with some example. 8
(b) Write short note following (any **two**) 7
(i) SMTP
(ii) MPLS
(iii) IP over ATM

7. (a) What is Quality of Service? What are the methods used to provide QoS? 8
(b) Explain the concept of Network Address Translation? 7

MCA. sem 2 (CBGS) 18/5/15.

OS

Q.P. Code : 19485

(3 Hours) [Total Marks: 80

N.B.: (1) Question No. **1** is **compulsory.**
(2) Attempt any **four** questions from the remaining **six** questions.
(3) Answers to **sub-questions** should be answered **together.**
(4) Draw the **diagrams** wherever **required.**

Q1. (a) For the processes listed in the table, draw Gantt chart and calculate average waiting time and average turnaround time using:- 12
(i) FCFS
(ii) Shortest Job First (both preemptive & non preemptive)
(iii) Round Robin (quantum = 4)

Process	Arrival Time (ms)	Processing Time (ms)
P1	0	8
P2	1	4
P3	2	9
P4	3	5

(b) What is deadlock? What are the necessary conditions for a deadlock to occur? Explain various method of preventing deadlock. 8

Q2. (a) What are external and internal fragmentations? Discuss the techniques to overcome fragmentations. 8
(b) What is process? Explain five state process model with each state transition in it. 7

Q3. (a) Consider following snapshot of a system 8

Process	Allocation			Max			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P0	0	2	1	6	4	2	4	2	4
P1	0	0	1	2	2	1			
P2	2	1	0	3	2	1			
P3	2	0	0	6	0	3			
P4	3	1	1	4	2	2			
P5	1	1	1	2	2	2			

Using Banker's Algorithm answers the following:-
(i) What is the context of matrix need?
(ii) Is the system in safe state? Give the sequence.
(iii) If a request from process P0 arrives for (0, 1, 0) can the request be granted immediately?

(b) Explain the different method of file access. 7

[TURN OVER

Q4. (a) Given reference string to the following pages by a program :- 8
1,2,3,4,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6.
How many page faults will occur for the following page replacement algorithms, assuming three frames?
1. LRU replacement
2. FIFO replacement
3. Optimal replacement

(b) Explain the concept of spooling and explain how it is different from buffering? 7

Q5. (a) What is semaphore? Explain different types of semaphore. Also explain the difference between semaphore and monitor. 8

(b) When does the page fault occur? Describe the action taken by O.S. when page fault occurs. 7

Q6. (a) Suppose a disk drive has 200 cylinders, numbered 0 to 199. The driver is currently serving a request at cylinder 100 and previous request was at cylinder 130. The queue of pending request in FIFO order is 120, 90, 55, 135, 60, 75, 150. 8
What is the total head movement under the following scheduling algorithms?
(i) FCFS (ii) SSTF (iii) SCAN (iv) C-SCAN.

(b) Explain the Access Matrix model of protection. How does it serve a useful abstraction for reasoning about protection mechanism in computer systems? 7

Q7. Write a short notes on any **three** :- 15
(a) Free Space Management
(b) Linker and Loader
(c) Multithreading
(d) Race Condition
(e) Android OS

MCA SEM II (CBGS) 13/05/15

Data Structures

QP Code : 19482

(REVISED COURSE)

(3 Hours) **Total Marks:80**

N.B. (1) Question No. 1 is compulsory.

(2) Attempt **any four** out of remaining **six** questions.

(3) Figures to right indicate full marks.

Q.1 a Differentiate between following: 10
- i. Singly linked list and doubly linked list
- ii. Sequential search and hash list search

b Given a set of symbols & corresponding frequency table as below. Explain the steps to find Huffman code for each of character 10

Symbol	A	B	C	D	E	F	G	H	I	J
Frequency	7	2	2	3	11	2	2	6	6	1

Q.2 a Write algorithms to implement enqueue and dequeue in a circular queue. 08

b What is binary tree? Given the following traversals reconstruct the binary tree. 07
Inorder: F C E A B H D G
Postorder: F E C H G D B A

Q.3 a Define stack. Explain any two stack applications with example. 08

b Define max heap. Create a valid max heap using following: 07
16,12,15,53,81,27,30,2,50,92,6

Q.4 a Define binary search tree. Write an algorithm to 08
- i) Insert a node (without recursion)
- ii) Search the element

b Define hash list. Using midsquare method and key offset, store the keys shown below in hashing list. (listsize=13). Calculate load factor. 07
325, 568, 78, 55, 111, 121, 65

Q.5 a Write following algorithms for singly linked list: 08
- i. Delete a node
- ii. Append two linked lists

b Draw the B tree of order 3 by inserting following data: 07
98,24,6,7,11,8,22,4,5,16,19,20,78

Q.6 a Explain threaded binary tree. 08

PTO

DP-Con. : 8726-15.

b Define expression tree. Consider following infix expression. Draw the expression tree and find prefix and postfix expressions: (C+D+A*B)*(E+F) 07

Q.7 a Consider following list and implement radix sort, show the tracing: 07

455, 135, 346, 409, 567, 698, 123, 582

b Write short notes : : (Any two) 08

i. Graph Storage Structures

ii. Clustering

iii. Doubly linked list

———*———

MCA sem-II CBGS M/J-2015 Probability & Statistics 22/5/1

QP Code : 19490

(3 Hours) Total Marks: - 80

N.B.

1. Question no.1 is compulsory.
2. Attempt any four questions from the remaining six questions.
3. Assume any necessary data but justify the same
4. Figures to the right indicate full marks
5. Use of scientific calculator is allowed

1 (a) (i) A shelf has 6 mathematics books and 4 physics books. Find the probability that 3 particular mathematics books will be together (5)

(ii) Determine the probability density function(pdf) of Geometric distribution and find out the mean of the distribution (5)

(b) (i) Find Spearman's rank correlation coefficient for the following data: (5)

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

(ii) An urn contains 7 white and 3 red balls. 2 balls are drawn at random from the urn. Compute the probability that neither of them is white. Also find the expected number of white balls drawn. (5)

2 (a) (i) The IQ's of 480 school children at a certain elementary school are given below. Find the mean and the standard deviation (4)

Class Marks	70	74	78	82	86	90	94	98
Frequency	4	9	16	28	45	66	85	72
Class Marks	102	106	110	114	118	122	126	
Frequency	54	38	27	18	11	5	2	

(ii) The mean yield for a one acre plot is 662 kilos with a standard deviation of 32 kilos. Assuming normal distribution, how many one acre plots in a batch of 1000 plots would expect to have yield (i) over 700 kilos (ii) below 650 kilos? (Given: $P(0\le z\le 1.19)=0.3830$ and $P(0\le z\le 0.38)=0.1480$ (4)

(b) If X and Y are two random variables having joint density function (7)

$f(x,y) = (1/8) * (6-x-y)$; $0\le x<2$, $2\le y<4$

$= 0$; otherwise

(i) Find the marginal density functions of X and Y

(ii) Find $P(X<1 \cap Y<3)$ and $P(X<1 | Y<3)$

3 (a) (i) The average marks scored by 32 boys are 72 with a standard deviation of 8 while for 36 girls is 70 with a standard deviation of 6. Did the boys perform better than the girls? (Z value for right tailed test and 1% level of significance is 2.33) (4)

(ii) Following is the salary of few workers in a company. Find the coefficient of range (4)

Serial number of workers	1	2	3	4	5
Salary(in thousands) per month	30	60	45	42	62

(b) State and prove Baye's theorem. The probabilities of X, Y and Z becoming managers are 4/9, 2/9 and 1/3 respectively. The probabilities that the bonus scheme will be introduced if X, Y and Z become managers are 3/10, ½ and 4/5 respectively. What is the probability that the bonus scheme will be introduced? If the bonus scheme has been introduced, what is the probability that the manager appointed was X? (7)

4 (a) (i) Prove using laws of expectation: (4)
- $E(aX+b) = aE(X) + b$
- $V(aX+b) = a^2V(X)$

(ii) A coin is tossed until a head appears. What is the expectation of the number of tosses required? (4)

(b) The following distribution gives marks of 50 students (7)

Marks	0-10	10-20	20-30	30-40	40-50
Students	5	7	20	12	6

Find all the Quartiles and Bowley's coefficient of Skewness

5 (a) (i) The mean height and standard deviation of 8 randomly chosen soldiers are 166.9 cm and 8.29 cm respectively. Corresponding values of 6 randomly chosen sailors are 170.3 cm and 8.50 cm respectively. Can we conclude that the soldiers are in general shorter than the sailors? (Value of t for 12 degrees of freedom at 5% level of significance is 1.782) (4)

(ii) Find the coefficient of variation for the following data (4)
12 17 20 16 13 11 18 12 18 13

(b) The probability of a man hitting a target is 0.25. (7)
- If he fires 7 times, what is the probability of his hitting the target atleast twice?
- How many times must he fire so that the probability of his hitting the target atleast once is greater than 2/3?

6 (a) (i) The following data gives the number of aircraft accidents that occurred during various days of the week (4)

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
15	19	13	12	16	15

Test if the accidents are uniformly distributed over the week. (Chi Square value at 5% level of significance at 5 degrees of freedom is 11.07)

(ii) Calculate the mean deviation about the median for the following data (4)

Marks range	0-20	20-40	40-60	60-80	80-100
Number of students	5	8	15	16	6

(b) Let X be a continuous random variable with probability density function: (7)

$f(x) = ax \quad , 0<x<1$
$= a \quad , 1<x<2$
$= -ax + 3a \quad , 2<x<3$
$= 0 \quad$, otherwise

Determine the constant 'a' and compute $P(X<1.5)$ and $P(1.5<X<2.5)$

7 (a) (i) Subway trains on a certain line run every half hour between midnight and six in the morning. What is the probability that a man entering the station at a random time during this period will have to wait atleast 20 minutes? (4)

(ii) An integer is chosen at random from two hundred digits. What is the probability that the integer is divisible by 6 or 8? (4)

(b) Find Karl Pearson's coefficient of correlation for the following data (7)

X	62	64	65	69	70	71	72	74
Y	126	125	139	145	165	152	180	208
