

Code : 1P2A14

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)**

**MCA I Semester Regular Examinations, January 2012  
ACCOUNTING AND FINANCIAL MANAGEMENT**

**( For students admitted in 2011-12 )**

**Time: 3 hours**

**Max Marks: 60**

*Answer any FIVE of the following  
All questions carry equal marks*

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1. What is meant by double-entry system of accounting? Explain its importance to Financial Management?
2. The particulars of incomes and expenses of a company given below, for the year ended 31<sup>st</sup> March, 2011.

Particulars	Rs.	Particulars	Rs.
Opening stock	76,250	Sales	5,00,000
Purchases	3,15,250	Closing stock	98,500
Manufacturing Expenses	7,000	Income from investments	6,000
Administrative Expenses	1,00,000		
Selling and Distribution Expenses	12,000		
Loss by Fire	13,000		

You are required to calculate

- |                         |                     |
|-------------------------|---------------------|
| a) Gross Profit Ratio.  | b) Net profit Ratio |
| c) Stock Turnover Ratio | d) Operating Ratio  |
3. Explain the various methods of valuation of inventories.
  4. What is Funds flow statement? Discuss the significance of funds flow statement as a tool of financial analysis.
  5. Define 'Financial Management'? Briefly explain goals of Financial Management?
  6. Write the following
    - a) Objectives of Budgetary control.
    - b) Zero Based Budgeting.
  7. What is 'Capital Budgeting'? Explain briefly the various methods of Capital Budgeting?
  8. The following particulars were obtained from the books of a firm for two periods

Particulars	Period-I	Period-II
Units sold	7,000	9,000
Selling price per unit (Rs)	100	100
Profit / Loss (Rs)	10,000 (Loss)	10,000 (Profit)

You are required to calculate,

- |  |                   |           |
|--|-------------------|-----------|
| a) P/V Ratio                             | b) Fixed Expenses | c) B.E.P. |
| d) Profit when sales were Rs. 10,00,000. |                   |           |

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**Code : 1P2B12****ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)****MCA I Semester Regular Examinations, January 2012****COMPUTER PROGRAMMING****( For students admitted in 2011-12 )****Time: 3 hours****Max Marks: 60**

*Answer any FIVE of the following  
All questions carry equal marks*

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1. a) What is a flowchart? Explain the different symbols used in the notation of flowcharts  
b) Give brief description about the history of programming languages.
2. a) Discuss in detail about the different storage classes present in C language.  
b) Mention the advantages of arrays over the normal variables.
3. a) Differentiate between library functions and user defined functions.  
b) Explain with suitable example, the different parameter passing techniques.
4. a) Define a structure. Explain the usage of structures in detail.  
b) Explain the following file operations  
i) read            ii) write            iii) seek
5. a) List the advantages of functions.  
b) Draw and explain the basic structure of C++ program.
6. a) What is a constructor? Explain the special properties of constructors.  
b) Define inline function. Mention the advantages and disadvantages of inline functions.
7. a) Differentiate between static binding and early binding.  
b) Explain multilevel and multiple inheritance in detail.
8. a) What is an exception? Explain the different key words present in exception handling mechanism.  
b) What member function is used for opening the file with stream? Explain it in detail.

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Code : 1P2B15

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)**

**MCA I Semester Regular Examinations, January 2012  
INFORMATION AND COMMUNICATION TECHNOLOGY  
( For students admitted in 2011-12 )**

**Time: 3 hours**

**Max Marks: 60**

*Answer any FIVE of the following  
All questions carry equal marks*

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1. a) Explain multiprocessor and multicomputer systems.  
b) Explain the single bus structure with a neat diagram.
2. Write a note on RAM and ROM.
3. Explain any two secondary storage systems, in detail.
4. List out various input devices and output devices, and explain them in detail.
5. Explain the following components of a computer.
  - i) Mother Board
  - ii) Processor
  - iii) Memory
  - iv) Cabinet
6. What are the different types of network topologies? Explain them in detail.
7. a) Discuss the features of TCP.  
b) Compare and contrast UDP and TCP.
8. Explain the concept of TELNET in detail.

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Code : 1P2B11

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)MCA I Semester Regular Examinations, January 2012  
MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE  
( For students admitted in 2011-12 )

Time: 3 hours

Max Marks: 60

*Answer any FIVE of the following  
All questions carry equal marks*

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1. a) Construct the truth table for  $\neg(P \wedge Q) \longleftrightarrow (\neg P \vee \neg Q)$  .
- b) Show that  $(\neg P \wedge (\neg Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge R) \leftrightarrow R$  .
- c) Obtain the Principal Disjunctive Normal Form of

$$P \rightarrow ((P \rightarrow Q) \wedge \neg(\neg Q \vee \neg P))$$

2. a) Show that from

$$\text{i) } ((\exists x)(F(x) \wedge S(x)) \rightarrow (y)(M(y) \rightarrow W(y)))$$

$$\text{ii) } (\exists y)(M(y) \wedge \neg W(y))$$

The conclusion  $(x)(F(x) \rightarrow \neg S(x))$  follows.

- b) Explain about the concept of free and bound variables, universe of discourse for predicate calculus.
3. a) Explain about power set, inclusion and equality of sets with suitable examples.
- b) Using Venn diagrams, show that  $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ .
- c) Prove that  $A \times (B \cup C) = (A \times B) \cup (A \times C)$ .
4. a) Show that the function  $f \langle x, y \rangle = x+y$  is primitive recursive.
- b) What is an equivalence relation? Give an example and prove that it is an equivalence relation.
- c) Explain with an example about bijective functions.
5. Write short notes on the following.
  - a) Groups
  - b) Monoids
  - c) Isomorphism of groups

6. How many integral solutions are there for  $x_1 + x_2 + x_3 + x_4 + x_5 = 30$  where for each  $i$

- $x_i \geq 0$
- $x_i \geq 1$
- $x_1 \geq 2, x_2 \geq 3, x_3 \geq 4, x_4 \geq 2$  and  $x_5 \geq 0$
- $x_i > i$

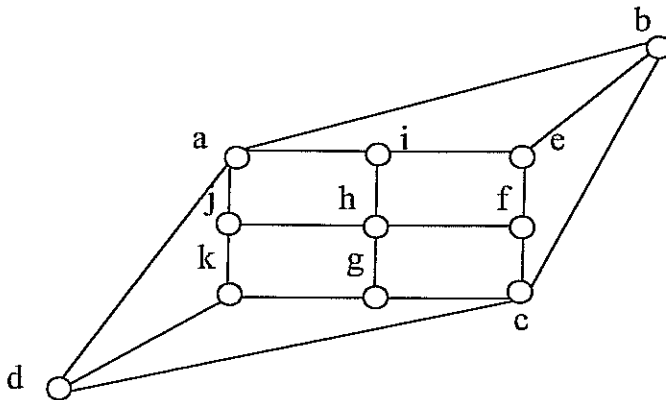
Note : Write the steps involved in arriving your answer.

7. a) There are 3 pegs and  $n$  circular discs of increasing diameter on one peg, with the largest disk on the bottom. These disks are to be transferred one at a time on to the other peg with the provision that at no time is one allowed to put a larger disk on one with smaller diameter. Determine the number of moves required.

(Hint : Form recurrence relation for the number of moves and solve.)

b) Compute the coefficients of  $\sum_{r=0}^{\infty} d_r X^r = \frac{X^2 - 5X + 3}{X^4 - 5X^2 + 4}$

8. a) Determine the chromatic number of the following graph. Give an argument that fewer colors will not suffice.



b) Write short notes on Euler circuits and its applications.

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Code : 1P2C13

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)

MCA I Semester Regular Examinations, January 2012

PROBABILITY AND STATISTICS

( For students admitted in 2011-12 )

Time: 3 hours

Max Marks: 60

*Answer any FIVE of the following  
All questions carry equal marks*

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1. a) Prove that if  $E_1, E_2$  and  $E_3$  are random events in a sample space and if  $E_1, E_2, E_3$  are pair wise independent and  $E_1$  is independent of  $(E_2 \cup E_3)$  then  $E_1, E_2$  and  $E_3$  are mutually independent.
- b) From a city 3 newspapers A, B, C are being published. A is read by 20%, B is read by 16%, C is read by 14%, both A and B are read by 8%, both A and C are read by 5%, both B and C are read by 4% and all three A, B, C are read by 2%. What is the percentage of the population that read at least one paper?
2. a) i) Define Probability Mass function.  
ii) A player tosses 3 fair coins. He wins Rs. 500 if 3 heads appear, Rs. 300 if 2 heads appear, Rs. 100 if one head occurs. On the other hand he loses Rs 1500 if 3 tails occur. Find the expected gain of the player.
- b) A continuous random variable has the probability density function.
 
$$f(x) : \begin{cases} k x e^{-\lambda x} & \text{for } x \geq 0, \lambda > 0 \\ 0, & \text{otherwise} \end{cases}$$
 Determine i) k ii) Mean iii) variance.
3. a) In a test on 2000 electric bulbs, it was found that the life of a particular make, was normally distributed with an average life of 2040 hrs and S.D of 60hrs. Estimate the number of bulbs likely to burn.
  - i) More than 2150 hrs.
  - ii) Less than 1950 hrs and
  - iii) More than 1920 hrs but less than 2160 hrs.
- b) Show that the Poisson distribution is the limiting case of the binomial distribution.
4. a) A population consists of five numbers 2, 3, 6, 8, 11. Consider all possible samples of size 2 that can be drawn with replacement from the population. Find
  - i) The mean of the population
  - ii) S.D. of the population
  - iii) The mean of the sampling distribution of means and
  - iv) The S.D. of the sampling distribution of means
- b) Measurements of the weights of a random sample of 200 ball bearings made by a certain machine during one week showed a mean of 0.824 and S.D. of 0.042. Find maximum error at 95% confidence interval and its confidence limits for the mean if  $x=32$ .

5. a) The following is the distribution of the hourly number of trucks arriving at a company's ware house.

Trucks arriving per hour	0	1	2	3	4	5	6	7	8
Frequency	52	151	130	102	45	12	5	1	2

Fit a Poisson distribution and test for goodness of fit at 5% level of significance.

- b) Two independent samples of 8 and 7 items respectively had the following values of the variables.

Sample I	9	11	13	11	16	10	12	14
Sample II	11	13	11	14	10	8	10	

Do the estimates of population variances differ significantly?

6. a) Mice with an average life span of 32 months will live up to 40 months when fed by a certain nutritious food. If 64 mice fed on this diet have an average life span of 38 months and S.D. of 5.8 months. Is there any reason to believe that average life span is less than 40 months?
- b) In a city:A, 20% of random sample of 900 school boys, had a certain slight physical defect. In another city:B, 18.5% of a random sample of 1600 school boys had the same defect. Is the difference between the proportions significant at 5% level of significance?
7. a) Using the method of Least squares, fit a second degree parabola  $y = a + bx + cx^2$  for the data given below.

x:	1	2	3	4	5	6	7	8	9
y:	2	6	7	8	10	11	11	10	9

- b) The following recorded data shows the test scores made by salesmen on an intelligence test and their weekly sales.

Salesmen:	1	2	3	4	5	6	7	8	9	10
Test Scores	40	70	50	60	80	50	90	40	60	60
Sales ( in Rs '000)	2.5	6.0	4.5	5.0	4.5	2.0	5.5	3.0	4.5	3.0

Calculate regression line of sales on test scores and estimate the most probable weekly sales volume if a salesman makes a score of 70.

8. A car park contains 5 cars. The arrival of cars is Poisson with a mean rate of 10 per hr. The length of time each car spends in the car park has negative exponential distribution with mean 2 hrs. How many cars are in the car park on average and what is the probability of a newly arriving customer finding the car park full and having to park his car elsewhere?

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**Code : 1P2C16****ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)****MCA I Semester Regular Examinations, January 2012  
TECHNICAL COMMUNICATION AND COMPUTER ETHICS  
( For students admitted in 2011-12 )****Time: 3 hours****Max Marks: 60**

*Answer any FIVE of the following  
All questions carry equal marks*

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1. Critically examine the different channels of communication with illustrations.
2. Discuss the impact of Psychological and Emotional interference in proper communication.
3. Write a note on the barriers of communication.
4. What are the aspects of Speech Process? Explain.
5. Bring out the importance of Group Discussion strategies in communication.
6. Explain the pre-interview preparation techniques.
7. Examine the relevance of Ethics in the Business world.
8. Write an essay on the aspects of Software Development.

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