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Reg. No. : .....

Name : .....

**First Year B.C.A./B.Sc. (Computer Science) Degree Examination, Sept. 2012  
(I.D.E.)  
Paper – I : TECHNICAL COMMUNICATION**

Time : 3 Hours

Max. Marks : 125

I. a) Complete the conversation by supplying the missing links :

Student : Excuse me, can you tell me if the last date for submitting online applications for the Exams has been extended. I tried opening the University website, but couldn't .

Section Officer : \_\_\_\_\_

Student : Yes, that is true. There are more than three thousand students who are applying for the exams. Should I check at the B.Sc. Section ?

Section Officer : \_\_\_\_\_

Student : Oh. That means the date has not been extended.

Section Officer : \_\_\_\_\_

Student : If you receive any communication will you be uploading it immediately ?

Section Officer : \_\_\_\_\_

Student : In that case I will wait till the evening. If I have any problem opening the site, I will ring up the section to find out. Thank you. **10**

b) You are thinking of buying a laptop. You visit the showroom of an agency which sells laptops. Make a conversation with the Manager in which your requirements and their availability at the showroom are discussed. **15**

P.T.O.



II. a) Correct the following sentences :

- 1) We must conform with the rules.
- 2) The customer got tired to wait.
- 3) I am tired to do the work.
- 4) Please excuse me to be so late.
- 5) She said she will come tomorrow.
- 6) Renu and myself were at the office.
- 7) The reason is because I believe it.
- 8) Can you bring a better example ?
- 9) He pointed the map on the wall.
- 10) Rahim has found a work at the bank.

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b) Fill in the blanks choosing the right word from the brackets :

- 1) They \_\_\_\_\_ the highhanded behavior of the manager. (represented, resented)
- 2) The principal was \_\_\_\_\_ in his dealings with the students. (sententious, sensous)
- 3) China and Russia are found \_\_\_\_\_ on a map. (contiguous, contingent)
- 4) The Government has \_\_\_\_\_ all responsibility in the matter. (adjudicated, abdicated)
- 5) Her last album was released \_\_\_\_\_. (prodigiously, posthumously)

5

III. Write a letter to a mobile phone service provider requesting for barring the commercial calls to your mobile.

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IV. Write a paragraph of **100** words **each** on **any three** of the following :

- 1) A study tour you undertook.
- 2) Your successful appearance in a singing competition on TV.
- 3) Saving fuel.
- 4) Physical fitness.
- 5) Your idea of a successful career.

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V. Define in one sentence each, any ten of the following (Eg. orthopedics : The branch of medicine that deals with the prevention or correction of injuries or disorders of the skeletal system and associated muscles, joints and ligaments).

- 1) Pesticide
- 2) Global warming
- 3) Depression
- 4) Downloading
- 5) Blogging
- 6) Bandwidth
- 7) Food security
- 8) Branded articles
- 9) Scanning
- 10) Touchscreen
- 11) Speed Governor
- 12) E-Governance
- 13) Participatory Democracy
- 14) Fast-track courts
- 15) Gender justice.

10

VI. Read the following passage and answer the following questions in **a sentence** or **two** :

It is always the problem of how to change an ideal into reality that gets in the way of both the leaders and the people. A thought is not a deed and never will be. We are not magic men. We cannot imagine something into existence-especially a change of behaviour. Just as we have been conditioned to be what we are now-greedy, competitive, stingy, mean-so we need to learn to love, to learn to be free. Freedom is a difficult thing to handle. How many people given the complete freedom to do whatever they like would die to boredom ? No structure, no rules, no compulsion to work from nine to five, no one telling us when to do this, do that - it sounds great until we try it. We've learned to be directed by so many others-by mommy, daddy, teacher, principal, boss, policeman, politician, bureaucrat, etc. - that freedom from all this could be overwhelming. Imagine: making love, eating, sleeping, playing .... and ... ho, hum, now what ? Where do you go and what do you do when the trip ends ?



Give people freedom and they'll do all the things they thought they never had a chance to do. But that won't take very long. And after that? After that, my friend, it'll be time to make your life meaningful. Can you do it if you're free? Can you do it if others no longer require you to do what they say is best? Authority is only necessary for those who need it. Most of us need it because we've been taught to believe that we have to be concerned about others. For instance: you're selfish if you think of yourself; or even: 'Ask not what your country can do for you, ask what you can do for your country'. But thinking is quite outdated and, perhaps, ridiculous. You've got to get in touch with what your real needs are before you can begin to be of value to others. We are no longer able to think for ourselves, we think for the 'good' of others. 'Who am I?', 'What do I really want out of life?' These are considered selfish questions. So a whole society goes down the drain. So it is with communes, whose members are too eager to help their curious 'brothers', who find it remarkably easy to create all kinds of physical and figurative mess and then leave it for the members to clean up.

- 1) Why does the author say 'a thought is not a deed'?
- 2) What is meant by 'imagining something into existence'?
- 3) Why is freedom a difficult thing to handle?
- 4) Why can freedom be boring?
- 5) Why does the sudden experience of freedom overwhelm us?
- 6) What is the relationship between authority and freedom?
- 7) How can freedom be meaningfully used?
- 8) Why is freedom considered selfish?
- 9) Why is the notion that we should be concerned about others outdated?
- 10) How according to the author, can helping others be a wasteful action?

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Reg. No. : .....

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**First Year B.C.A./B.Sc. Computer Science (IDE) Degree  
Examination, September 2012  
PRINCIPLES OF ACCOUNTANCY AND MANAGEMENT**

Time : 3 Hours

Max. Marks : 125

**PART – A**

Answer any ten questions. Each question carries 5 marks.

1. What is a trial balance ? Explain its objectives.
2. Define marginal costing. What are the features of marginal costing ?
3. What are the main pillars of classical organisation theory ?
4. What are the basic principles of delegation of authority ?
5. Write short note on probabilistic models.
6. What do you mean by job description and job specification ?
7. Define the term 'promotion'. Distinguish between horizontal and vertical promotion.
8. What is vestibule training ?
9. What is standard cost and standard costing ?
10. What do you mean by working capital cycle ?
11. Define 'master budget'.
12. What is debt-service ratio ? Explain its significance. **(10×5=50 Marks)**

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PART – B

Answer **all** Sections.

SECTION – I

Answer **any two** questions. **Each** question carries **12½** marks.

13. What is meant by profit maximisation ? What are its limitations as a financial goal ?
14. Define cost accounting. How does a good system of cost accounting serve the management ?
15. Describe the chief functions of a personnel manager. **(2x12½=25 Marks)**

SECTION – II

Answer **any two** questions. **Each** question carries **12½** marks.

16. Discuss the utility of variance analysis in cost control. What are the major causes for efficiency, volume, capacity and calendar variance ?
17. You are given the following data :

Sales price	Rs. 350 per unit
Variable cost	Rs. 200 per unit
Fixed expenses	Rs. 16,50,000

Ascertain :
  - a) Break-even point.
  - b) Sales per unit if break-even-point is brought upto 15,000 units.
  - c) Sales per unit of break-even point is brought down to 10,000 units.





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18. The gross profit of Bright Ltd. for the year ending 31<sup>st</sup> March 2011 is Rs. 4,00,000 which is one-fourth of the sales. Credit sales of the company is three-fourth of total sales. The stock turnover is 10 times and average collection period is 15 days. Total assets turnover based on sales is 4 times and the long-term debt to equity shareholders' fund is 50%. Shareholders' fund is Rs. 2,00,000. The current ratio is 2 : 1. Assume 360 days in a year.

Find out :

- a) Sundry creditors
- b) Cash in hand
- c) Sundry debtors
- d) Closing stock
- e) Long-term debt and
- f) Fixed assets.

(2x12½=25 Marks)

SECTION – III

Answer any two questions. Each question carries 12½ marks.

- 19. Performance appraisal by objectives is considered to eliminate the subjectivity in appraisal. Do you agree ? Give reasons in support of your view.
- 20. What do you mean by line organisation structure ? What are its benefits and limitations ?
- 21. What is a fund flow statement ? State the important objectives of preparing a fund flow statement.

(2x12½=25 Marks)

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Reg. No. : .....

Name : .....

**First Year B.C.A./B.Sc. Computer Science (IDE) Degree Examination,  
Sept. 2012**

**PROGRAMMING PRINCIPLES**

Time : 3 Hours

Max. Marks : 125

**PART - A**

Answer any 10 questions. Each question carries five marks.

1. Write a C program using pointers to sort a given set of numbers.
2. Explain streams. Discuss two types of streams.
3. Write a program in C using functions and arguments to calculate the sum of first 'n' terms of the series  $x - x^3/3! + x^5/5! - x^7/7! + \dots$
4. Discuss arithmetic and logical operator precedence in C with examples.
5. Explain any five of the various input/output functions used in C with syntax.
6. Explain how can pointers be used to manage arrays in C program.
7. Discuss conditional GOTO statements.
8. What is meant by a data file ? Explain how can you read an already available data file within a C program.
9. Discuss the advantages of using pointers. Write down the statements to declare
  - a) a pointer to an integer
  - b) a pointer to an array of integers
10. Write a program in C to solve a linear equation.
11. Differentiate between *do while* and *while* loops.
12. Write program segments in C for inserting and deleting elements in a linked list.
13. Discuss on passing by value and passing by reference in functions.
14. Explain approximation and errors in computing.
15. Discuss with examples difference between Union and Structures in C.

P.T.O.





## PART – B

Answer **any two** questions from **each** Section. **Each** question carries **12½** marks.

## SECTION – I

16. Write a program to create a data file containing roll number followed by marks of entrance examination for 100 students. Read the same file and display the total marks along with register number.
17. Describe recursive functions. Write a C program for solving Towers of Hanoi problem.
18. Explain with C program segments, passing of structures to functions.

## SECTION – II

19. What is meant by time and space complexity. Evaluate the time and space complexity for a sorting algorithm.
20. Write a program to check whether a given number is a prime or not. Write a macro for the checking.
21. Discuss the algorithms of shell sort and quick sort. Compare their performance.

## SECTION – III

22. Use a structure to define a record with fields accession number of the book, name of the book, author of the book. Write a program to store the details of 100 such books and search the details of the book given the accession number of the book.
23. Write a program to count the number of each vowel in a given sentence.
24. Write a program in C to calculate the sum of row values and sum of column values of each column and row separately.

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Reg. No. : .....

Name : .....

First Year B.C.A./B.Sc. Comp. Science Degree Examination, Sept. 2012  
(I.D.E.)

**Paper – III : BASIC ELECTRONICS AND FUNDAMENTALS OF  
COMPUTERS**

Time : 3 Hours

Max. Marks : 125

**Instructions :** Answer **any ten** questions from **Part A** and **any two** questions from **each** Module of **Part B**. **Each** question in **Part A** carries **5** marks and in **Part B** carries **12½** marks.

**PART – A**

1. Draw the structure of a triac and explain.
2. How do you use a phototransistor for controlling the liquid level of a tank ?
3. Define the three stability factor  $S$ ,  $S'$  and  $S''$ .
4. Compare zener and avalanche breakdown.
5. Draw symbols for Nchannel MOSFET, SCR, UJT, PNP transistor and photodiode.
6. State and explain maximum power transfer theorem.
7. Draw the circuit of OPAMP as a multiplier and obtain the expression for output voltage.
8. List any 5 advantages of employing negative feedback in amplifiers.
9. Draw the block diagram of a CRO and discuss.
10. Distinguish between online and offline UPS.
11. How do you obtain a PCB from the circuit diagram ?
12. Give the colour coding employed in capacitors and explain.

P.T.O.

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(-2-)



- 13. Explain the concept of DBMS.
- 14. Convert
  - a)  $585_{10}$  into its equivalent octal
  - b)  $723_8$  into its equivalent binary.

15. Briefly explain DTP and spread sheet. (10x5=50 Marks)

**PART – B**

**Module – 1**

- 16. a) With the help of VI characteristics, explain the working of photodiode. 7½
  - b) Compare the features of photodiode and phototransistor. 5
- 17. a) Draw the circuit of voltage divider bias and derive expression for stability factor S. 7
  - b) Define various current gains of a BJT and obtain the relationship between them. 5½
- 18. a) Explain the static characteristics of enhancement MOSFET and explain. 7½
  - b) Draw the V-I characteristics of UJT. 5

**Module – 2**

- 19. a) Draw the circuit of RC coupled amplifier and discuss on its frequency response characteristics. Define bandwidth. 7½
  - b) Compare astable, monostable, and bistable multivibrators. 5
- 20. a) Draw the block diagram of a digital multimeter and explain. 7½
  - b) Compare analog and digital multimeters. 5
- 21. a) Draw the circuit of astable multivibrator using 555 and explain the working with the help of relevant waveforms. 7½
  - b) Draw the block diagram of an SMPS and explain. 5

13  
15



**Module – 3**

- 22. a) Explain the concept of artificial intelligence and expert systems. 7½
- b) What are the features of BIOS ? 5
- 23. a) Explain the working principle of laser printer. 6
- b) Write a brief description about memory hierarchy. 6½
- 24. Write notes on :
  - a) Animation. 4
  - b) Windows operating system. 4
  - c) Time sharing and real time operating systems. 4½

**(6×12½=75 Marks)**



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Reg. No. : .....

Name : .....

**First Year B.C.A./B.Sc. Computer Science (IDE) Degree  
Examination, Sept. 2012  
Paper – II : MATHEMATICS**

Time : 3 Hours

Max. Marks : 125

**Instruction :** Part A carries 50 marks. Part B carries 75 marks.

**PART – A**

Answer **any ten** questions. Each question carries 5 marks.

1. Show that the propositions  $\neg(P \wedge Q)$  and  $(\neg P \wedge \neg Q)$  are equivalent.
2. Verify that  $P \vee \neg(P \wedge Q)$  is a tautology.
3. Prove the following identity and writout the dual identity and prove it  
 $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ .
4. Let R be a relation on N (set of all positive integers) defined by  
 $R = \{(a, b) / a + b \text{ is even}\}$ . Is R an equivalence relation ?
5. Prove that the sum of degrees of points of a graph G is twice the number of lines.
6. If G is a tree prove that every two points of G are joined by a unique path.
7. Define the hyperbolic sine and cosine functions and find their derivatives.
8. If  $x = \cos t$ ,  $y = \sin t$  then find  $\frac{dy}{dx}$ .
9. Separate in to real and imaginary parts of  $\frac{(2-3i)^2}{2+3i}$ .

P.T.O.



10. If  $n_1, n_2, n_3, \dots, n_k$  are pairwise prime numbers then write the formulae for  $\phi(n_1, n_2, n_3, \dots, n_k)$  and hence find  $\phi(77)$ .

11. Reduce to its normal form and find the rank of  $\begin{bmatrix} 8 & 0 & 3 \\ 2 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$ .

12. Prove that  $18! \equiv -1 \pmod{437}$ .

13. Is the set  $\{1, 0, -1\}$  a group under the operation addition? Justify.

14. Find the inverse of the matrix  $A = \begin{bmatrix} 3 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 2 \end{bmatrix}$  and verify that

$$AA^{-1} = I = A^{-1}A.$$

15. Find the  $n^{\text{th}}$  derivative of  $\cos(ax + b)$ .

### PART - B

This Part consists of **three** Sections. Answer **any two** questions from **each** Section. **Each** question carries **12½** marks.

### SECTION - I

16. a) Let  $E = \{\{1, 2, 3\}, \{2, 3\}, \{a, b\}\}$ . Find the power set of  $E$ .  
 b) State and prove Wilson's theorem.  
 c) Let  $A = \{1, 2, 3, 4\}$  and  $B = \{2, 3, 4, 5\}$ . Write  $A \times B$  and all the following relations in  $A \times B$   
 i)  $R = \{(x, y) / x = y\}$   
 ii)  $R = \{(x, y) / x = y + 1\}$   
 iii)  $R = \{(x, y) / x^2 = y\}$   
 iv)  $R = \{(x, y) / x = y^2 + 7\}$
17. a) Let  $f(x) = 2x + 1$  and  $g(x) = x^2 - 2$ . Define the compositions  $f \circ g$  and  $g \circ f$  and hence evaluate  $f \circ g(4)$  and  $g \circ f(-1)$ .  
 b) Define the inverse of a function and find the inverse of  $g(x) = x^2 - 1$ .  
 c) Define a grammar and a regular grammar with examples.





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18. a) Define with examples
- i) Binary operation
  - ii) Monoid
  - iii) Abelian group
- b) Is the set of all positive integers a group? Justify.
- c) Define a group homomorphism with an example.

SECTION – II

19. a) Find 'C' of the Mean Value Theorem,  $f(x) = (x - 1)(x - 2)(x - 3)$ ;  $x \in [0, 4]$ .
- b) State Leibnitz theorem and hence find the  $n^{\text{th}}$  derivative of  $x^3 \cdot \cos x$ .
- c) Find the greatest and least values of  $f(x) = x^4 - 4x^3 - 2x^2 + 12x + 1$  in the interval  $[-2, 5]$

20. a) Find:

i)  $L[\sin^2 t]$

ii)  $L^{-1}\left[\frac{4}{(s+1)(s+2)}\right]$

b) If  $y = e^{m \cdot \sin^{-1} x}$  then prove that  $(1 - x^2) y_2 - xy_1 = m^2 y$ .

c) Verify  $\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y \partial x}$ , when  $u = \log [y \sin x + x \sin y]$ .

21. a) Find the characteristic roots of the matrix  $\begin{bmatrix} 1 & 2 & -3 \\ 2 & 4 & -6 \\ -1 & -2 & 3 \end{bmatrix}$  and also find the

Eigen vector corresponding to one of the roots.

b) Prove that the set  $\{(1, 0, -1), (1, 2, 1), (0, -3, 2)\}$  is linearly independent in  $\mathbb{R}^3$ .

c) Check whether the following equations are consistent. If so solve them

$$2x + 5y + 3z = 1$$

$$-x + 2y + z = 2$$

$$x + y + z = 0.$$



## SECTION - III

22. a) Find  $\frac{dy}{dx}$  when  $y = \cosh^{-1} x$ .
- b) Define a vector space and prove that the set of all complex numbers is a vector space over itself.
- c) If  $u = \log(x^3 + y^3 + z^3 - 3xyz)$ . Show that  $\frac{\partial^2 y}{\partial x^2} + \frac{\partial^2 y}{\partial y^2} + \frac{\partial^2 y}{\partial z^2} = \frac{-3}{(x+y+z)^2}$ .
23. a) Define a differential equation with an example and also define the nature of a solution of a differential equation.
- b) Solve  $(D^2 + 8D + 16)x = 4e^t - e^{-2t}$ .
- c) Prove that every tree has a center consisting of either one point or two adjacent points.
24. a) Verify Rolle's theorem for  $f(x) = x^2$  in  $[-1, 1]$ .
- b) Sum the series  $\sin\theta + \sin 2\theta + \sin 3\theta + \dots$  to 'n' terms.
- c) Define the basis of a vector space. Form atleast one basis of the vector spaces  $\mathbb{R}$ ,  $\mathbb{R}^2$  and  $\mathbb{R}^3$ .