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B.C.A. DEGREE EXAMINATION, MARCH 2011.

(Examination at the end of First Year)

Part II

Paper I — MATHEMATICS — I

Time : Three hours   Maximum : 100 marks

PART I — (4 × 15 = 60 marks)

Answer any FOUR choosing at least ONE question from each Section.
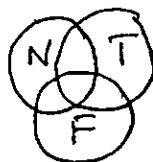
SECTION A

1. Simplify : $\dfrac{3x-6}{4x^2+12x-16} - \dfrac{2x-5}{6x^2-6} + \dfrac{3x^2+3}{8x^2+40x+32}$.

2. Show that $\dfrac{1}{1.2} + \dfrac{1}{2.3} + \dfrac{1}{3.4} + ... + \dfrac{1}{n(n+1)} = \dfrac{n}{n+1}$ (by mathematical induction).

3. Two cards are drawn from a pack, each being replaced before the next one is drawn. Compute the probability that all are

    (a) Diamons

    (b) Kings

    (c) Black cards.

SECTION B

4. (a) Find the value of $\begin{vmatrix} 3 & -2 & 5 & -8 \\ 0 & 7 & -4 & 9 \\ 0 & 0 & -6 & 4 \\ 0 & 0 & 0 & 2 \end{vmatrix}$.

    (b) Write $v = (2,3,-5)$ as a linear combination of $u_1 = (2,-1,-4)$, $u_2 = (1,7,-5)$, $u_3 = (1,2,-3)$ if possible.

5. In a survey of 60 people, it was found that 25 read news week magazine, 26 read times and 26 read fortune. Also 9 read both news week and fortune, 11 read both the news week and time, 8 read both time and fortune and 8 red no magazine at all.

    (a) Find the number of people who read all the magazines

    (b) Find the number of people who read exactly one magazine.

(c) Fill the correct number in each of the eight regions of the Venn diagram. Here N, T, F denote the set of people who read exactly one magazine.

6. Consider the poset $P = (1, 2, 3, 4, 5, 6, 8, 9, 12, 18, 24)$, whose order is divisibility. Draw the diagram for P.

PART II — (5 × 6 = 30 marks)

Answer any FIVE questions choosing atleast ONE from each Section.

SECTION C

7. Arrange the following numbers in the ascending order of magnitude

(a) $-5, \dfrac{31}{5}, \sqrt{7}, 0$

(b) $-\sqrt{3}, -\sqrt{5}, -2.3, \dfrac{5}{4}$.

8. If $a = 1$, $b = 2$, find the value of $\dfrac{a^4 + ab^3 + a^3b + 2a^2b^2 + b^4}{a^2 + ab + b^2}$.

9. If $f : R \to R$ is defined as $f(x) = x^2 - 3x$ when $x \geq 2$ and $f(x) = x + 2$ when $x < 2$, then find $f(5)$, $f(0)$, $f(-2)$, $f(10)$, $f(-5)$.

10. Explain NOT gate (or inverter).

SECTION D

11. Prove that the idempotent laws for the elements of a lattice (a) $a \wedge a = a$ (b) $a \vee a = a$.

12. If $u = (3, 3c, -u, 1, 5)$, $v = (u, -1, 3, 7, 2c)$ are orthogonal vectors, find C.

13. If $n_{P_6} = 12^n_{P_4}$, find n.

14. If $f(x) = x^2$, $g(x) = 5x + 2$, $h(x) = x + 3$ are real functions then find $h \circ g \circ f$, $f \circ f \circ f = f^3$ and $g \circ g = g^2$.

PART III — (5 × 2 = 10 marks)

Answer ALL questions.

15. Find H.C.F. and L.C.M. of $4a^2 - 4b^2$, $6a - 6b$.

16. Normalize $u = (4, 2, 3, -8)$ (or unit vector).

17. If $A \subseteq B$ then prove that $A \cup B = B$.

18. Find $4x^2 + 3xy + 6z$ if $x = 2$, $y = 1$, $z = 3$.

19. Define atom.

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B.C.A. DEGREE EXAMINATION, MARCH 2011.

(Examination at the end of First Year)

Paper II (Part II) — SYSTEMS APPROACH TO MANAGEMENT

Time : Three hours   Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   (a)   Write short notes on top management.

      (b)   What are the requirements of a good plan?

      (c)   Define line organization.

      (d)   What is decentralisation?

      (e)   State the importance of staffing.

      (f)   Explain about job specification.

      (g)   Distinguish between oral and written communication.

      (h)   Define motivation.

      (i)   Discuss the relation between planning and control.

      (j)   Define budgetary control.

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SECTION B — (4 × 20 = 80 marks)

Answer ALL of the following questions.

2. (a) Explain the role of management as a profession, discipline and an art.

   (b) Discuss Henri Fayal's contribution to the science of management.

Or

   (c) What is mean by organizing? Explain the principles of organizing?

   (d) What is committee? What should be done to make committees effective?

3. (a) Explain the steps involved in the selection procedure.

   (b) Distinguish between recruitment and selection.

Or

   (c) Explain the need and importance of staffing.

   (d) Define HRM. Discuss its objectives.

4. (a) Barriers or Gateways to communication?

   (b) Explain the Maslow's need hierarchy theory.

Or

   (c) What is leadership? Enumerate the qualities of a good leader?

   (d) Define morale. How will you measure moral in an organization?

5. (a) What are the merits and demerits of budgetary control?

   (b) Explain the basic steps in the control process.

Or

   (c) Explain the essentials of effective budgetary control.

   (d) Explain about feedback control.

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B.C.A. DEGREE EXAMINATION, MARCH 2011.

(Examination at the end of First Year)

Paper III (Part II) — INTRODUCTION TO INFORMATION TECHNOLOGY

ime : Three hours   Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

(a) Define information system.

(b) List types of data.

(c) What is the role of control unit?

(d) Define memory.

(e) Explain about E-mail.

(f) Define security.

(g) Explain about WAN.

(h) Define database system.

(i) What is Internet?

(j) Explain one facility about browsers.

SECTION B — (4 × 20 = 80 marks)

Answer ALL of the following questions.

2. (a) Explain different types of storage devices.

Or

(b) Explain the structure of a CPU.

(c) Explain about embedded processors.

3. (a) Explain LAN and it's applications.

(b) Explain the types of computers connected to Internet.

Or

(c) What is a computer language? Explain different types of computer language.

(d) Discuss the steps involved in developing a programme.

4. (a) Explain in detail about non-text databases and archiving databases.

(b) How can a perfect database can be organized?

Or

(c) What is meant by spread sheet?

(d) Explain about one numerical computation example in spread sheet.

5. (a) Explain disaster recovery and intellectual property rights.

(b) What are future enhancements in information technology?

Or

(c) Explain about Privacy, Security and Integrity of information.

(d) Explain the use of FTP protocol in file transferring.

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B.C.A. DEGREE EXAMINATION, MARCH 2011.

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Paper IV (Part II) — PROGRAMMING USING C

Time : Three hours   Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

1.   Answer the following questions.

(a)   What is an operator?

(b)   Define data type.

(c)   Define pointer.

(d)   What is variable?

(e)   What is the purpose of size of ( ) operator?

(f)   Define identifier.

(g)   Explain nested-if statement.

(h)   What does the word ASCII stands for?

(i)   What does one use to print out a literal?

(j)   State the reason for using structures.

SECTION B — (4 × 20 = 80 marks)

Answer the following questions.

2. (a) Explain the structure of C-Language program with example.

Or

(b) Define data type. Explain different types of data types.

(c) What is constant? Explain different types of constants.

3. (a) Explain different types of operators in C-Language with examples.

Or

(b) What is variable? List and explain the rules for declaring a variable with necessary examples.

4. (a) Define function. Explain categories of functions with necessary examples.

Or

(b) Define an array. Explain types of arrays with examples.

(c) Explain initialization and declaration of arrays.

5. (a) Define structure. Explain features of structures.

(b) Write a program to access array elements using pointers.

Or

(c) Define file. Explain different file handling functions with suitable examples.

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