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

(Advance Supplementary)

(Examination at the end of First Year)

Paper I (Part II) — 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

(a)　$\dfrac{\left[\dfrac{x+y}{x-y} - \dfrac{x-y}{x+y}\right]}{1 + \dfrac{x-y}{x+y}}$

(b)　$\dfrac{1}{1 - \left[\dfrac{1}{1 + \dfrac{1}{a}}\right]}$

2.　Prove by mathematical induction,

$x^n - y^n$ is divisible by $x - y$, $\forall n \in N$.

3.　One ball is drawn at random from a bag containing 2 red balls and 4 black balls. Determine the probability that it is

(a)　Red

(b)　Not red

(c)　White

(d)　White or black.

SECTION B

4.　(a)　Find the value of $\begin{vmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{vmatrix}$

(b)　Write $\begin{pmatrix} 1 \\ -2 \\ 5 \end{pmatrix}$ as linear combination of $\begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix}$, $\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$, $\begin{pmatrix} 2 \\ -1 \\ 1 \end{pmatrix}$.

5. In a survey concerning the smoking habits of consumers· it was found that 55% smoke cigarettes of brand A; 50% of brand B; 40% of brand C; 30% smokes cigarettes A and B; 20% A and C; 12% B and C and 10% smoke all the three brands. What percent do not smoke? What percent smoke exactly two brands of cigarettes? (Draw the venn diagram).

6. . Verify whether the following relations are partial order relation (or) total order relation

    (a) $R_1 = \{ (1, 1), (2, 2), (3, 3)\}$ on $A = \{ 1, 2, 3 \}$

    (b) $R_2 = \{ (1, 1), (2, 2), (3, 3), (3, 2), (2, 1), (3, 1) \}$ on $A = \{ 1, 2, 3 \}$

<div align="center">PART II — (5 × 6 = 30 marks)</div>

<div align="center">Answer any FIVE questions choosing atleast ONE from each Section.</div>

<div align="center">SECTION A</div>

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

    (a) $\sqrt{2}, -\sqrt{3}, -1.6, \dfrac{-3}{2}$

    (b) $-3, \dfrac{22}{7}, \sqrt{5}, -3.2, 0$

8. Evaluate $\left(e^x - 1\right)\left(e^x + 1\right)\left(e^{2x} + 1\right)\left(e^{4x} + 1\right)$.

9. If $f(x) = x^2$ (here $f : R \to R$) then find

    (a) $f(10)$

    (b) $f(20)$

    (c) $f(h + 2)$

    (d) $f(h + 2) - f(h)$

    (e) $\dfrac{f(x + h) - f(x)}{h}$.

10. Determine how the following pairs of sequences of bits is processed by an OR gate :   110001   101101

<div align="center">SECTION B</div>

11. Verify that the composition of functions satisfies the associative law $h \circ (g \circ f) = (h \circ g)$ of .

12. Normalize $u = \left(\dfrac{1}{2}, \dfrac{2}{3}, \dfrac{-1}{4}\right)$.

13. Define :

    (a)   Lattice

    (b)   Semi lattice with example

14. If $^nC_6 = {^n}C_{10}$ find $^nC_8$.

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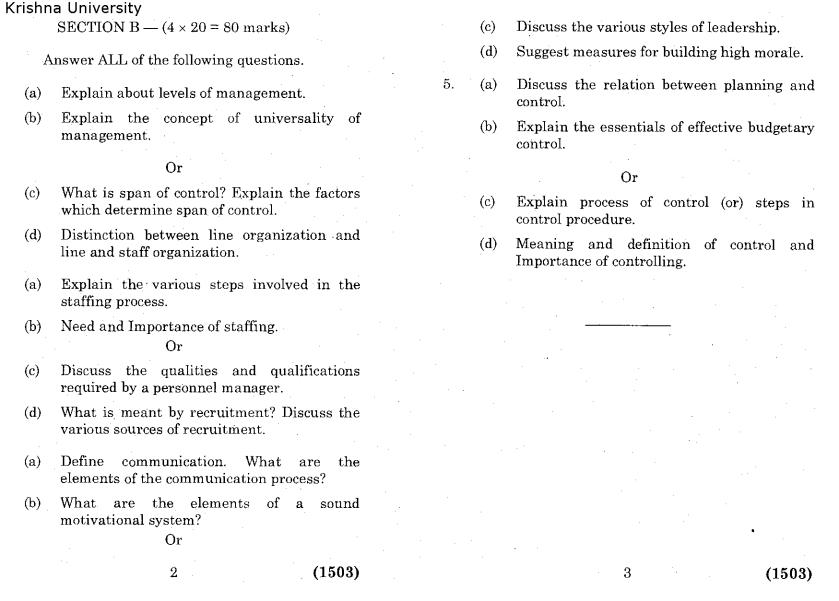
Paper II (Part II) — SYSTEMS APPROACH TO MANAGEMENT

Time : Three hours   Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   (a)   Define Management.

    (b)   What is forecasting? Explain the need for forecasting in planning?

    (c)   Define staff organization.

    (d)   Define Authority.

    (e)   What is meant by staffing?

    (f)   Explain about job analysis.

    (g)   Distinguish between formal and in formal communication.

    (h)   Distinguish between motivation and morale.

    (i)   Explain about break-even analysis.

    (j)   Explain about PERT & CPM.

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Answer ALL of the following questions.

(a) Explain about levels of management.

(b) Explain the concept of universality of management.

Or

(c) What is span of control? Explain the factors which determine span of control.

(d) Distinction between line organization and line and staff organization.

(a) Explain the various steps involved in the staffing process.

(b) Need and Importance of staffing.

Or

(c) Discuss the qualities and qualifications required by a personnel manager.

(d) What is meant by recruitment? Discuss the various sources of recruitment.

(a) Define communication. What are the elements of the communication process?

(b) What are the elements of a sound motivational system?

Or

(c) Discuss the various styles of leadership.

(d) Suggest measures for building high morale.

5. (a) Discuss the relation between planning and control.

(b) Explain the essentials of effective budgetary control.

Or

(c) Explain process of control (or) steps in control procedure.

(d) Meaning and definition of control and Importance of controlling.

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

(Advance Supplementary)

(Examination at the end of First Year)

Paper III (Part II) — INTRODUCTION TO INFORMATION TECHNOLOGY

Time : Three hours   Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. (a) Define Computer.

    (b) Define Process.

    (c) List Components of desktop computers.

    (d) Define RAM and ROM.

    (e) List Applications of LAN.

    (f) Define operating system.

    (g) Define privacy.

    (h) Explain WWW.

    (i) What is meant by browser?

    (j) What are intellectual property rights?

SECTION B — (4 × 20 = 80 marks)

Answer ALL of the following questions.

2. (a) Explain the block diagram of a computer.

    (b) Explain the different types of data

Or

    (c) Explain data processing using computer.

3. (a) Explain wide area networks and it's applications.

    (b) Explain the future of Internet technology.

Or

    (c) Define operating system. Explain the functions and applications of an operating system.

4. (a) Explain the structure of a database.

    (b) Explain the procedure of archiving databases.

Or

    (c) What are the different types of charts and explain briefly about each of them.

5. (a) Write a short note on Internet and E-mail systems.

    (b) Explain the facilities provided by the browsers.

Or

    (c) Define a protocol. Explain different types of protocols and it's benefits.

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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 type of language is C?

　　(b)　What is an integer?

　　(c)　What is meant by truncation?

　　(d)　Explain the difference between nested-if and else-if ladder.

　　(e)　Define function.

　　(f)　Explain the difference between while and do-while.

　　(g)　State the purpose of initializing an array.

　　(h)　How is a pointer initialized?

　　(i)　What are the files associated with every C-program?

　　(j)　State the difference between arrays and structure.

SECTION B — (4 × 20 = 80 marks)

Answer the following questions.

(a) Define programming language? Explain C-Language programming characteristics.

Or

(b) Explain about algorithm, Flowcharts and pseudocode with a necessary example.

(a) Explain control structures with syntaxes and flowcharts through examples.

Or

(b) Explain conditional statements and unconditional statements with examples.

(a) Explain the general structure of function with example.

(b) What is recursion method? Explain with an example factorial finding.

Or

(c) Define Pointer. Explain the features of pointers.

(d) Write a program to perform arithmetic operations through pointers.

5. (a) Distinguish between text mode and binary mode operations of a file.

(b) Explain different file input and output operations in C-Language.

Or

(c) How can we pass strings as arguments to functions?

(d) Explain about nesting of structures with example.