Roll No. ..... Total Pages : 2

BCA/D-12 **893**

COMPUTER & PROGRAMMING FUNDAMENTALS

Paper : BCA-III

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *five* questions in all, selecting *one* question from each unit in addition to Compulsory Question No. 1. All questions carry equal marks.

Compulsory Question

1. (a) Name *two* pointing devices.
   (b) Name the types of ROM.
   (c) What are the units of memory ?
   (d) Write *two* characteristics of good programming language.
   (e) Define Interpreter.
   (f) Name the various computer networks.
   (g) Write *two* applications of Internet.
   (h) Define Real time operating system. 2×8=16

UNIT–I

2. (a) What are the characteristics of a computer ? 7
   (b) Classify computers on the basis of size, speed and memory. 9
3. (a) What is the difference between Primary and Secondary memory ? 6
   (b) Explain the characteristics of Magnetic disk. Also explain various types of magnetic disks. 10

UNIT–II

4. (a) Distinguish between Application software and System software. 7

   (b) Explain :

   (i) Multithreading.

   (ii) Time-sharing.

   (iii) Multitasking. 9

5. What is a virus ? Explain various types of viruses. Explain the Antivirus software utility. 16

UNIT–III

6. (a) Explain the Program design methodologies. 8

   (b) Explain the advantages and disadvantages of Structured programming. 8

7. (a) Draw a flow chart to find the HCF and LCM of two given nos. 8

   (b) Explain :

   (i) Pseudocode. (ii) Decision table. 8

UNIT–IV

8. (a) Write an algorithm of merging. 10

   (b) Compare Linear and Binary search. Which one is better and why ? 6

9. What do you mean by Network topology ? Discuss various topologies. How would you decide about selecting a particular topology ? 16

Roll No. .....

Total Pages : 3

BCA/D-12

894

PC SOFTWARE

Paper : BCA–112

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *five* questions in all. Select *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

नोट : कुल **पाँच** प्रश्न कीजिए। प्रत्येक इकाई से **एक** प्रश्न चुनिए। प्रश्न संख्या 1 अनिवार्य है। सभी प्रश्नों के अंक समान हैं।

Compulsory Question

(अनिवार्य प्रश्न)

1. (a) Differentiate between CUI and GUI.

(b) What is editing in MS-Word ?

(c) What is a cell in MS-Excel ? What is the address of the last most cell in a Excel spreadsheet ?

(d) What is the significance of design templates in MS- PowerPoint ? 4×4=16

(अ) सी.यू.आई. एवं जी.यू.आई में अन्तर बताइए।

(ब) एम.एस.-वर्ड के सन्दर्भ में एडिटिंग क्या होती है?

(स) एम.एस.-एक्सेल के सन्दर्भ में सैल क्या होता है? एक एक्सेल वर्कशीट में सबसे अन्तिम सैल का क्या पता होता है?

(द) एम.एस.-पावरपॉइंट में डिजाइन टैम्पलेट का क्या महत्त्व है?

UNIT–I (इकाई–I)

2. What is Operating system ? Explain the basic features of Windows as an operating system.
ऑपरेटिंग सिस्टम क्या होता है? विन्डोज ऑपरेटिंग सिस्टम की मुख्य विशेषताएं बताइए।

3. Write the methods to Move, Copy, Remove, Delete, Rename and Paste folder and file.
फोल्डर एवं फाइल को मूव, कॉपी, रिमूव, डिलीट, रीनेम एवं पेस्ट करने की क्रिया के बारे में लिखिए।

UNIT–II (इकाई–II)

4. What is Mail-Merge ? Explain the steps for preparing a Mail-Merge document.
मेल–मर्ज क्या होता है? एक मेल–मर्ज डॉक्यूमैंट बनाने के बारे में समझाइए।

5. What is Clip-Art ? Write the steps to insert a picture using Clip-Art in MS-Word.
क्लिप–आर्ट क्या होता है? एम.एस.–वर्ड में क्लिप–आर्ट की सहायता से एक तस्वीर संलग्न करने के बारे में विस्तार से बताइए।

UNIT–III (इकाई–III)

6. What is Data type ? Explain data type available in MS-Excel.
डाटा–टाइप क्या होता है? एम.एस–एक्सेल में विभिन्न डाटा–टाइप के बारे में बताइए।

7. What are functions in Excel ? Explain some mathematical and statistical function available in Excel.
एक्सेल में फंक्शन क्या होते हैं? एक्सेल में उपलब्ध कुछ गणितीय एवं कुछ सांख्यिकीय फंक्शन के बारे में बताइए।

UNIT–IV (इकाई–IV)

8. What is Slide show ? Write the steps in preparing some simple slides of a slide show and then execute this show.
एम.एस.–पावरपॉइंट में स्लाइड कैसे दिखाई जाती है? एक साधारण स्लाइड शो में बहुत–सी स्लाइडें बनाने एवं फिर उनको दिखाने के बारे में विस्तार से लिखिए।

9. Explain in brief the use of sound and animation in Power-Point.
एम.एस.–पावरपॉइंट में ध्वनि और एनिमेशन का क्या महत्त्व है, संक्षेप में बताइए।

9. (a) Derive first and second order derivatives based on numerical differentiation. 8

(b) Given the following table :

x :	0	1	2	3	4
$(f)x$:	6.9897	7.4036	7.7815	8.1281	8.4510

Find Y'(2) and Y"(2) using Newton Gregory backward formula. 8

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BCA/D-12 **895**

COMPUTER ORIENTED NUMERICAL METHODS

Paper : BCA-113

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *five* questions in all, selecting *one* question from each Section. Q. No. 1 is compulsory.

(Compulsory Question)

1. Short answer type question :

(a) Define Absolute error and Relative error with example ? 2

(b) Locate the error and correct it in the following table, given the functional relation $y = x^3$:

x	1	2	3	4	5	6	7	8
$f(x)$	1	8	27	64	120	216	343	512

3

(c) Prove that relation between Δ (Del) and E (Shift operator) are

$$\Delta^3 = E^3 - 3E^2 + 3E - 1.$$ 3

(d) For integral $\int_0^4 (2 - x^2)dx$; explain Gaussian Quadrature formula for integration. 2

(e) Explain 4th order Runga Kutta method for solving a differential equation. 3

(f) Compute the determinant of the matrix using pivoting

$$\begin{bmatrix} 1 & 4 & -2 & 3 \\ 2 & 2 & 0 & 4 \\ 3 & 0 & -1 & 2 \\ 1 & 2 & 2 & -3 \end{bmatrix}$$ 3

UNIT–I

2. (a) Explain floating point representation and normalised floating point representation of real numbers. 8

(b) Use Regula Falsi method to obtain a real root upto three iterations for equation $x^3 + 7x^2 + 9 = 0$. 8

3. (a) Calculate the root of the equation $x^3 - 5x + 3 = 0$ starting with initial value $x_0 = 1.0$ with accuracy of 0.0001. 8

(b) Using Bairtow's method to find the Complex roots of

$f(x) = x^4 + x^3 + 2x^2 + x + 1 = 0$. 8

UNIT–II

4. (a) Using Gauss Elimination method, solve

$x + 3y + 8z = 4$

$x + 4y + 3z = -2$

$x + 3y + 4z = 1$. 8

(b) What are Ill conditioned equations ? How ill conditions are measured ? Explain with an example. 8

5. (a) Use Taylor's series expansion, find the appropriate polynomial and also range upto 4 decimal places for diffcrential equation

$$\frac{dy}{dx} = 0.1\left(x^3 + y^2\right);\ y(0) = 1.$$ 8

(b) Use Euler's method, solve

$\frac{dy}{dx} = \frac{x - y}{x + y}$; $y(0) = 1$ in the range

$0 \le x \le 0.1$ taking $h = 0.02$. 8

UNIT–III

6. (a) Given the following table, Find y(78)

x :	80	85	90	95	100
y :	5026	5674	6362	7088	7854.

8

(b) Use Newton's divided difference formula to find interpolating polynomial for the data

x :	0.0	0.5	1.0	2.0
y :	0.00	0.57	1.46	5.05.

8

7. (a) Find y, when $x = 25$ using Newton Gregory backward formula for

x :	16	18	20	22	24	26
y :	39	85	115	151	264	388.

8

(b) Using Langrang's formula, evaluate Y(0.9) for the data :

x :	0	1	2	4
y :	5	14	41	98.

8

UNIT–IV

8. Solve the integral $\int_0^1 \frac{dx}{1 + x^2}$ using

(a) Trapezoide rule

(b) Simpson's $\frac{1}{3}$rd rule

by considering 16 strips ? 8,8

Roll No. ..... Total Pages : 3

BCA/D-12 **896**

LOGICAL ORGANIZATION OF COMPUTER–I

Paper : BCA–114

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *five* questions in all. Select *one* question from each unit. Q. No. 1 is compulsory.

(Compulsory Question)

1. (a) Write the full form :

ASCII, EBCDIC, DRAM. 3

(b) Make Truth table for 3 variable AND, NOR gate. 3

(c) Prove that NAND is a universal gate. 3

(d) State & prove Demorgan's law. 3

(e) Make Venn diagram for OR, AND, NOR gates. 3

(f) Define Duality principle. 1

UNIT–I

2. (a) Convert as directed :

$(7.3)_{10} \rightarrow (\ )_2$

$(10.625)_{10} \rightarrow (\ )_8$

$(X)_5 \rightarrow (1234)_{10}$

$(AF3D) \rightarrow (\ )_2$

$(117.6C) \rightarrow$ Octal. 10

(b) Use 2's compliment to solve

–6	–42	–9
–8	+30	–4

6

3. (a) Explain Floating point representation. 8

(b) Write a note on 2421, cyclic code. 4

(c) Perform BCD addition for 9 + 6. 4

UNIT–II

4. (a) Define Boolean Algebra & write its postulates. 8

(b) Solve using Boolean Algebra :

$$XY + \bar{X}Z + YZ = XY + \bar{X}Z$$

$$ABC + A\bar{B}C + AB\bar{C} + A\bar{B}\bar{C} = A\,.$$ 4

(c) Solve Full Adder. 4

5. (a) Solve using K-map

$$Z = \Sigma 0, 2, 3, 7, 9 + \underset{\varphi}{\Sigma} 1, 4, 5, 11$$

$$Z = \pi\, 0, 2, 4, 6.$$ 8

(b) Prove using Truth table 4

$A \oplus (B \oplus C) = (A \oplus B) \oplus C.$

(c) Draw and label 4 variable K-map. 4

UNIT–III

6. (a) Define Logic and explain NAND, XOR, OR gates. 8

(b) Draw circuits

(i) $X = (\bar{A}B + A\bar{B})\,CD + \bar{X}\bar{Y}Z$

(ii) $P = (AB + \overline{AB})\,\overline{CD} + (\bar{A} + \bar{B})\,\bar{C}\bar{D}\,.$ 4

(c) Draw circuit for Half Adder. 4

7. (a) Write note on AND-OR-INERT using example. 8

(b) Explain Multilevel realization using NAND gates. 8

UNIT–IV

8. (a) Explain 4 : 1 multiplexer.

(b) Draw 10 to 4 Line Encoder. 16

9. (a) Explain 8421 to Cyclic code convertor.

(b) Make 7-segment display unit. 16

Roll No. .....

Total Pages : 3

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BCA/D-12

MATHEMATICAL FOUNDATION–I

Paper : BCA-115

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *five* questions in all, selecting *one* question from each section. Question No. 1 is compulsory.

(Compulsory Question)

1. (a) Differentiate x^x w.r.t x. 3

(b) Solve $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = 0$. 3

(c) Prove that ϕ is a subset of every set. 3

(d) Find the complement of each element of the lattice D_{30}. 3

(e) Write down all subset of $\{a, b, c\}$. 2

(f) Define Permutation and Combination. 2

SECTION–I

2. (a) Prove that $A - (B \cap C) = (A - B) \cup (A - C)$. 8

(b) Which of the following lattices are Boolean algebra ? 8

(i) D_{70}.

(ii) D_{30}.

(iii) D_6.

(iv) D_{210}.

3. (a) In how many ways can 5 boys and 5 girls be seated at a round table ? So that no two girls are set together. 8

(b) Find the numbers of arrangements that can be made out of the letters of the word "MATHEMATICS". In how many of these vowels occure together. 8

SECTION–II

4. (a) Show that $\lim_{x \to 0} \frac{e^{1/x}+1}{e^{1/x}-1}$ does not exist. 8

(b) If $x^y + y^x = 0$. Find $\frac{dy}{dx}$. 8

5. (a) If $x\sqrt{1+y} + y\sqrt{1+x} = 0$, $x \neq y$. Find $\frac{dy}{dx}$. 8

(b) Using $\varepsilon - \delta$ definition, prove that $|x|$ is a continuous function. 8

SECTION–III

6. (a) Find the differential equation of the system of circles touching y-axis at the origin. 8

(b) Solve $\cos^2 x \frac{dy}{dx} + y = \tan x$. 8

7. (a) Solve $(x^3 + 3xy^2)\, dx + (3x^2y + y^3)\, dy = 0$. 8

(b) Solve $(y \log x - 1)\, y\, dx = dy$. 8

SECTION–IV

8. (a) Solve $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} - 3y = x^2 \log x$. 8

(b) Solve $\frac{d^2y}{dx^2} + y = xe^x \sin x$. 8

9. (a) Solve $\frac{d^2y}{dx^2} + y = \operatorname{cosec} x$. 8

(b) Solve $\frac{d^2y}{dx^2} - 5\frac{dy}{dx} + 6y = xe^{4x}$. 8

7. Write a paragraph in about 150 words on any *one* of the following topics :

(i) Life in a Big City.

(ii) Fashions.

(iii) A College Library.

UNIT–IV

8. Write a letter to the Deputy Commissioner complaining against the misuse of public places of your area.

9. Write 20 dialogues between the Bank cashier and a customer regarding the genuineness of some currency notes.

Roll No. ..... Total Pages : 4

BCA/D-12 **898**

COMMUNICATION SKILLS (ENGLISH)

Paper : BCA-116

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *five* questions in all. Question No. 1 is compulsory. The remaining *four* questions are to be attempted selecting *one* from each unit. All questions carry equal marks.

(Compulsory Question)

1. Write brief answers :

(a) What does the writer mean by "Vast continent of ignorance" ?

(b) When did Patrov's grief start ?

(c) What is Asphalt ?

(d) Explain the expression, "Nightmares of examination".

(e) What is Rosy's expression about Macintosh ?

(f) Explain E-mail.

(g) What happened to Salim while running after the ball ?

(h) What had been the Verger's dream ?

UNIT–I

2. "The whole aim of our education is to strain the faculty of memory." Discuss with appropriate illustrations.

3. Write short answers of the following questions :

(a) Who was the person who changed the life of Dr. Holtz ?

(b) What does Rosy fear ?

(c) What type of life had Petrov lived ?

(d) What opinion does Major hold of England ?

(e) How can a teacher shape his pupils into good citizens ?

UNIT–II

4. Read the following passage and answer the questions given at the end :

Rebellion: I do not know when that rebellion will come, it might be in a week or in hundred years, but I know, as surely as I see this straw under my feet, that sooner or later, justice will be done. And above all, pass on this message of mine to those who come after you, so that future generations shall carry on the struggle until it is victorious.

Questions :

(a) What rebellion has here been referred to ?

(b) When will that rebellion come ?

(c) What does the speaker know for certain ?

(d) To whom should this message be passed on, and why ?

(e) How long does the speaker want the struggle to continue ?

5. (a) Explain Fax-message.

(b) Illustrate the advantages and disadvantages of E-mail.

(c) What are the essential points for composing text message ?

UNIT–III

6. (a) Fill in suitable article wherever necessary :

(i) Jolly is _____ M.A. M. Phil.

(ii) _____ French live in France.

(iii) Kalidas is _____ Shakespeare of India.

(iv) My brother is _____ union leader.

(b) Change the form of narration :

(i) He said,"I am going out now."

(ii) "Welcome home my dear", said my father.

(iii) The captain said to the soldiers, "Fire at the enemy at once."

(iv) The doctor said to the patient, "You will recover soon."

(c) Fill in the blanks with the correct form of the verbs given in brackets :

(i) Man _____ the only enemy we have. (be)

(ii) He generally _____ a white suit. (wear)

(iii) At 9,p.m last night, I _____ the television. (watch)

(iv) It _____ since six in the morning. (rain)

(d) Supply the correct prepositions wherever necessary :

(i) I shall meet him _____ tomorrow.

(ii) The enemy attacked _____ the fort.

(iii) She resembles _____ her mother.

(iv) Richa is suffering _____ fever.