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SCHOOL OF ENGINEERING AND TECHNOLOGY

END-SEMESTER EXAMINATION: DECEMBER 2019

(Academic Session: 2019 – 20, Semester Term: Aug 2019– Dec 2019)

Name of the Program: BCA	Semester: I
Stream: CSE	
PAPER TITLE: Introduction to Computing	PAPER CODE: ECS31101
Maximum Marks: 40	Time duration: 3 hours
Total No of questions: 9	Total No of Pages: 02

Answer all the Groups

Group A

(Answer all the questions)

$5 \times 1 = 5$

1.

a. Convert decimal number $(67)_{10}$ to its octal number.

b. Convert decimal $(17.35)_{10}$ to binary form.

c. Add two octal number $(72)_8 + (25)_8$.

d. Design a circuit diagram for the following expression: (A+B)` + C.D+ E.F`.

e. Covert the hexadecimal number $(1D7F)_{16}$ to a binary number.

Group B

(Answer any three questions)

$3 \times 5 = 15$

2. Write the difference between computer organization and computer architecture with diagram. Write the function of different specific registers used in a processor.
3. What is Instruction cycle? Explain the steps of instruction cycle with pictorial representation.
4. Demorganize the following function:
   a. [(AB)` + A` + AB]`
   b. [(A + B`) + (C +D`)]
5. Prove that NAND and NOR gate are universal gate.
6. Find the subtraction of 560 and 825 using 9`s and 10`s complement.

Group C

(Answer any two questions)

$2 \times 10 = 20$

7.

a. Explain the factor on which the performance of a computer depends.

b. Write an assembly language program to add three bit numbers stored in register HL, DE, BC and store the result in DE with minimum number of instruction.

c. What is cache memory? Where it is placed in computer system.

[4+4+2]

8.

a. How to intereonnect the different units of a computer?

b. Explain the different functions of operating system.

c. Explain program development life cycle.

[3+4+3]

9.

a. Explain the different forms of Boolean algebra.

b. Express the Boolean function as a product of maxterm(product of sum): XY+ X'Z

c. Write and explain the different laws of Boolean algebra.

[3+3+4]

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END-SEMESTER EXAMINATION: DECEMBER 2019

(Academic Session: 2019 – 20, Semester Term: Aug 2019– Dec 2019)

Name of the Program:BCA — Semester: I
Stream: CSE
PAPER TITLE:Programming & Data Structures — PAPER CODE:ECS31103
Maximum Marks: 40 — Time duration: 3 hours
Total No of questions: 09 — Total No of Pages: 02

Answer all the Groups

Group A

(Answer all the questions)

$5 \times 1 = 5$

1.

a) What is the utility of strcmp() function?
b) Write down two rules for naming identifiers.
c) What is LIFO data structure?
d) Define Union.
e) How can you access an array element?

Group B

(Answer any three questions)

$3 \times 5 = 15$

2. a) Differentiate between call by value and call by reference. Explain with pieces of C code.

b) How is a void pointer declared? What is its use in a C program?

3+(1+1)

3. a)Write a C program to find all roots of a quadratic equation.

b) Write an algorithm for traversing a linked list. 3+2

4. a) Differentiate between while and do while loop using suitable C code.

b) Write a C program to find the length of a string without using strlen(). 2+3

5. a) What is meant by one-way list?

b) Draw a schematic diagram of a linked list with six nodes. Explain.

c) What is a null list? 1+3+1

6. a) Write a C program to display the sum of natural numbers using Recursion

b) Explain 'Queue full' and 'Queue Empty' conditions for a circular queue using code for implementation.

3+2

Group C

(Answer any two questions)

$2 \times 10 = 20$

7. a) Write down the algorithm to convert the infix expression to postfix expression.

b) Define constant. What are its types in a C program?

c) Write a C program to copy the elements of an array into another array.

4+(1+2)+3

8.a) Differentiate between switch case and if else with suitable C code.

b)Define Union in C. Mention the advantages and disadvantages of union over structure in a C program.

c)What is a deque? How is it represented? Explain the two types of deque? 3+(1+1+1)+(1+1+2)

9. a)Write a C program to check whether triangle is valid or not if angles are given.

b)When are function declarations useful? Explain function declaration with a suitable code in C. 3+(2+5)

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END-SEMESTER EXAMINATION: DECEMBER 2019

(Academic Session: 2019 – 20, Semester Term: Aug 2019– Dec 2019)

Name of the Program: BCA
Stream: CSE
Semester: I

PAPER TITLE: Communication Skills
Maximum Marks: 40
Total No of questions: 9

PAPER CODE: HEN31121
Time duration: 3 hours
Total No of Pages:1

Answer all the Groups

Group A

(Answer all the questions)

$5 \times 1 = 5$

1. a) We .....to the theatre tonight. (fill in the blanks with proper verb form of go)
   b) Some friends..... to stay with us. (fill in the blanks with proper verb form of come)
   c) Who is .....best player in your team. (fill in the blanks with appropriate article)
   d) What is the longest river .....Europe? (fill in the blanks with appropriate preposition)
   e) Correct the sentence: The weather today the same as yesterday.

Group B

(Answer any three questions)

$5 \times 3 = 15$

2. Describe different formats of writing a report with examples.

3. Describe the etiquettes of writing an email.

4. What are the differences among biodata, curriculum vitae and resume?

5. What is a credit letter? Discuss different types of credit letters with examples.

6. What are the differences between a formal letter and a business letter?

Group C

(Answer any two questions)

$2 \times 10 = 20$

7. Suppose the District Collector, Jhunjhunu, is concerned about the rapid increase in the number of road accidents in Pilani. The Chairman, Municipal Corporation, Pilani, has been asked to submit a report investigating the causes and suggesting measures to improve the situation. Prepare an outline of the above report.

8. Write an email to the entire staff of your software company and wish them for Christmas and New Year in advance.

9. Write an application to the Head of the Department and request him/her to arrange extra classes for those students whose performance was not good in the mid-term examination.

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END-SEMESTER EXAMINATION: DECEMBER 2019

(Academic Session: 2019 - 20, Semester Term: Aug. 2019 - Dec 2019)

Name of the Program: BCA	Semester: I
Stream: CSE	
PAPER TITLE: Mathematics-I	PAPER CODE: SMA31141
Maximum Marks: 40	Time Duration: 3 Hours
Total No. of Questions: 9	Total No. of Pages: 2

Note:

1. Please follow all the instructions given on the cover page of the Answer Booklet Strictly.
2. Assumptions made if any, should be stated clearly at the beginning of your answer.
3. No Mobile Phones will be permitted in the Examination Hall.
4. The use of Non-programable calculator is permitted.

Answer all the Groups

Group A

Answer All The Questions: $5 \times 1 = 5$

1. (i)Find $A \triangle B$ where $A = \{1, 2, 3, 4, 5, 6\}$ and $B = \{1, 2, 4, 7, 8\}$. [1]

   (ii) Find the inverse of the matrix $A = \begin{pmatrix} -5 & -4 \\ 6 & 9 \end{pmatrix}$ [1]

   (iii) Evaluate $\int (e^{ax} + x^5) dx$. [1]

   (iv) Find the derivative of $\log 2x - \sin x$ w.r.t. x. [1]

   (v) Evaluate the remainder when $3x^4 - x^3 + 2x^2 - 2x - 1$ is divisible by $x - 3$. [1]

Group B

Answer Any Three Questions: $3 \times 5 = 15$

2. Solve the following linear system of equations by Cramer's rule: [3]

$$2x - y = 3$$
$$3y - 2z = 5$$
$$-x + 2z = -4$$

(b) Let $U = \{-1, -2, 0, 3, 5, 10, 12, 13, 16\}$ be universal set and $A = \{-2, 3, 5, 12\}$, $B = \{-1, -2, 0, 5, 12, 13\}$ be two subsets of U. Verify the De-morgan's Law $(A \cap B)^c = A^c \cup B^c$. [2]

3. A function $f(x)$ is defined as

$$f(x) = \begin{cases} x+1, & x > 1 \\ \frac{3}{2}, & x = 1 \\ x, & x < 1 \end{cases}$$

Examine whether the function is continuous at $x = \frac{1}{2}$ and $x = 1$. [5]

4. (a) Out of 250 consumers, 125 like tea, 100 like coffee and 25 like both. How many consumers like only tea? How many consumers like exactly one of tea and coffee? [1+1]

(b) A particle moving along a straight line describes x meters in t seconds, where $x = 40 + 9t - t^3$. Find the velocity and acceleration of the particle at the end of 12 seconds. [3]

5. a) Find $\frac{dy}{dx}$ if $x = a(2t + \sin 2t)$, $y = a(1 - cos2t)$ at $t = \frac{\pi}{4}$. [3]

(b) Using Venn-diagram prove that $A-(B \cup C) = (A-B) \cap (A-C)$. [2]

6. If $y = x \sin x$ then prove that $x^2 \frac{d^2y}{dx^2} - 2x\frac{dy}{dx} + (2+x^2)y = 0$. [5]

Group C

Answer Any Two Questions: $2 \times 10 = 20$

7. (a) Solve the following linear system of equations by matrix inversion method: [5]

$$\begin{aligned} x - 2y &= 3 \\ 3x + 4y - z &= -2 \\ 5x - 3z + 1 &= 0 \end{aligned}$$

(b) Solve the equation $x^4 - 7x^3 + 14x^2 - 2x - 12 = 0$ whose one root is $1 + \sqrt{3}$. [5]

8. (a) Solve the equation $2x^6 - x^5 + 6x^4 - 6x^2 + x - 2 = 0$ [6]

(b) Evaluate $\int_1^3 |2 - x| dx$. [4]

9. (a) Evaluate $\lim_{x \to 0} \frac{(4+x)^{\frac{3}{2}} - 8}{x}$ [3]

(b) Given

$$f(x) = \begin{cases} 2x + 6, & -3 \leq x \leq 0 \\ 6, & 0 < x < 2 \\ 2x - 6, & 2 \leq x \leq 5 \end{cases}$$

Evaluate $\lim_{x \to 0} f(x)$ and $\lim_{x \to 2} f(x)$. [4]

(c) Let $f : R \to R$ be given by $f(x) = x^2$. Is it bijective? [3]

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END-SEMESTER EXAMINATION: DECEMBER 2019

(Academic Session: 2019 – 20, Semester Term: Aug 2019– Dec 2019)

Name of the Program: BCA
Stream: CSE
Semester: I

PAPER TITLE: Environmental Science
PAPER CODE: SGY31111

Maximum Marks: 40
Time duration: 3 hours

Total No of questions: 09
Total No of Pages: 02

(Any other information required for the student may be mentioned here)

Answer all the Groups

Group A

(Answer all the questions)

5 × 1 = 5

1. **a)** What is acid rain?
   b) Why dissolved oxygen (DO) is considered as an important water quality parameter?
   c) Mention few disadvantages (at least two) of wind energy.
   d) Give examples for each: a. An inverted pyramid of number, b. An inverted pyramid of biomass
   e) What is an ecotone and why is it significant?

Group B

(Answer any three questions)

3 × 5 = 15

2. State the source and adverse effects of (i) nitrogen oxides and (ii) lead on the environment. (2.5+2.5=5)

3. Explain bioaccumulation and biomagnification with an appropriate example. (5)

4. Define BOD and COD. There are two samples of waste water. Sample-I has BOD 500 mg/L and COD 1800 mg/L whereas sample II has BOD and COD both 300 mg/L - comment on the two sample. Provide examples of some inorganic pollutants obtained in polluted water. (2+2+1=5)

5. Write a short note on Conservation of biodiversity. (5)

6. What is the difference between recycling and reuse? Discuss the advantages of recycling. (2+3=5)

Group C

(Answer any two questions)

$2 \times 10 = 20$

7. Discuss with an appropriate diagram the changes in dissolved oxygen content with time when wastewater is discharged from a point source into a lake. Oxygen sag curve, deoxygenation curve, reoxygenation curve, saturation DO and DO deficit should be marked appropriately in the same plot. What are the sources of mercury in water? Discuss the harmful effects of mercury. (6+2+2=10)

8. What is hazardous waste? Provide few examples. Discuss the methods of safe disposal of hazardous waste. (2+2+6=10)

9. Write notes on (i) ozone layer depletion and (ii) greenhouse effect. (5+5=10)

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END-SEMESTER EXAMINATION: DECEMBER 2019
(Academic Session: 2019 – 20, Semester Term: Aug 2019– Dec 2019)

Name of the Program:BCA **Semester: I**
Stream: CSE
PAPER TITLE: HSS1 **PAPER CODE:HEN41117**
Maximum Marks: 40 **Time duration: 3 hours**
Total No of questions: 10 **Total No of Pages:2**
(Any other information required for the student may be mentioned here)

Answer all the Groups
Group A
(Answer all the questions) 5x3=15

1.Fill in the blanks with appropriate prepositions (Write the complete sentences)

i)Is your brother _____home?
ii)There is no unity _____the leader.
iii)He is a man_____ humble origin.
iv)The village is 5 miles _____the highway.
v) He is _____to Mumbai.

2. Complete the following sentences using appropriate articles. In some cases, no articles are needed. (5)
i)I am _____university student. (Write the complete sentences)
ii)She goes to temple in _____mornings.
iii)Kiran is _____best student in the class.
iv)_____ Camel is the ship of the desert.
v)This book has won _____Booker prize.

3.Change the Voice of the following sentences:
i)Darjeeling grows tea.
ii)You need to clean your shoes properly.
iii)I gave the girl a book.
iv)He is said to be very rich.
v)James Watt discovered the energy of steam.

Group B

(Answer any three questions)

$3 \times 5 = 15$

4.Discuss the types of non-verbal communication.

5. Write a paragraph on the topic Growing pollution in our country.

6.Write a report stating the details of a seminar that you have recently attended.

7. 'Communication is a two-way process of exchanging ideas of information.'- Discuss.

Group C

(Answer any two questions)

2x5=10

8. Write the Summary of the passage given below.

As today's bride and groom celebrate their wedding, they have every excuse for being nervous. They exchange promises of lifelong fidelity and mutual support. However, all around them, they can see that many people do not and cannot keep these promises. Their own marriage has a one in three chance of divorce, if present tendencies continue. Traditional marriage is facing a crisis, at least in Britain. Not only are there more and more divorces, but the number of marriages is falling. Living together is more popular than before. The family is now no longer one man, one woman and their children. Instead, there are more and more families which include parents, half sisters and brothers, or even only one parent on her / his own. Although Britain is still conservative in its attitudes to marriage compared with other countries such as the USA, Sweden and Denmark, the future will probably see many more people living together before marriage - and more divorce. Interestingly, it is women rather than men who apply for divorce. Seven out of ten divorces are given to the wife. Also, one of the main reasons for divorce, chosen by ten times more women than men, is unreasonable or cruel behaviour. Perhaps this means that women will tolerate less than they used to.

9..Write an application to your Dean requesting for a study leave before the final examination of your college/university.

10. What are the types of listening? Discuss.