1BCATH01

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BCA-1

BCA First Semester Examination, 2022-23

First Paper

Mathematics-I

Time : 2 hours ***Max. Marks : 60***

Note : Attempt all questions. Section-A contains question no. 1 & 2 which are short answer type questions and carry 12 marks each. Section B contains question nos. 3 & 4 which are long answer type questions carrying 18 marks each.

SECTION – A

1. State Cayley-Hamilton theorem and hence find A^{-1}, if exists, where :

$$A=\begin{pmatrix} 2 & -1 & 1 \\ 0 & 2 & -1 \\ 0 & 0 & 2 \end{pmatrix}$$

OR

Define the order and degree of a differential equation. Further, find the general solution of the differential equation.

$$x\frac{dy}{dx}-y=2x^3\cos x$$

2. Evaluate :

$$\int_1^2 \frac{3x^2}{x^2+4x+3}\,dx$$

OR

Define continuity of a function in a domain and determine the values of 'a' and 'b' so that the function f : IR $\rightarrow$ IR defined by :

$$f(x)=\begin{cases} a+bx; & if\ x<1 \\ 2 \quad ; & if\ x=1 \\ b-ax; & if\ x>1 \end{cases}$$

is continuous at x = 1.

SECTION – B

Note : Attempt any two parts of each question in this section.

3. (a) State Lagrange's Mean Value Theorem and verify it for the function $f(x) = x^3 + 3$ in the interval [0, 3].

(b) Show that :

$$\begin{vmatrix} -a^2 & ab & ac \\ ba & -b^2 & bc \\ ca & cb & -c^2 \end{vmatrix} = 4a^2b^2c^2$$

(c) Determine the maximum value of $f(x) = \sin x (1 + \cos x)$ if exists.

4. (a) Evaluate :

$$\int \frac{1}{4 + 5\cos x}\, dx$$

(b) Solve :

$$x^2 dy + y(x + y)\, dx = 0$$

(c) State Euler's theorem for homogeneous functions and verify it for the function :

$$z = x^2 + 3x\sqrt{(x^2 + y^2)}$$

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BCA-3

BCA First Semester Examination, 2022-23

Third Paper

Basic Circuit Analysis

Time : 2 hours ***Max. Marks : 60***

Note : Attempt all questions. Section-A contains question no. 1 & 2 which are short answer type questions and carry 12 marks each. Section B contains question nos. 3 & 4 which are long answer type questions carrying 18 marks each.

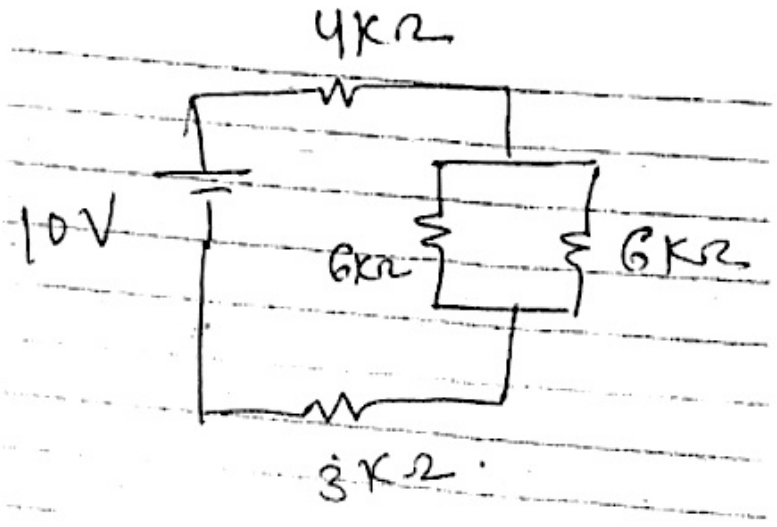
SECTION – A

1. (a) Discuss material properties that are required in electronic devices construction. 6

(b) Define electric current and power and mention their relation with electric voltage and change. 6

OR

Find out the voltages and power in different components in the circuit shown :



2. What is meant by inductive and capacitive reactance ? Discuss then relation with total reactance. 12

OR

Discuss the dependency of reactance on frequency with the help of neat diagram. 12

SECTION – B

3. (a) Discuss RTL, DTL and TTL logic families and compare their performance with each other. 9

(b) Differentiate between MOS and CMOS.

OR

(a) Discuss the effect of device parameters on circuit characteristics. 9

(b) Explain have simulation facilities electronic circuit design. 9

4. (a) Explain the working principle of induction type voltmeters. 9

(b) What is a voltmeter ? Why is it used ? Discuss its construction.

OR

(a) Discuss power measurement with the help of three voltmeter method. 9

(b) Explain have 20mA current can be measured with a 2mA meter having an interval resistance of 1KΩ. 9

BCA-4

BCA First Semester Examination, 2022-23

Fourth Paper

Fundamental of Programming

Time : 2 hours ***Max. Marks : 60***

Note : Attempt all questions. Section-A contains question no. 1 & 2 which are short answer type questions and carry 12 marks each. Section B contains question nos. 3 & 4 which are long answer type questions carrying 18 marks each.

SECTION – A

1. Answer the following question :

(a) What is debugging?

(b) What do you mean by 'Modifier' ?

(c) What is an nested loop?

(d) What is 'if., else., if ladder?

OR

What do you mean by data type in C? Discuss various data types with their storage limit.

2. Discuss bubble sorting technique. Write a 'C' language program to sort 15 integers using bubble sort.

OR

Draw flow chart and write code for calculating factorial of a given integer using recursive function.

SECTION – B

3. (a) How 'Switch' statement handles multi-way decision making? Explain using a suitable example.

(b) How double dimension arrays can be used to handle strings? Support your answer by inputting ten different names of cities and print them in ascending order.

OR

(a) What is passing parameters in C? Discuss the methods used in passing parameters.

(b) Write a function to calculate number of words in a given message.

4. Write short notes on the following :

(a) Flowchart

(b) String functions.

OR

(a) Command line arguments

(b) Unary Operators

BCA-5

BCA First Semester Examination, 2022-23

Fifth Paper

Communication Skills

Time : 2 hours ***Max. Marks : 60***

Note : Attempt all questions. Section-A contains question no. 1 & 2 which are short answer type questions and carry 12 marks each. Section B contains question nos. 3 & 4 which are long answer type questions carrying 18 marks each.

SECTION – A

1. (a) Discuss barriers to communication and how to overcome them. 12

OR

(b) What are the methods of effective oral, written and non-verbal communication ? Discuss.

2. (a) What is the difference between resume and CV ? Analyze with examples. 12

OR

(b) Examine the differences between verbal and non-verbal communication.

SECTION – B

3. (a) Prepare of CV projecting yourself fit for the position of a senior level software Developer position in an established IT Company. 18

OR

(b) Explain the ethical codes one must practice in the professional workplace.

4. (a) Write a business letter containing a set of demands for the latest hardware needed to set up a BPO/IT company. 18

OR

(b) Discuss the tools of communication used in the modern world/workplace. 18

BCA-6

BCA First Semester Examination, 2022-23

Sixth Paper

Business Systems

Time : 2 hours ***Max. Marks : 60***

Note : Attempt all questions. Section-A contains question no. 1 & 2 which are short answer type questions and carry 12 marks each. Section B contains question nos. 3 & 4 which are long answer type questions carrying 18 marks each.

SECTION – A

1. (a) What do you mean by MIS? What type of information is provided by MIS? 6

(b) Discuss the advantages of implementing an accounting system in business organization. 6

OR

(a) Define Information? What are the characteristics of good information? 6

(b) Discuss the different types of Applications where we can utilize Batch, Onlineand Real Time Processing. Explain with suitable examples. 6

2. (a) What is inventory control? Discuss the objectives of inventory control system. 6

(b) Distinguish between Data and Information. Give one example of data and information obtained by processing data. 6

OR

(a) What is Decision Support System? Discuss the different types of Decision Support Systems. 6

(b) Explain the difference between Transaction processing system and office automation system. 6

SECTION – B

3. (a) Explain Sequential File and Random File? Discuss the advantages and disadvantages of both types of file? 9

(b) What is a ERP ? Discuss the different modules which are handled by ERP in any business organization. 9

OR

(a) What are the advantages of report generation in any information system? Also list the important points to keep in mind while designing the format of a report. 9

(b) What is an information system explain the components of an information system in detail. 9

4. (a) Describe the various Levels of Management. Also discuss the functions of Management. 9

(b) What is Payroll System ? Explain the need of Computerized Payroll System. 9

OR

Write short notes on the following :

(a) SDLC

(b) Financial Accounting System

(c) Report Generation Techniques