

# **Asha M. Tarsadia Institute of Computer Science and Technology**

## **Uka Tarsadia University**

B.Tech. Computer Science and Engineering (CSE)/ B.Tech. CE (Software Engineering)/

B.Tech. CSE (Cloud Computing, Cyber security, Artificial Intelligence and Machine Learning)/B. Tech Computer Engineering/B. Tech Information Technology

### **Unit Test – 1**

**Subject Name: Digital Logic and Computer Design**

**Maximum Marks: 30**

**Date: 01/03/2023**

**Timing: 09:00 AM to 10:30 AM**

#### **General Instructions:**

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions

**Q-1 Answer the following in Brief (Any 1) (6)**

1  $(52)_{10} = (\dots)_2 = (\dots)_3 = (\dots)_5 = (\dots)_8 = (\dots)_{16} = (\dots)_{BCD}$

2  $(250.5)_{10} = (\dots)_2 = (\dots)_3 = (\dots)_4 = (\dots)_7 = (\dots)_8 = (\dots)_{16}$

**Q-2 Answer the following in Brief (Any 2) (12)**

1 Express the Boolean function in (1) Sum of min terms (2) product of max term

(a)  $F = A + B'C + AB'C'$  (b)  $F = XY + X'Z$

2 Make a dual & complement of

- (a)  $A'B + A'BC' + A'BCD + A'BC'D'E$   
(b)  $X'Y'Z + XY'Z' + XYZ + XYZ'$   
(c)  $X'Z + X'Y + XY'Z + YZ$

3 Reduce the expression  $f(a,b,c,d) = \sum m(0,1,2,3,5,7,8,9,10,12,13)$  using K-mapping and implement real minimal expression in AOI logic as well as in NAND logic

**Q-3 Answer the following in Brief (Any 2) (12)**

- 1 Design a half adder circuit.
- 2 Design a full subtractor circuit.
- 3 Design 4 bit binary to gray code converter

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Learning)/B. Tech Computer Engineering/B. Tech Information Technology

### Unit Test – 1

#### **Subject Name: Web Designing (IT3007)**

**Maximum Marks: 30**

**Date: 01/03/2023**

**Timing: 02:00 PM to 03.30 PM**

#### **General Instructions:**

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

**Q-1 Answer the following in brief. (Any 5) 10**

- 1 Write a short note on Internet.
- 2 Define the following terms:  
i. Internet      ii. Web
- 3 What is the use of HTTP? explain in detail.
- 4 Write a short note on web browser.
- 5 Explain different web design issues.
- 6 Write the tips of effective navigation in web page.

**Q-2 Answer the following in brief. (Any 5) 10**

- 1 Explain HTML tag with an HTML code snippet.

- 2 Write an HTML code for given table.

|       |     |
|-------|-----|
| Apple | 120 |
| Kiwi  | 50  |

- 3 Describe the following tags:  
i. <html>      ii. <u>
- 4 Write an HTML code for given form.

# HTML Form

**First name:**

(Enter your firstname)

**Last name:**

(Enter your lastname)

**Gender:**

Male  Female

**Mail ID:**

(Enter your mail id)

**Subjects**

- Web Development
- Maths
- DLD

**Submit**

- 5 Write a short note on front end and back end designing.
- 6 Explain HTML Skeleton with example.

Q3.

**Answer the following in brief. (Any 5)**

10

- 1 Explain various ways to apply CSS styles to a web page.
- 2 Explain box model in detail.
- 3 Write an HTML code for displaying the flexbox items as shown in given figure.



- 4 Explain the justify-content property of a grid layout
- 5 Write short note on media query.
- 6 Write a CSS code to set background image with non-repeating property.

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### Unit Test – 1

#### Subject Name: Calculus

Maximum Marks: 30

Date: 02/03/2023

Timing: 09:00 AM to 10:30 AM

#### General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

**Que-1 (A) Answer the following (Any 1) (02)**

- (1) Find the tangent line to the curve  $y = \sqrt{x}$  at  $x = 4$ .
- (2) Find  $\frac{dy}{dx}$  for the function  $\sin(x + y) = x - y$ .

**Que-1 (B) Answer the following (Any 1) (04)**

- (1) If  $y = (x + \sqrt{x^2 - 1})^m$  then prove that  $(x^2 - 1)y_2 + xy_1 = m^2y$ .
- (2) Find  $\frac{dy}{dx}$  for the function  $y = x^{\cos x}$ .

**Que-2 (A) Answer the following (Any 1) (02)**

- (1) Find  $f \circ f(x)$  and  $g \circ g(x)$  for  $f(x) = \sin(x)$  and  $g(x) = \cos(x)$ .
- (2) Find the average rate of change of the function  $P(\theta) = \theta^3 - 4\theta^2 + 5\theta$ ,  $\theta \in [1, 2]$ .

**Que-2 (B) Answer the following (Any 2) (10)**

(1) Let  $f(x) = \begin{cases} x, & 0 \leq x \leq 1 \\ 3-x, & 1 < x < 2 \end{cases}$ , find of the following

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| (a) $\lim_{x \rightarrow 1^-} f(x)$ | (b) $\lim_{x \rightarrow 1^+} f(x)$ |
| (c) $\lim_{x \rightarrow 1} f(x)$   | (d) $\lim_{x \rightarrow 0^+} f(x)$ |
| (e) $\lim_{x \rightarrow 2^-} f(x)$ |                                     |

(2) Define Function and draw the graph of  $f(x) = x^2 + 7$ ;  $x \in R$

(3) Write the five limit laws.

**Que-3 (A) Answer the following (Any 1)**

(02)

- (1) If  $1 - \frac{x^2}{4} \leq u(x) \leq 1 + \frac{x^2}{2}$  ;  $\forall x \neq 0$  then find  $\lim_{x \rightarrow 0} u(x)$ .  
(2) Check whether the function  $x^2 + y^2 = 1$  is implicit or Explicit.

**Que-3 (B) Answer the following (Any 2)**

(10)

- (1) Define: Continuous function and Prove that:  $\cosh^2 x - \sinh^2 x = 1$ .

(2) (i) Graphing the given functions for  $f(x) = \begin{cases} -x, & x < 0 \\ x^2, & 0 \leq x \leq 1 \\ 1, & x > 1 \end{cases}$ .

- (ii) Draw the graph for a function  $y = x^3$  ;  $x \in (-\infty, \infty)$ .

- (3) Show that the point (2,4) lies on the curve  $x^3 + y^3 - 9xy = 0$ . Then find tangent and normal to the curve.



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B.Tech. CSE (Cloud Computing, Cyber security, Artificial Intelligence and Machine  
Learning)/B.Tech Computer Engineering/B.Tech Information Technology

### **Unit Test – 1**

#### **Subject Name: Environmental Studies**

**Maximum Marks: 30**

**Date: 02/03/2023**

**Timing: 02:00 PM to 03.30PM**

#### **General Instructions:**

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

|            |   |           |
|------------|---|-----------|
| <b>Q-1</b> | <b>(A) Answer the following. (Any 2)</b>  | <b>08</b> |
|            | 1 Define Environment. Discuss any three multidisciplinary natures of it.                |           |
|            | 2 Discuss briefly on structure and functions of ecosystem.                              |           |
|            | 3 Brief on types and functions of forest ecosystem.                                     |           |
|            | <b>(B) Answer the Following. (Any 2)</b>  | <b>04</b> |
|            | 1 Define Environment Studies, Ecosystem   |           |
|            | 2 Enlist types of ecosystems.   |           |
|            | 3 Define: Food chain, Food web  |           |
| <b>Q-2</b> | <b>(A) Answer the following. (Any 1)</b>  | <b>03</b> |
|            | 1 Write short note on Land degradation.   |           |
|            | 2 Explain Wind Energy.  |           |
|            | <b>(B) Answer the following. (Any 1)</b>  | <b>05</b> |
|            | 1 Differentiate Renewable energy and Non-renewable energy.                              |           |
|            | 2 Discuss on water resources and explain causes of ground water depletion.              |           |
| <b>Q-3</b> | <b>Do as directed. (Any 2 )</b>   | <b>10</b> |
|            | 1 Write a detail note on Ozone Layer depletion.   |           |
|            | 2 In which year Wildlife Protection Act came into existence? Explain the act in detail. |           |
|            | 3 Briefly explain Montreal and Kyoto protocols.   |           |

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Learning)/B.Tech Computer Engineering/B. Tech Information Technology

### Unit Test – 1

#### **Subject Name: Programming with Python**

**Maximum Marks: 30**

**Date: 03/03/2023**

**Timing: 09:00 AM to 10:30AM**

#### **General Instructions:**

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

**Q-1 Answer the following in brief. (Any 5) 10**

1. Enlist any four keywords in Python with their usage.
2. What are mutable and non-mutable data types?
3. Define a nested tuple having a list as an element with Python syntax and write its length in number.
4. Describe the `is` and `is not` operator with example.
5. Show the use two tuple method `.count()` and `.index()`.
6. Describe following string methods each with an example:
  - i. `.upper()`
  - ii. `.lower()`
  - iii. `.find()`
  - iv. `.split()`

**Q-2 Do as directed. (Any 4) 20**

1. Describe following dictionary methods each with an example:
  - i. `.get()`
  - ii. `.clear()`
  - iii. `.keys()`
  - iv. `.values()`
  - v. `.items()`
2. Describe `for` loop and `while` loop in Python each with an example.
3. Explain the use `break`, `continue` and `pass` statements in a loop with example.
4. Explain the use of slice operator for accessing elements of a tuple.
5. Write a Python program that accept 5 elements from the user in list and returns the addition of those elements.

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## Unit Test - 2

# **Subject Name: Digital Logic and Computer Design**

**Maximum Marks: 30**

Date: 01/05/2023

**Timing: 09:00 AM to 10:30 AM**

### **General Instructions:**

1. Take appropriate assumptions whenever necessary.
  2. Figures on the right indicate full marks allocated to the questions
  3. Draw Diagrams/Figures with pencil/black ink pen only.
  4. Attempt all the questions

**Q-1** Answer the following in Brief (Any 1) (6)

- 1 Draw the positive level, negative level, positive edge and negative edge triggered timing diagram of JK flip-flop.
  - 2 Convert D flip-flop to T flip-flop.

**Q-2** Answer the following in Brief (Any 2) (12)

- 1 Draw and explain 4 bit universal shift register.
  - 2 Design Ring counter.
  - 3 Design of 3 bit synchronous Up counter using T flip-flop.

**Q-3** Answer the following in Brief (Any 2) (12)

- 1 Explain processor organization with necessary diagram.
  - 2 Explain status register in detail.
  - 3 Draw and explain processor unit with control variable.

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### **Unit Test – 2**

#### **Subject Name: Web Designing (IT3007)**

Maximum Marks: 30

Date: 01/05/2023

Timing: 02:00 PM to 03:30 PM

##### **General Instructions:**

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

|            |  |           |
|------------|--|-----------|
| <b>Q-1</b> | <b>Answer the following in brief.</b>  | <b>10</b> |
| 1          | Define Javascript.   | 2         |
|            | OR   |           |
| 1          | What is DOM?   | 2         |
| 2          | <b>Answer the following in brief. (Any 2)</b>  | <b>8</b>  |
| (i)        | Explain getElementsByName() DOM method with example.   |           |
| (ii)       | What is the use of popup boxes? Enlist types of popup boxes.                                   |           |
| (iii)      | Write JavaScript that takes three numbers as parameters, and returns the sum of those numbers. |           |
| <b>Q-2</b> | <b>Answer the following in brief.</b>  | <b>10</b> |
| 1          | Write down the full form of below image formats.   | 2         |
|            | JPEG, PNG, GIF   |           |
|            | OR   |           |
| 1          | Write an SVG code to write “Hello World” text with red color.                                  | 2         |
| 2          | <b>Answer the following in brief. (Any 2)</b>  | <b>8</b>  |

- (i) Write an SVG code to create a polygon shape with three sides. 10
- (ii) Define the term favicon. State the steps to create it. 10
- (iii) Describe different image sources. 10
- Q3.** Answer the following in brief. 10
- 1 How do you make images responsive? 2
- OR
- 1 Write usage of <small> and <mark> elements in Bootstrap with an example. 2
- 2 Answer the following in (any 2)** 8
- (i) Enlist different button size classes and show all button size with an example. 4
- (ii) What is Bootstrap CDN? Write advantages of using Bootstrap CDN. 4
- (iii) Explain typography list with an example. 4

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**Unit Test – 2**

**Subject Name: Calculus**

**Maximum Marks: 30**

**Date: 02/05/2023**

**Timing: 09:00 AM to 10:30 AM**

**General Instructions:**

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

**Que-1 (A) Answer the following (Any 1) (02)**

(1) Evaluate:  $\int \tan^2 x \cdot \sec^2 x \, dx$  by using substitution method.

(2) Evaluate:  $\int x \cdot \sin 3x \, dx$  by using Integration by parts method.

**Que-1 (B) Answer the following (Any 1) (04)**

(1) If  $\bar{f} = 2yx \hat{i} + (x^2 - y^2) \hat{j}$  and C is the curve  $y^2 = x$  of arc from (0,0) to (1,1) then find  $\int_C \bar{f} \cdot d\bar{r}$

(2) Find the directional derivative of  $\phi(x^2 + y^2 + z^2)^{-1/2}$  at (1, -2, 1) in the direction of  $\bar{a} = \hat{i} + \hat{j} + \hat{k}$ .

**Que-2 (A) Answer the following (Any 1) (02)**

(1) Show that  $\bar{A} = 3y^4z^2 \hat{i} + 4x^3z^2 \hat{j} - 3x^2y^2 \hat{k}$  is solenoidal.

(2) If  $f = x^2y + y^2x + z^2$  then find  $\nabla f$  at point (1, 0, -2).

**Que-2 (B) Answer the following (Any 2) (10)**

(1) Expand:  $e^x \cos y$  in power of  $(x - 1)$  and  $(y - \frac{\pi}{4})$ .

(2) Verify Euler's theorem for  $u = x^2yz - 4y^2z^2 + 2xy^3$ .

(3) Discuss the continuity of the function  $F(x, y) = \begin{cases} \frac{x^3 - y^3}{x^2 + y^2} ; & \text{when } x \neq 0, y \neq 0 \\ 0 ; & \text{when } x = 0, y = 0 \end{cases}$

**Que-3 (A) Answer the following (Any 1)**

(02)

(1) Find the degree of the homogeneous function  $u = \frac{x^2+y^2}{x+y}$ .

(2) If  $z = \sqrt{x} + \sqrt{y}$  then prove that  $x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} = \frac{1}{2} z$ .

**Que-3 (B) Answer the following (Any 2)**

(10)

(1) Solve:  $xy' + y = 0$  when  $y(2) = -2$  by using separable variable method.

(2) Solve:  $xdy - ydx = \sqrt{x^2 + y^2} dx$  by using Homogeneous differential equation method.

(3) Evaluate:  $\int_0^5 (x+1)dx$



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B.Tech. CSE (Cloud Computing, Cyber security, Artificial Intelligence and Machine  
Learning)/B.Tech Computer Engineering/B.Tech Information Technology

### Unit Test - 2

#### **Subject Name: Environmental Studies**

**Maximum Marks: 30**

**Date: 2/05/2023**

**Timing: 02:00 PM to 03:30 PM**

#### **General Instructions:**

- 1 Take appropriate assumptions whenever necessary.
- 2 Figures on the right indicate full marks allocated to the questions
- 3 Draw Diagrams/Figures with pencil/black ink pen only
- 4 Attempt all the questions

|            |  |           |
|------------|--|-----------|
| <b>Q-1</b> | <b>Answer the following in brief. (Any 3)</b>  | <b>09</b> |
| 1          | Enlist levels of bio-diversity. Explain genetic diversity                                  |           |
| 2          | Enlist different threats to bio-diversity. Explain habitat loss in detail                  |           |
| 3          | Explain different services of biodiversity.  |           |
| 4          | Explain conservation of bio-diversity.   |           |
| <b>Q-2</b> | <b>A Answer the following in brief. (Any 1)</b>  | <b>05</b> |
| 1          | Classify Air pollutants and give brief idea about air pollution.                           |           |
| 2          | Give details on Solid waste management.  |           |
| <b>B</b>   | <b>Answer the following in brief. (Any 2)</b>  | <b>04</b> |
| 1          | Explain Point and Non-Point source of water pollution.                                     |           |
| 2          | List out effects of nuclear hazard and E-waste.  |           |
| 3          | Enlist control methods for water and soil pollution  |           |
| <b>Q-3</b> | <b>Answer the following in brief. (Any 3)</b>  | <b>12</b> |
| 1          | Describe in detail about Chipko movement in India. Write the conclusions of that movement? |           |
| 2          | Give detail about disaster management in India with context to event like flood            |           |
| 3          | Explain in detail about Human Population Growth  |           |
| 4          | Give detail about Environmental Ethics   |           |
| 5          | Explain the role of religions in environmental conservation                                |           |

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B.Tech. CSE (Cloud Computing, Cyber security, Artificial Intelligence and Machine  
Learning)/B.Tech Computer Engineering/B.Tech Information Technology

### Unit Test – 2

#### **Subject Name: Programming with Python**

**Maximum Marks: 30**

**Date: 03/05/2023**

**Timing: 09:00 AM to 10:30AM**

#### **General Instructions:**

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only
4. Attempt all the questions.

|            |  |           |
|------------|--|-----------|
| <b>Q-1</b> | <b>Answer the following in brief. (Any 5)</b>  | <b>10</b> |
|            | 1 What is class and object with example.<br>2 Explain the function with example<br>3 Write a program to retrieve lines that starts with a and ends with n.<br>4 What is inheritance explain with an example?<br>5 Differentiate between 'w' and 'a' mode<br>6 Explain split () methods of regular expression with suitable examples.   |           |
| <b>Q-2</b> | <b>Do as directed. (Any 4)</b>   | <b>20</b> |
|            | 1 What is recursion? Write and explain a python program to find factorial of number using recursion.<br>2 Why does python require file handling? Explain opening files in python in all modes.<br>3 What are regular expressions? Describe question mark, star, plus and dot regex symbols with suitable python code snippet.<br>4 Explain polymorphism with an example. Explain method overriding and operator overloading with an example.<br>5 What is Exception Handling? List out and explain Built-in Exception. How to handle exceptions? |           |

# UKA TARSADIA UNIVERSITY

B.Tech (Computer Engineering)/B.Tech (Information Technology)/B.Tech CE (Software Engineering)/B.Tech CSE/B.Tech CSE (AI&ML)/B.Tech CSE (Cloud Computing)/B.Tech CSE (Cyber Security) ( Semester 2 )  
EC3002(2022-23)  
Digital Logic and Computer Design

Date :12/06/2023

Time :9:30AM- 12:30PM

Max. Marks:60

## Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

## SECTION - 1

### Q 1 Answer the following (Any 1)

[6]

- I) Convert,  $(250.5)_{10} = (\dots)_{10} = (\dots)_{16} = (\dots)_{10} = (\dots)_{4} = (\dots)_{3}$   
 $= (\dots)_{2} = (\dots)_{7}$
- II) Subtract the following numbers using r's and (r-1)'s complement method
  - (i) 745.81 - 436.62
  - (ii) 101001 - 011001

### Q 2 Answer the following in detail. (Any 2)

[12]

- I) Expand the boolean function  $F = A+BC'+ABD'+ABCD$ . And find out minterms and maxterms.
- II) Reduce the boolean function  $F = \sum m(0,1,3,4,5,6,7,13,15)$  using K-Map and implement the real minimal expression using NAND logic.
- III) State and prove the De-Morgan's theorem.

### Q 3 Answer the following in detail. (Any 2)

[12]

- I) Draw and explain 4 bit binary parallel subtractor.
- II) Draw and explain 2 bit magnitude comparator circuit.
- III) Implement the following function using  $8 \times 1$  MUX and  $4 \times 1$  MUX  
 $F(a,b,c) = \sum m(1,2,4,7)$

## SECTION - 2

### Q 4 Answer the following (Any 1)

[6]

- I) Draw and explain R-S flip flop.
- II) Convert D flip-flop to T flip-flop.

### Q 5 Answer the following in detail. (Any 2)

[12]

- I) Design 3-bit ripple up counter using Positive edge triggered JK flip-flop.
- II) Design 3 bit ripple down counter using Negative edge triggered T flipflop.
- III) Design MOD-10 synchronous counter using T flip-flop.

### Q 6 Answer the following in detail. (Any 2)

[12]

- I) Draw and explain block diagram of processor unit with control word.
- II) Draw and explain 4 - bit combinational logic shifter.
- III) Explain function table for the ALU.

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B.Tech (Computer Engineering)/B.Tech (Information Technology)/B.Tech CE (Software Engineering)/B.Tech CSE/B.Tech CSE (AI&ML)/B.Tech CSE (Cloud Computing)/B.Tech CSE (Cyber Security) ( Semester 2 )  
 IT3007(2022-23)  
 Web Designing

**Date :** 14/06/2023

**Time :** 9:30AM- 12:30PM  
**Max. Marks:** 60

**Instructions :**

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

## SECTION - 1

**Q 1 A)** Answer the following in brief. (Any 1) [2]

- I) State the task of <div> and <span> tag.
- II) What is the use of <form> tag?

**Q 1 B)** Answer the following in detail. (Any 2) [10]

- I) Write HTML code of following form:

**Student Name**

|       |      |
|-------|------|
| first | last |
|-------|------|

**Library ID**

|                     |
|---------------------|
| enter enrollment no |
|---------------------|

**Book Title**

|           |
|-----------|
| book name |
|-----------|

**Author Name**

|       |      |
|-------|------|
| first | last |
|-------|------|

Here is more information about the book I am requesting

|  |
|--|
|  |
|--|

**submit**

- II) Explain HTML skeleton with example.

- III) Describe the following tags:

- i. <html>
- ii. <ul>
- iii. <li>

**Q 2 A)** Answer the following in brief (Any 1) [2]

- I) Enlist application layer protocols.
- II) Enlist characteristics of HTML.

**Q 2 B)** Explain components of web browser using a suitable diagram. [4]

OR

**Q 2 B)** Describe anatomy of a web page.

**Q 3 A) Answer the following in brief. (Any 1)** [2]

- I) What is an ID selector in CSS ?
- II) What are style sheets?

**Q 3 B) Answer the following in detail. (Any 2)** [10]

- I) Design a form in a colorful way which include username, password and a hyper link which allows the user to navigate to another form.
- II) Explain the pseudo class selector in CSS with example.
- III) Explain various ways to embed CSS styles to a web page.

## SECTION - 2

**Q 4 A) Answer the following in brief. (Any 1)** [2]

- I) Define DOM.
- II) What is the use of typeof operator in JavaScript?

**Q 4 B) Answer the following in detail. (Any 2)** [10]

- I) Write a JavaScript to print "Good Morning" on DOM if user entered time is less than 12 o'clock else print "Good Day".
- II) Explain all datatypes used in javascript.
- III) Create a JavaScript code to validate the student registration form with required fields such as (Username, Email, Password, Contact).

**Q 5 Answer the following In Detail (Any 2)** [6]

- I) Write a SVG code to create circle shape.
- II) Describe different image sources.
- III) Define image optimization. State the general image optimization strategies.

**Q 6 A) Answer the following in brief. (Any 1)** [2]

- I) What is Bootstrap CDN? Write advantage of using Bootstrap CDN.
- II) Explain any four classes used in typography.

**Q 6 B) Answer the following in detail. (Any 2)** [10]

- I) Enlist and explain Bootstrap image shapes with an example.
- II) Write a program for making button active, disabled and block.
- III) Explain grid use in Bootstrap. Enlist Bootstrap grid classes.

# UKA TARSADIA UNIVERSITY

B.Tech (Computer Engineering)/B.Tech (Information Technology)/B.Tech CE (Software Engineering)/B.Tech CSE/B.Tech CSE (AI&ML)/B.Tech CSE (Cloud Computing)/B.Tech CSE (Cyber Security) ( Semester 2 )

IT3008(2022-23)

## Programming with Python

Date :16/06/2023

Time :9:30AM- 12:30PM

Max. Marks:60

### Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

### SECTION - 1

Q 1 Answer the following in detail. (Any 2)

[12]

- I) Write a python program to check whether the user-entered number is palindrome or not.
- II) Write a python program that finds a maximum of three user-entered numbers using a user-defined function named MAX().
- III) Explain for loop and while loop in python each with an appropriate example.

Q 2 Answer the following in detail. (Any 2)

[12]

- I) Write a python program to sort following list in ascending order:  
list = [25, 45, 56, 7, 69, 48, 68, 79, 114, 16]
- II) Enlist and describe any three in-built list methods of python.
- III) Write a python code that takes five integers from the user in the list and returns multiplication of integers to the user with an appropriate message.

Q 3 Answer the following in Detail (Any 2)

[6]

- I) List and define any two types of operator supported by python language.
- II) State and define data types in python.
- III) Enlist type of arguments in python.

### SECTION - 2

Q 4 Answer the following in detail. (Any 2)

[12]

- I) What is Inheritance? Explain each type of inheritance.
- II) Discuss destructors in python.
- III) Explain multithreading in python.

Q 5 Answer the following in detail. (Any 2)

[12]

- I) Describe exceptions and discuss their need in programming.
- II) Discuss the try-except statement for catching an exception with an example in python.
- III) Write a python program that matches a string that has an 'a' followed by anything and ends with 'b', using regular expression.

Q 6 Answer the following In Detail (Any 2)

[6]

- I) Write a Python program to take a character from the user and search that character in the file. If the character is present then print total occurrences of that character in the file or else display the message "No such character found".
- II) Enlist and describe any two in-built file methods in Python each with an example.
- III) What are different modes to open a file? List and define various modes.

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MT3024(2022-23)  
Calculus

Date :19/06/2023

Time :9:30AM- 12:30PM

Max. Marks:60

## Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

## SECTION - 1

Q 1 A) Answer the following in brief. (Any 1)

[2]

i) Find average rate of change of the function  $f(x) = x^3 - 4x^2 + 5x$  over the interval  $[1, 2]$ .

ii) Write Sandwich theorem.

Q 1 B) Answer the following in detail. (Any 2)

[10]

i) Find the limit for  $\lim_{x \rightarrow -1} \frac{x^3 - x^2 - 5x - 3}{(x+1)^2}$ .

ii) Define function and draw the graph of  $f(x) = x^2$ , where  $x \in R$ .

iii) Check  $f(x) = \begin{cases} 2x+3, & x < 1 \\ 5, & x = 1 \\ 3x+2, & x > 1 \end{cases}$  is continuous or not?

Q 2 Answer the following (Any 1)

[6]

i) If  $y = \cos^{-1}\left(\frac{3+5\cos x}{5+3\cos x}\right)$  than prove that  $\frac{dy}{dx} = \frac{4}{5+3\cos x}$ .

ii) Find Local Maximum and minimum value for  $f(x) = 3x^2 + 2x - 5$ .

Q 3 Answer the following (Any 3)

[12]

i) Evaluate:  $\int_0^{\pi} \frac{\sin x}{1+\cos^2 x} dx$ .

ii) Using Partial Fraction, evaluate  $\int \frac{(3x-1)}{(x-1)(x-2)(x-3)} dx$ .

iii) Find the integration with respect to  $x$ :  $\frac{3+2x}{3x-2}$ .

IV) Prove that:  $\int u.v \, dx = u \int v \, dx - \int \left( \frac{du}{dx} \int v \, dx \right) dx$ .

## SECTION - 2

Q 4 Answer the following (Any 3)

[12]

I) If  $z = f(x, y) = x^2 + y^2$  then prove that:  $\left( \frac{\partial z}{\partial x} - \frac{\partial z}{\partial y} \right)^2 = 4 \left( 1 - \frac{\partial z}{\partial x} - \frac{\partial z}{\partial y} \right)$

II) If  $u = \sin^{-1} \left( \frac{x}{y} \right) + \tan^{-1} \left( \frac{y}{x} \right)$  then find  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$

III) If  $u = \sin^{-1} \left( \frac{x^2+y^2}{x+y} \right)$  then prove that  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \tan u$

IV) Find The first order partial derivatives of the following functions

[1]  $z = \log(x+y)$

[2]  $w = 2r + \log s$

Q 5 Answer the following in Detail (Any 2)

[6]

I) Find  $\nabla \phi$  and  $|\nabla \phi|$  if,  $\phi = 2xz^4 - x^2y$  at  $(2, -2, -1)$ .

II) Find  $\nabla \times (\nabla \times \vec{A})$  if  $\vec{A} = x^2y \vec{i} - 2xz \vec{j} + 2yz \vec{k}$  at point  $(1, 0, 2)$ .

III) Prove that  $\int_C \vec{F} \cdot d\vec{r} = \frac{7}{12}$  along the parabola  $y^2 = x$  between the points

$(0, 0)$  and  $(1, 1)$ , where  $\vec{F} = x \vec{i} + xy \vec{j}$ .

Q 6 Answer the following (Any 3)

[12]

I) Find the general solution of the equation  $\frac{dy}{dx} = \frac{x+1}{y-2}$

II) Prove that  $\frac{d^2y}{dx^2} = 9y$ , when  $y = Ae^{3x} + Be^{-3x}$ .

III) Solve:  $5yy' + 3x = 0$

IV) Show that the function  $y = e^x + 1$  is a solution of the differential equation  $y'' - y' = 0$ .

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(Software Engineering)/B.Tech CSE/B.Tech CSE (AI&ML)/B.Tech CSE (Cloud Computing)/B.Tech CSE (Cyber Security) ( Semester 2 )

CV3003(2022-23)

## Environmental Studies

Date : 21/06/2023

Time : 9:30AM- 12:30PM

Max. Marks:60

### Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right Indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

### SECTION - 1

#### **Q 1 Answer the following (Any 1)**

[9]

- I) Explain causes and impacts due to mining and dam building on environment.
- II) Explain energy resources: renewable and non-renewable energy sources.

#### **Q 2 Answer the following (Any 1)**

[9]

- I) Describe in detail the two types of conservation of biodiversity: In-situ and Ex-situ.
- II) What is meant by India as a Mega Biodiversity Nation? Also, explain species diversity in detail.

#### **Q 3 Answer the following (Any 3)**

[12]

- I) Explain in brief about pond ecosystem.
- II) What is the function of ecosystem? Explain in brief.
- III) Write a brief note on concept of sustainability and sustainable development from environment point of view.
- IV) Listout any four multidisciplinary nature of environmental studies.

### SECTION - 2

#### **Q 4 A) Answer the following.**

[1]

- I) What are pollutants?

#### **Q 4 B) Answer the following in brief( Any two)**

[4]

- I) What are the causes of air pollution?
- II) Discuss the point and non-point sources of water pollution.
- III) Describe soil pollution and major soil pollutants.

#### **Q 4 C) Answer the following in detail( Any one)**

[4]

- I) Discuss nuclear hazard in brief.
- II) Describe pollution. Write difference between pollutants and pollution with examples in brief?

#### **Q 5 Answer the following (Any 1)**

[9]

- I) Explain environment laws in detail.
- II) Explain International agreements on environment in detail.

#### **Q 6 Answer the following in detail. (Any 2)**

[12]

- I) Describe human population growth: impacts on environment.
- II) Explain resettlement and rehabilitation of project affected persons.
- III) Explain disaster management in detail.