

## A3-R5 : PROGRAMMING AND PROBLEM SOLVING THROUGH PYTHON

अवधि : 03 घंटे

DURATION : 03 Hours

अधिकतम अंक : 100

MAXIMUM MARKS : 100

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| ओएमआर शीट सं. : |  |  |  |  |  |
| OMR Sheet No. : |  |  |  |  |  |

रोल नं. : 

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उत्तर-पुस्तिका सं. : 

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Answer Sheet No. : 

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परीक्षार्थी का नाम :

Name of Candidate :

परीक्षार्थी के हस्ताक्षर :

Signature of Candidate :

### परीक्षार्थियों के लिए निर्देश :

### Instructions for Candidate :

|                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                   |
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| कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यानपूर्वक पढ़ें।                                                                                                                                                                                                                 | Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.                                                                                                                                                                                                                                                              |
| प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है।                                                                                                                                                                                                                    | Question Paper is in English language. Candidate can answer in English language only.                                                                                                                                                                                                                                                             |
| इस मॉड्यूल/पेपर के दो भाग हैं। भाग एक में चार प्रश्न और भाग दो में पाँच प्रश्न हैं।                                                                                                                                                                                                                             | There are TWO PARTS in this Module/Paper. PART ONE contains FOUR questions and PART TWO contains FIVE questions.                                                                                                                                                                                                                                  |
| भाग एक "वैकल्पिक" प्रकार का है जिसके कुल अंक 40 हैं तथा भाग दो "व्यक्तिपरक" प्रकार का है और इसके कुल अंक 60 हैं।                                                                                                                                                                                                | PART ONE is Objective type and carries 40 Marks. PART TWO is Subjective type and carries 60 Marks.                                                                                                                                                                                                                                                |
| भाग एक के उत्तर, ओएमआर उत्तर-पुस्तिका पर ही दिये जाने हैं। भाग दो की उत्तर-पुस्तिका में भाग एक के उत्तर नहीं दिये जाने चाहिए।                                                                                                                                                                                   | PART ONE is to be answered in the OMR ANSWER SHEET only. PART ONE is NOT to be answered in the answer book for PART TWO.                                                                                                                                                                                                                          |
| भाग एक के लिए अधिकतम समय सीमा एक घण्टा निर्धारित की गई है। भाग दो की उत्तर-पुस्तिका, भाग एक की उत्तर-पुस्तिका जमा कराने के पश्चात् दी जाएगी। तथापि, निर्धारित एक घंटे से पहले भाग एक पूरा करने वाले परीक्षार्थी भाग एक की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, भाग दो की उत्तर-पुस्तिका ले सकते हैं। | Maximum time allotted for PART ONE is ONE HOUR. Answer book for PART TWO will be supplied at the table when the Answer Sheet for PART ONE is returned. However, Candidates who complete PART ONE earlier than one hour, can collect the answer book for PART TWO immediately after handing over the Answer Sheet for PART ONE to the Invigilator. |
| परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना और अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल/कमरा नहीं छोड़ सकते हैं। ऐसा नहीं करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।                                                                                       | Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his/her Answer Sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.                                                                                                        |
| प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात् एवं उत्तर लिखना आरम्भ करने से पहले उम्मीदवार जाँच कर यह सुनिश्चित कर लें कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।                                                                                                                                 | After receiving the instruction to open the booklet and before starting to answer the questions, the candidate should ensure that the Question Booklet is complete in all respect.                                                                                                                                                                |

जब तक आपसे कहा न जाए, तब तक प्रश्न-पुस्तिका न खोलें।

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

## PART ONE

(Answer all the questions)

1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein.

(1x10)

- 1.1 Which of these is not a core data type ?

- (A) Lists
- (B) Dictionary
- (C) Tuples
- (D) Class

- 1.2 What data type is the object below ?

L = [1, 23, 'hello', 1]

- (A) List
- (B) Dictionary
- (C) Tuple
- (D) Array

- 1.3 Which of the following function convert a string to a float in python ?

- (A) int(x [,base])
- (B) long(x [,base])
- (C) float(x)
- (D) str(x)

- 1.4 What is the output of the following program ?

```
def myfunc(a):
```

```
    a = a + 2
```

```
    a = a * 2
```

```
    return a
```

```
    print myfunc(2)
```

- (A) 8
- (B) 16
- (C) Indentation Error
- (D) Runtime Error

- 1.5 What is the output of the expression ?

3\*1\*\*3

- (A) 27
- (B) 9
- (C) 3
- (D) 1

- 1.6 What is the output of the following program ?

```
i = 0
```

```
while i < 3:
```

```
    print i
```

```
    i += 1
```

```
else:
```

```
    print 0
```

- (A) 0 1 2 3 0
- (B) 0 1 2 0
- (C) 0 1 2
- (D) Error

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1.7 What is the output of the following program ?</p> <pre>print "Hello World"[::-1]</pre> <p>(A) dlroWolleH<br/>(B) Hello Worl<br/>(C) d<br/>(D) Error</p> <p>1.8 Given a function that does not return any value, what value is shown when executed at the shell ?</p> <p>(A) int<br/>(B) bool<br/>(C) void<br/>(D) None</p> <p>1.9 What is the output of the following program ?</p> <pre>print 0.1 + 0.2 == 0.3</pre> <p>(A) True<br/>(B) False<br/>(C) Machine dependent<br/>(D) Error</p> <p>1.10 Given a string s = "Welcome", which of the following code is incorrect ?</p> <p>(A) print s[0]<br/>(B) print s.lower()<br/>(C) s[1] = 'r'<br/>(D) print s.strip()</p> | <p>2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)</p> <p>2.1 There is no default return value for a function that does not return any value explicitly.</p> <p>2.2 Function name and parameter list are part of function header.</p> <p>2.3 Brackets enclose the input parameters or arguments of a function.</p> <p>2.4 Define keywords marks the beginning of the function block.</p> <p>2.5 Python is case sensitive when dealing with identifiers.</p> <p>2.6 There is no maximum possible length of an identifier in Python.</p> <p>2.7 1st_string is a valid identifier name.</p> <p>2.8 Python has no concept of private variables.</p> <p>2.9 eval is a keyword in Python.</p> <p>2.10 All keywords in Python are in lowercase.</p> |
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3. Match words and phrases in column X with the closest related meaning/word(s) /phrase(s) in column Y. Enter your selection in the “OMR” answer sheet supplied with the question paper, following instructions therein. (1x10)

| X    |                                                         | Y |            |
|------|---------------------------------------------------------|---|------------|
| 3.1  | To take input from the keyboard                         | A | Numpy      |
| 3.2  | Convert a string value to int                           | B | Get 1      |
| 3.3  | Evaluate the value of a string                          | C | tell()     |
| 3.4  | The operator used for concatenating two strings         | D | write()    |
| 3.5  | Statement used for error checking                       | E | Eval 2     |
| 3.6  | The function used to find power of a number             | F | Tuple      |
| 3.7  | Array processing package                                | G | pow()      |
| 3.8  | Immutable object                                        | H | +          |
| 3.9  | Key value pair                                          | I | Decryption |
| 3.10 | The operator used to calculate remainder after division | J | Assert     |
|      |                                                         | K | Queue      |
|      |                                                         | L | Dictionary |
|      |                                                         | M | //         |

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the “OMR” answer sheet supplied with the question paper, following instructions therein. (1x10)

|   |          |   |       |   |            |
|---|----------|---|-------|---|------------|
| A | *        | B | Range | C | Dictionary |
| D | open     | E | input | F | Random     |
| G | Module   | H | eval  | I | list       |
| J | Convert  | K | int   | L | tuples     |
| M | Continue |   |       |   |            |

- 4.1 The \_\_\_\_\_ command is used to take input from the keyboard.
- 4.2 The \_\_\_\_\_ function is used to convert a string value to int.
- 4.3 The function used to evaluate the value of a string is \_\_\_\_\_.
- 4.4 The \_\_\_\_\_ function takes the parameter filename and the mode during file processing.
- 4.5 List structure in python where elements are stored in \_\_\_\_\_ parenthesis.
- 4.6 The \_\_\_\_\_ statement lets the program go through the piece of code without performing any action.
- 4.7 \_\_\_\_\_ operator repeats a list for the given number of items.
- 4.8 \_\_\_\_\_ is a set of functions you want to include in your application.
- 4.9 The structure having keys and values is called \_\_\_\_\_.
- 4.10 The \_\_\_\_\_ function generates a sequence of numbers from 1 to n.

## PART TWO

(Answer any FOUR questions)

5. (a) Consider a 3 digit decimal number. Draw a flow chart to print its digits in reverse order. The input is to be taken by user.

(b) Convert decimal no 365.27 to binary number.

(c) Draw a flow chart to evaluate the series of  $\sin(x)$  upto 5 terms and print the output value for  $x = 3$ .  
(5+5+5 )

6. (a) Write a recursive function to find the factorial of a number.

(b) Write a program to check Armstrong numbers in a certain interval.

(c) Write a program to check if the input number is odd or even.  
(5+5+5 )

7. Differentiate between the following :

(a) `readline()` and `readlines()`

(b) `tell()` and `seek()`

(c) Indexing and Slicing (5+5+5 )

8. (a) Write complete syntax of following functions and explain their functioning.

(i) `rstrip()`

(ii) `split()`

(iii) `isalpha()`

(iv) `pow()`

(b) Write a program code to open a data file. Save element values 2, 4, 9, 10, 11 in this data file and print these data values by accessing the file. (8+7)

9. (a) Write a Python program to get the smallest number from a list.

(b) Write a NumPy program to convert a Python dictionary to a Numpyndarray. (6+9)

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SPACE FOR ROUGH WORK

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SPACE FOR ROUGH WORK