10126

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Reg. No.:_____ Name:_____

FIRST SEMESTER B.TECH DEGREE EXAMINATION, JANUARY 2016

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each question carries 4 marks (40 Marks)

1. a) Name any 3 optical input devices.
   b) Name the different I/O ports used in a computer.
   c) Define system software with an example. (1 each)
2. Write notes on buses. (3)
3. Draw the flowchart to find out the greatest of three numbers. (2)
4. Differentiate between top down and bottom up problem solving strategies. (2)
5. Write an algorithm to compute sum of the series $1 - \frac{x^2}{2} + \frac{x^4}{4} - \frac{x^6}{6} + \cdots \ldots \ldots \ldots n$ terms. (2)
6. a) Which of the following is a valid variable name in Python? (i) 12xyz (ii) break (iii) A_123 (iv) A?B?C
   b) Evaluate the expression x**y**z given x=2,y=3,z=2 .
   c) Predict the output of following code:

```
for i in range(10,-1,-2):
print i
```

   (1 each)
7. Write a Python program to find the sum of all even terms in a group of n numbers entered by the user. (3)
8. Show how you will use the cosine() and log() functions in your program with the help of an example. (2)
9. What will be the output of this program? Briefly explain the working of this code. (2)

```
def check(x,y):
if y==0:
print 'error'
return
else:
return x/y
a,b=10,5
print check (a,b)
```

10. Write a Python program to compute the nth fibonacci number. Use a recursive function for the implementation. (2)
11. Let fruit='apples' be a string. What will be the output of the following expressions: (2)
    i) len(s1) (ii) s1[0:4] (iii) s1[6] (iv) s1[-4]
12. Let Data represent the list ['circle','square','triangle']. Write the expressions for following operations: (3)

i) Replace the value 'circle' with 'ellipse'
ii) Add a new value 'rectangle' top end of list
iii) Remove the values 'square' and 'triangle' from list.

13. Let farm={'Sheep':5,'Cows':2,'Goats':10} be a dictionary. Write the statements for following operations. (3)
i) To add the key value pair ('Ducks':8)
ii) To display the number of items in the dictionary.
iii) To remove the key value pair ('Cows':2)
14. Write the syntax for opening a file in Python. Give one example. (2)
15. What do you mean by pickling in Python? Explain its significance with the help of an example. (3)
16. When does an exception occur during program execution? How are exceptions handled in Python? Explain with examples. (3)

PART B

Answer any 4 complete questions each having 8 marks

17. (a) Draw and explain the instruction execution cycle in a computer. (4)
(b) Write notes on OMR, MICR, and OCR devices. (4)

18. Give the algorithm and flowchart for finding the largest and smallest numbers in a given list of N numbers. (8)

19. (a) Differentiate between break and continue statements with proper examples. (3)
(b) Write a Python program to display all Armstrong numbers in a given range. (5)

20. (a) Write a Python program to count the number of zeros and negative terms in a given set of n numbers. (4)
(b) Write a Python program to find the sum of digits of a number using functions(preferably a recursive function). (4)

21. (a) Why do we need functions? What are the advantages of using a function? (3)
(b) Write a Python program to simulate a menu driven calculator with addition, subtraction, multiplication, division and exponentiation operations. Use a separate function to implement each operation. (5)

Answer any 2 complete questions each having 14 marks

22. (a) What do you mean by mutability of a data structure? Explain with the help examples, why we say that lists are mutable while tuples are immutable. (3)
(b) Write a Python program to count number of vowels, consonants, words and questionmarks in a given string. (6)
(c) Write a Python program to input a list of n numbers. Calculate and display the average of numbers. Also display the cube of each value in the list. (5)
23. (a) Write a Python program to create a dictionary of roll numbers and names of 5 students. Display the contents of dictionary in alphabetical order of names. (7)

(b) Write a Python program to create a text file and to input a line of text to it. Display the line of text with all punctuation marks removed. (7)

24. (a) Define the terms class, attribute, method and instance with the help of an example. (4)
(b) Create a class Car with attributes Model, year and price and a method cost() for displaying price. Create two instances of the class and call the method for each instance. (5)
(c) Write a Python program to create a file containing 10 numbers. Read the contents of the file and display the square of each number. (5)

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10128

Reg. No.:_____ Name: _____

FIRST SEMESTER B.TECH DEGREE EXAMINATION, JUNE 2016

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions

1. Differentiate features of RAM and ROM (3)
2. Describe Instruction cycle and its steps. (3)
3. Write the algorithm for finding largest among set of N numbers (2)
4. What is the purpose of flow charts in problem solving? Describe symbols used in flow chart (2)
5. Draw the flow chart for finding whether the given number is odd or even (2)
6.
```
for count in range(100):
print count
```
Convert the above code to equivalent while loop (3)
7. Write a python code to print the following pattern

```
1
2  3
4  5  6
```
(3)
8. Write a function to find the sum of numbers between a lower bound and upper bound (2)
9. Illustrate with suitable example Type conversion and Type coercion (2)
10. List the advantages of using functions in program (2)
11. Write a Python code to check whether two strings are equal or not (2)
12. Describe the Dictionary methods with example (3)
13. Write a Python code to search an element in a list (3)
14. Why exception handling is required in programming? (2)
15. Differentiate Shallow equality and Deep equality (3)
16. List the advantage of using pickling in python. Also state the usage of dump method with suitable examples (3)

PART B

Answer any 4 complete questions each having 8 marks

17. a)Describe the memory hierarchy in terms of cost, speed and storage (5)

b) What are the translator softwares used for converting a program written in a high-level language to object code? How are they different from each other? (3)

18. Write the algorithm and flow chart to find the sum of digits of a number (8)
19. Explain the difference between definite Iteration and indefinite(infinite) iteration. Give example programs for illustrating each type (8)
20. a) Write a program to generate Fibonacci series upto a limit (4)
    b) What is recursion? Write a recursive function to find the factorial of a number. (4)
21. Write a Python program using function to check the type of a triangle (Scalene, Isosceles, Equilateral) by getting the vertices from the user. (8)

Answer any 2 complete questions each having 14 marks

22. a)Write a Python code to add two matrices using list (8)
    b)Write a Python program to reverse a string and print whether its palindrome or not. (6)
23. a) A book shop details contains the Title of book and Number of copies of each title. As books are added to shop the number of copies in each should increase and as books are sold the number of copies in each should decrease. Implement this scenario using Dictionary data type in Python (7)
    b) Describe the use of try-except method in Python with suitable illustration. (7)
24. a) Write a python code to read a text file ,copy the contents to another file after removing the blank lines (8)
    b) Write notes on Class, Attributes and Instances with suitable examples for each. (6)

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10129

Reg. No.:_____ Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE SPECIAL EXAMINATION, SEPTEMBER 2016

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions

1. Von Neumann Architecture uses Stored Program concept. What do you infer from this statement? (3)
2. Which are the parameters used for rating the performance of a computer? (3)
3. Draw a flowchart to find given number is odd or even. (2)
4. List the symbols used in flowchart and describe where each one is used. (2)
5. Write an algorithm to display even numbers in reverse order starting from 50 to 0. (2)
6. Give the syntax for if statement in python. Explain how alternative execution and chained conditionals performed in python with examples. (3)
7. Given,

   a=6

   b=7

   c=42

   Evaluate the following expressions

   Print 1, not a==7 and b==7

   Print 2, not(a==7 and b==6)

   Print 3, not a==7 and b==6 (3)
8. Which of the following is *not* a reason to use a function in your program? Justify your answer.
   a) To break a program into pieces that make sense
   b) To make your program run faster
   c) To produce code that will perform the same action many times but with different values each time
   d) To place repeated code in one place so it can be reused (2)
9. What is the difference between type conversion and coercion in Python? Give an example for each. (2)

10. Write a program to calculate *nCr* with a function for finding out factorial.

    [Note: - nCr=n!/r!*(n-r)!] (2)

11. What are the different ways in which we can delete an item from a list? Explain with examples. (2)

12. Consider the following code snippet:

```
one = "This a test!"
one[2] = "u"
print one
```

What error will the above code produce? Why is the error caused? Write the Python code which will work around this issue and print the string "Thus a test!" as output. (3)

13. Assume that the variable *data* refers to the dictionary {"b":34,"a":67}. Write the expressions that perform the following tasks

    a) Replace the value at key "b" with negation of the value.

    b) Add key:value pair "c":56 to *data***.**

    c) Remove the value at key "a" in *data***.** (3)

14. The following code sequence fails with a traceback when user enters a file that does not exist. How would you avoid the traceback and make it so you could print out your own error message when a bad file name was entered?

```
fname = raw_input('Enter the file name: ')
fhand = open(fname)
```

    Justify your answer. (2)

15. Compare class and object. Generate a class to represent a rectangle. (3)

16. What is pickling? How does it aid in putting values into a file? Also, what happens when the "load" method is invoked? (3)

PART B

Answer any 4 complete questions each having 8 marks

17. a) Describe the memory hierarchy of a computer with the help of a diagram (3)

    b) Write notes on internal memory. (5)

18. Design an algorithm and flowchart to generate 0,1,1,2,3,5,8,13,21,34…..

19. Write a program to generate all prime numbers in a given range.

20. a) Write a python program to find the roots of a quadratic equation. (4)

    b) Define recursion with an example function. (4)

21. a) List the advantages of using functions. (3)

b) Write a Python program to calculate the area of a circle, given the centre and a point on the perimeter. Use a function to find radius as the distance between two points. (5)

Answer any 2 complete questions each having 14 marks

22. a) With examples explain the built-in methods used for list operations. (7)

b) Create a dictionary named 'stock'. Add the following elements to stock and perform the following operations.

pencil - 400, pen - 1000, eraser- 200,

ink -50

i. Print stock.

ii. Delete ink and print stock.

iii. Explain keys and key- value pairs find the number of key-value pairs and identify the keys. (7)

23. a) Write a program to replace a substring with a new substring in the given string. (7)

b) Write a program that reads a file and writes out a new file with the lines in reversed order.(7)

24. a) Write a function that gets input from the user and handles the Value Error exception. Describe how exceptions are handled in Python (8)

b) Create a class Student with attributes name and roll no. and a method dataprint() for displaying the same. Create two instances of the class and call the method for each instance. (6)

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Reg.No:…… Name:……

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION, JANUARY 2017

Course Code**: BE101-05**

Course Name**: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING**

Max.Marks:100 Duration: 3 Hours

PART A

(Answer all questions)

1. List any three CPU registers and give the purpose of each one. (3)
2. List out the different types of buses used in a computer system. (2)
3. Differentiate between system software and application software. (2)
4. Draw the flowchart to generate the numbers between 100 and 200 which are divisible by 3, but not divisible by 4. (2)
5. Write an algorithm to count the number of digits in a positive integer. (2)
6. Pretend you are a python interpreter. Evaluate each of the expressions given below. Write down the value they evaluate to, and the type of that value.

   (i) len(range(4,5)) (ii)”a”+”b”*2 (iii) 4**(3.0/2) (3)
7. Write a python program to find the sum of all odd terms in a group of n numbers entered by the user. (3)
8. Illustrate the concept of modules in Python with a typical example. List out the names of some commonly used modules. (3)
9. Write the output of this program. Briefly explain the working of this code. (2)

```
def proc(x):
    x=2*x*x
def main():
    x=10
main
proc(x)
print x
```

10. Let s=’orange’ be a string.What will be the output of the following expressions.
    (i) (a) s[0:4] (b) s[6] (c) s[-4] (d) s[-3:]
    (ii) You are given a string, for instance, ‘How are you’. Split the string on to a " " (space) delimiter and join using a – (hyphen) delimiter. (final output of the given example will be ‘How-are-you’)
    (3)

11. Compare tuple and List on the basis of mutability. Give example to illustrate this. (3)
12. Distinguish between object identity and structural equivalence. (2)
13. Let student = {'John':50,'Tom':60, 'Nina':82} be a dictionary. Discuss the output obtained after executing the following statements:

```
newstudent = student
newstudent['Tom'] = 45
print newstudent
print student
```

(3)

14. List out the different modes in which a file can be opened in Python. (2)
15. Differentiate between syntax error and runtime error with example. (2)
16. What do you mean by pickling in python? Explain its significance with the help of example. (3)

PART B

(Answer any 4 complete questions, each having 8 marks)

17. (a) Draw and explain instruction execution cycle in a computer (4)
    (b) Write notes on OMR, MICR, and OCR devices (4)
18. Give the algorithm and draw flowchart for generating Armstrong number between the given ranges. (Armstrong number is a number ***n*** such that sum of cubes of the digits of ***n*** is equal to ***n***) (8)
19. (a) Illustrate the usage of break and continue statements with proper examples. (3)
    (b) Write a program to find the quadrant of a given point (x,y). (5)
20. (a) Write a program that reads an integer N from the keyboard and then calls a user defined function to compute and displays the sum of the numbers from N to (2*N) if N is nonnegative. If N is negative, then displays the sum of the numbers from (2*N) to N.The starting and ending points are included in the sum. (4)
    (b)Write a program to compute the sum of first n positive integers using a recursive function. (4)
21. (a) List the advantages of using functions. (3)
    (b) Write a menu driven program to calculate area of circle, triangle, rectangle and square. Use a separate function to implement each operation. (5)

(Answer any two questions each having 14 marks)

22. (a) Write a program to check if a given string is a palindrome or not, without reversing the original string. (7)

    (b) Write a python program to create a dictionary of phone numbers and names of five persons. Display the contents of the dictionary in alphabetical order of names. (7)

23. (a) Write a python code to find transpose of a matrix using list. (4)

    (b) Describe how exceptions are handled in python with suitable illustration. (10)

24. (a) Define the terms class,attribute,method and instance with the help of an example. (4)

    (b) Create a class person with attributes Name, age, salary and a method display() for showing the details. Create two instances of the class and call the method for each instance. (5)

    (c) Write a python program that opens a file for input and prints the count of four letter words in it. (5)

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Reg. No._____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION, JULY 2017

Course Code**: BE101-05**

Course Name**: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING**

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions.

1. What are the objectives of operating system? (2)
2. What is the significance of cache memory? (2)
3. Differentiate between assemblers, compilers and interpreters. (3)
4. Write an algorithm to find the sum of first 'n' odd numbers, for a given positive integer n. (2)
5. What are the advantages of top-down design? (2)
6. Draw the flowchart to generate the first 'n' numbers in the Fibonacci sequence. (3)
7. Write the output produced by the following code. (2)

   a. for count in range(10,0,-2) :
      print(count, end=" ")

   b. Print 4 + 2 * * 3 * 6
8. Write a Python code that prints the absolute value of a given number without using Python's **abs** function. (2)
9. Write a program to find the roots of a quadratic equation. (3)
10. Write a function in Python to print a newline. (2)
11. What are the advantages of using functions? (2)
12. Write two functions isdigit(), which returns True if the character passed is a digit and isletter(), which returns True if the character passed is a letter. (3)
13. Write a program to remove all vowels from a given string. (3)
14. Is the compound type tuple in Python is mutable? Write a Python script to interchange 2 variables using tuple. (3)
15. Write a function exists() which returns True if the given file exists and False if it does not. (3)
16. What is meant by pickling in python? Explain its significance with the help of example. (3)

PART B

Answer any 4 complete questions, each having 8 marks.

17. a) Describe the Von-Neumann architecture. (4)

    b) Explain the memory hierarchy used in the computer storage with a diagram. (4)

18. Design an algorithm that accepts a positive integer 'n' and print all prime numbers up to 'n'. Also draw the flowchart. (8)

19. a) Write a python program to find the sum of digits of a given positive integer. (4)

    b) Write a program to print the following pattern

    1

    2 3

    4 5 6 (4)

20. a) Write a program using function to display a multiplication table of n*n size, for any given 'n'. (5)

    b) Compare the built-in functions int() and str() with examples. (3)

21. a) Write a program using function to find the binomial coefficient, ${}^{n}C_{r}$. (4)

    [Note: ${}^{n}C_{r} = n! / r!*(n-r)!$]

    b) Write a program that accepts the length of three sides of a triangle as input and determine whether or not the triangle is a right triangle. (4)

PART C

Answer any 2 complete questions, each having 14 marks.

22. a) Write a program to perform the following operations on a given string. (7)

    i. convert all small letters in a string into capital letters.

    ii. find the number of occurrences of a given substring.

    b) How to create a Dictionary in Python? Write a Python program to read and display a sparse matrix using dictionary. (7)

23. a) Write a program to read numbers stored in one file and store the sorted numbers in another file after deleting duplicates. (7)

    b) Create a class 'Rectangle' with attributes length and breadth and method area() for calculating the area of the rectangle. Create two instances of the class and call the method for each instance (7)

24. a) Write a program to sort a list of names in alphabetical order and print the sorted list in uppercase. (7)

    b) How exceptions are handled in Python? Illustrate with example. (7)

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Total Pages: 2

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions.

		Marks
1	What is the purpose of a translator? Explain the different types of translators.	(3)
2	Write an algorithm for finding the largest and smallest of N numbers.	(3)
3	What do you mean by cache memory?	(2)
4	Draw the flowchart for finding the sum of all even numbers between 1 and N	(3)
5	Identify all the invalid variable names from the following. Also give the reason (i) 2sum (ii) _sum@ (iii) for (iv) fori	(2)
6	What will be the output of the following expressions in python i) 2*3**2 ii) 2**3**2	(2)
7	Write a python function that will accept three arguments x , y and z. Find x+y and if the sum is greater than z, return the square root of (x^2+y^2). Otherwise return -1	(3)
8	What is the difference between type conversion and type coercion? Explain with example.	(3)
9	What will be the output of the following code **for** number **in** range(30,20,-2): number = number + 5 print number	(3)
10	Suppose S="*mary had a little lamb*". Write the python code to i) Replace "*lamb"* with "*kid"* ii) Find starting index of substring "*had"* in the string S .	(2)
11	Let data=[23,56,67,2,[6,7,12],123]. Write the expressions for following operations in Python: i) Replace the value 67 with 89 ii) Print the value 12. iii) Remove the value 56 from list.	(3)
12	Let t=('a','b','c',1,2,3). Write a python code to print the values in reverse order.	(2)
13	How can you create a fresh copy of a dictionary? Explain with example.	(2)
14	What is the advantage of using pickling? Explain the "dump" and "load" methods associated with it.	(3)
15	Explain with example the difference between read() and readline() functions associated with files in python.	(2)
16	Describe the different modes used for file operations.	(2)

PART B

Answer any four full questions, each carries 8 marks.

17 a) What are the different types of RAM? Give brief explanation. (4)

b) Design an algorithm for generating the following series (4)
(1, 3, 4, 7, 11, ...)

18 a) Explain the instruction cycle of a CPU with a neat diagram. (4)

b) Draw a flowchart for finding sum of the digits of a number, N. (4)

19 a) Describe recursion with one example. (4)

b) What is a system software? Explain its uses with examples. (4)

20 Write a python program to find the sum of cosine series ($1-x^2/2!+x^4/4!-x^6/6!$…….N terms). Use a function *fact* to find the factorial of a number. (8)

21 a) Write a Python program to calculate the hypotenuse of a right-angled triangle. (2)

b) Explain the logical operators in python with example? (3)

c) Write Python code to check whether a number is prime or not. (3)

PART C

Answer any two full questions, each carries 14 marks.

22 a) Write a python program to input a sentence and find the number of words in the sentence and print each word in uppercase. Also print the number of question marks (?), periods(.) and commas(,) present in the string. (7)

b) Write a Python program to input a list of n numbers. Calculate and display the sum of cubes of each value in the list. (5)

c) What are the operations associated with a list? Explain with examples. (2)

23 a) What is the difference between a list and a tuple? (3)

b) Describe the exceptions in python with examples. (4)

c) Explain the data structure, dictionary in Python using an example. How does the Dictionary operations- “del” , “len” , “keys ”, “items” and “has_key” operations work. Explain with examples. (7)

24 a) Write a Python program to read numbers from a file named, *num.txt.* Write all positive numbers from *num.txt* to file named *positive.txt* and all negative numbers to another file named *negative.txt*. (7)

b) Explain the terms class, object and attributes. Create a class Employee with attributes name, age and salary. Write a method *printdetails()* for displaying the same. Create two instances of the class and call the method for each instance. (7)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions. Marks

1	List any four input devices used with computer.	(2)
2	How is compiler different from interpreter?	(3)
3	Differentiate between assembly language and high-level languages.	(3)
4	Write an algorithm to find the largest among three numbers.	(3)
5	Which are the symbols used in flow chart?	(3)
6	What is a keyword? Give two examples.	(2)
7	Which of the following are not valid identifiers in Python? Justify your answer. i)num_1 ii)2nd_large iii) num1 iv)attendance%	(2)
8	Let x = 2**4/8/2 is an expression in Python. What will be the value of x?	(2)
9	Differentiate between input() and raw_input() functions.	(2)
10	Write a Python function to find the area of a circle.	(2)
11	Differentiate between type conversion and coercion.	(2)
12	str1 =”Jython” str1[0] = “P” Is there any error in this Python code? Justify your answer.	(2)
13	Differentiate between tuple and list.	(3)
14	What is the support provided by Python to handle exceptions?	(3)
15	What is pickling? Illustrate with example.	(3)
16	Define a class Mobile to store the details of a mobile (company, model & price) with the following methods: i) set_details() - to set the values to the data attributes ii) display_details() - to display the data attribute values. Create an object of the class and invoke the methods.	(3)

PART B

Answer any four full questions, each carries 8 marks.

17	a)	Draw and explain the Von Neumann and Harvard architecture.	(6)
	b)	Differentiate between ROM and RAM.	(2)
18	a)	Draw and explain instruction execution cycle.	(4)
	b)	Write any four functions of a typical operating system?	(4)
19	a)	Draw a flow chart to find the sum of digits of a number.	(4)
	b)	What is top-down design approach? How does it help in solving a problem?	(4)
20	a)	Write a Python program to find the sum of even numbers from N given numbers.	(4)
	b)	What is the significance of break and continue statements? Explain with proper examples.	(4)

21 a) Write a Python function is_prime(n) , which returns True if the number n is prime and returns False if the number n is not prime. Use the is_prime() function to generate first N prime numbers. (6)

b) What is recursion? (2)

PART C

Answer any two full questions, each carries 14 marks.

22 a) Write a Python function to generate first N Fibonacci numbers and return as a list. (7)

b) Explain any three methods of Dictionary type and write a Python program to display the frequency of each word in a string. Use Dictionary to store the word-frequency pairs. (7)

23 Write a menu driven program to store the student details (rollno, name, and mark) of a class as a list tuples. The menu has the following options: (14)

i) add – to add the details of a student

ii) remove – to remove the details of a student by giving rollno

iii) search – to search the details of a student by giving rollno and to display it

iv) max – to display the details of the student with highest mark.

24 a) Write a Python program to read two matrices from two files, find the sum and display the resultant matrix. Assume that the first line of the input file represents the order of the matrix in a comma separated format and the remaining lines represent the rows of the matrix in a comma separated format. (12)

b) Differentiate between read() and readlines() methods of file. (2)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION, JULY 2018

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 2 or 3 marks Marks

1		List any four applications of computer.	(2)
2		Differentiate between assemblers, compilers and interpreters.	(3)
3		Defineoperating system. List any two functions of OS.	(2)
4		Write an algorithm to check whether the given year is leap year or not.	(2)
5		Describe the basic symbols used in flow chart.	(2)
6		Explain Top-Down approach in problem solving.	(3)
7		What do you mean by identifier? What are the rules for identifiers?	(3)
8		Explain different category of range () with example.	(2)
9		Write a program to print the pattern. 1 1 0 1 0 1 1 0 1 0	(2)
10		Explain type conversion and coercion with suitable example.	(2)
11		With an example, explain function with default argument.	(2)
12		Write a Python program to find the sum of series: $[1+x+x^2/2!+x^3/3!+x^4/4!+\ldots\ldots]$. Use a user defined function to find factorial.	(3)
13		Discuss packing and unpacking in python tuple with example.	(3)
14		Write a Python program to traverse a string in reverse order.	(3)
15		What is the need for self-variable in python class attribute?	(3)
16		What are the different file operations used in python?	(3)

PART B

Answer any four full questions, each carries 8 marks

17	a)	Describe Von-Neumann architecture with a neat sketch.	(5)
	b)	List different type of CPU registers.	(3)
18		Write analgorithm and draw the flow chart for finding the roots of a quadratic equation.	(8)
19	a)	Write a Python program to read a number and print the number in words. (Hint:1230=>One Two Three Zero)	(5)
	b)	Explain any three operators and expressions in Python with suitable examples.	(3)
20	a)	Write a Python program to print prime numbers in a given range.	(4)
	b)	List the advantages and disadvantages of recursion.	(4)

21 a) Write a Python program to read the value of n and r and find nCr (n!/(r!*(n-r)!)). Use a user defined function to find factorial. (5)

b) Write a Python program to find the sum of first n natural numbers using recursion. (3)

PART C

Answer any two full questions, each carries 14 marks

22 a) Write a Python program to read two matrices from console, perform addition and display the resultant matrix. Use list data type for matrix operation. (8)

b) Describe any four string methods in python with example. (4)

c) Discuss the different tuple methods in python with example. (2)

23 a) Create a dictionary of acc.no and balance of n account holders from console. As amount is deposited, the balance should increase and as amount is withdrawn the balance should decrease. Write a program using dictionary datatype in python for the above. (8)

b) Explain exception handling in python with example. (6)

24 a) Illustrate the need of pickling in python with suitable example. (6)

b) Create a class "student" having name, age, roll no, mark of three subjects and total mark as attributes and read (), calculate () and display () as methods. Write a Python program to read details of a student, find total mark and display the details. (8)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions. Marks

1 Differentiate between digital computers and analog computers. (3)

2 What is high level language? Give four examples. (3)

3 Explain the concept of top down design for solving a problem. (3)

4 Write an algorithm to check whether a number is odd or even. (3)

5 Differentiate between int () and round() functions in python (3)

6 Write a Python program to compute the sum 1+1/2+1/3+…+1/n. Display the result in float with 2 decimal positions. (3)

7 Write the output of the following program fragment. (2)

```
def check(x,y):
    if y==0:
        print "error"
        return
    else:
        return(x/y)
a,b=2,4
print check(a,b)
```

8 Explain type coercion with an example (2)

9 Write an user define function in Python to print a newline. (2)

10 What will be the output of the given code? (2)

```
>>>str="*"
>>>list=["hello","world"]
>>>print(str.join(list))
```

11 Let fruits = {'apple':5,'orange':2,'banana':10}. Write the python expressions for the following operations: (3)

i. To add the key value pair ('mango':8)

ii. To display the number of items in the dictionary

iii. To remove the key value pair ('orange':2)

12 'Lists are mutable while tuples are immutable' Justify the statement. (3)

13 Write the output of the following print statements in python.

```
>>>f=open(test.txt,"w")                                    (2)
>>>f.write("Apples\nMangoes\nGrapes")
>>>f.close()
>>>f=open(test.txt,"r")
>>>print  f.readline()
>>> print  f.readlines()
```

14 Explain the use of dump() and load() methods in python. (3)

15 Predict the output of statement1 and statement2

```
class ABC:
        A=10
        def  fun():
                A=5
                print A
Obj=ABC()
print A          //statement1
Obj.fun()        //statement2
```

PART B

Answer any four full questions, each carries 8 marks.

16 What is memory hierarchy? Explain with a neat diagram. Compare in terms of speed, cost and storage. (8)

17 Give an algorithm and flow chart to find the largest among N numbers (8)

18 Write a Python program to print the odd composite numbers between m and n, where m and n are positive integers greater than 1. (8)

19 Write a menu driven Python program to input a number and implement the following operations. Use separate functions to implement each operation. (8)

i) check whether the number is odd or even

ii) check whether the number is positive, negative or zero

iii) generate factors of the number

20 What is recursion? Write a python program to calculate nPr. Use a recursive function fact() to find the factorial of a number.[nPr=n!/ (n-r)!] (8)

PART C

Answer any two full questions, each carries 14 marks.

21 a) Write a Python program to input a string and perform the following operations.

i. Reverse the string without using reverse() function.

ii. Check for a substring in the string

iii. Find all the occurrences of a particular character in the string and print the indices at which the character appears. (7)

b) Write a python program to store a line of text to a file. Read the file and display only the palindrome words in the file. (7)

22 a) What is a dictionary? With an example explain any five dictionary operations in python. (7)

b) Define a class in Python to store the details of students (rollNumber, Mark1, Mark2), with the following methods: (7)

readData()- to assign values to class attributes

computeTotal() – find the total marks

print_details()- to display the attribute values and the total marks

Create an object of the class and invoke the methods.

23 a) Write a Python program to read two matrices and perform matrix addition. (7)

b) What are the basic file operations and operating modes in Python? Explain. (7)

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries2 or 3 marks.

		Marks
1	Differentiate system software and application software.	(3)
2	Give the roles of PC, IR and MAR.	(3)
3	What are the properties of a good algorithm?	(3)
4	Draw a flowchart to find area of a triangle.	(3)
5	Write the syntax of chained conditional statement. Explain with an example.	(3)

6	Give the output for the following program segment:
	for c in "PYTHON":
	print (c)
	else:
	print ("Done")
	What will be the output if print (c) is followed by a break statement in the for loop?
		(3)

7	Write a Python program using function to convert an integer to a string.	(3)
8	How will you use sqrt() and log() functions in your program. Explain with an example.	(3)
9	Write a program to check if the word 'orange' is present in the string "This is orange juice".	(2)
10	For the dictionary given below, identify the key-value pairs. Also give the Python statements to print keys and values of the dictionary separately. Dict=['name':'john','age':25,'salary': 28000]	(3)
11	Consider the list scores = [5, 4, 7, 3, 6, 2, 1] and write the Python code to perform the following operations: i) Insert an element 9 at the beginning of the list. ii) Insert an element 8 at the index position 3 of the list. iii) Delete an element at the index position 4.	(3)
12	Predict the output. Justify your answer A=20 B=0 C=A/B print C	(2)
13	Explain any three inbuilt exceptions.	(3)

14 Differentiate between shallow equality and deep equality. (3)

PART B

Answer any four full questions, each carries8 marks.

15 What is a bus? Give the different types of buses. With a diagram show the interaction between CPU, memory and peripheral devices. (8)

16 Formulate an algorithm and draw a flowchart to generate Fibonacci series upto n terms (8)

17 Using compound Boolean expression write a Python program to print the numbers which are divisible by 7 and multiples of 5 between m and n where m and n are positive integers. (8)

18 What is recursion? Write a python program to calculate nCr. Use a recursive function *fact( )* to find the factorial of a number.[nCr=n!/(r! x (n-r)!)] (8)

19 Write a Python program to print the following output: (8)

```
*
* *
* * *
* *
*
```

PART C

Answer any two full questions, each carries14 marks.

20 a) Write a menu driven Python program to read a string and perform the following string operations:

(i) Slice the string to two separate strings; one with all the characters in the odd indices and one with all characters in even indices.

(ii) Replace all the spaces in the input string with * or if no spaces found, put $ at the start and end of the string. (7)

b) Explain any four file functions in Python with example. (4)

Explain how runtime errors are handled in python. (3)

21 a) Explain any three dictionary operations in Python. Give examples.

Write a Python program to create a dictionary of roll numbers and names of five students. Display the names in the dictionary in alphabetical order. (7)

b) Write a Python program to read a number and check for prime. If not, raise an arithmetic error to display as not prime. (7)

22 a) Write a Python program to read a list consisting of integers, floating point numbers and strings. Separate them into different lists depending on the data (7)

type.

b) Write a Python program to read a text file and display all the palindromes in the file. (7)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries2 or 3 marks.

		Marks
1	What is cache memory?	(3)
2	What is a bus? What are the functions of system and expansion buses?	(3)
3	What is an algorithm? Give the basic properties of an algorithm.	(3)
4	Draw a flowchart to find the factorial of a number.	(3)

5	Write the output for the following program segment:
	
	for i in range(2,8,1):
	
	if i==5:
	
	continue
	
	print (i, end)
	
	print "Done"
	
	What will be the output if continue statement is replaced with a break statement?
		(2)

6	Give the output for the following expression evaluation in Python: (i) -4**2 (ii) 2**3**2 (iii) 45%0	(3)
7	Write a Python code using function to find the quadrant of a given point (x, y)	(3)
8	Write a Python function to find the sum of all even numbers in a set of n numbers, entered by the user.	(3)
9	What will be the output of the given code? >>>values = "Apple, orange, grapes" >>>list = values.split(",") >>>print("list:", list)	(2)
10	Write a Python program to reverse the first half and second half of an even lengthed string separately. (Eg: if the string is "gooddays output should be "doogsyad")	(3)
11	Write a Python program to remove the characters at odd index positions in a string.	(3)
12	What is pickling? How is it implemented in Python?	(3)
13	Let r1 and r2 be the objects of the class rank. Give the output of the following code: >>> r1=rank()	(3)

```
>>> r1.a=44

>>> r1.b=22

>>> r2 = r1

>>> r1 is r2
```

14 Write a function to check the existence of a file. (3)

PART B

Answer any four full questions, each carries8 marks.

15 a) What is an operating system? Explain any three types of OS? (5)

b) What are the key features of an interpreter? (3)

16 Give an algorithm and flowchart to generate prime numbers in a given range. (8)

17 Write a Python program to find the largest and second largest of n numbers. Assume n>=3 and all the numbers are distinct. No sorting algorithm should be used. (8)

18 Define a Python function *digit()* to extract the digits of a number. Use the function to accept a number from the user and display it only if all its digits are even. (8)

19 a) Write a Python program to print the following pattern.

```
5 4 3 2 1

4 3 2 1

3 2 1

2 1

1
```

(5)

b) With an example explain *while…else* construct in Python. (3)

PART C

Answer any two full questions, each carries14 marks.

20 a) Write a Python program to read a matrix and find the sum of each row and each column. (7)

b) Write a Python program to input a list of 'n' numbers. Calculate the cube of each number and store it in a file. (7)

21 a) What is a dictionary? Explain any five dictionary operations with examples. (7)

b) Write a Python program to create a text file. Read the contents of the file, encrypt every character in the file with a distance of 3 and write it to a new file. (7)

Eg. **yak** encrypted as **bdn**

22 a) Write a Python program to read a list of positive integers and separate the prime and composite numbers into two separate lists. (7)

b) Define a class in Python to store the details of *book (title, author, cost)*, with the following methods:

i) *get_details()*- to assign values to class attributes
ii) *print_details()*- to display the attribute values (7)

Create an object of the class and invoke the methods.

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech degree examinations (S), September 2020 (S1/S2 - 2015 Scheme)

Course Code: BE101-05

Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 2 or 3 marks. Marks

1 Differentiate data bus, address bus and control bus. (3)

2 What is the role of translators in computers? Give examples. (3)

3 Give the various flowchart symbols and their use. (3)

4 Write an algorithm for swapping two integers. (3)

5 What are Boolean expressions? Give example Boolean statements in Python and its output. (3)

6 What will be the output of the following program segment? (3)

```
i=5
while i<0:
    print i
    i = 1
else:
    print "Sorry"
```

7 What are the advantages of using functions? (3)

8 Write a python function to read the sides of a triangle a, b and calculate the hypotenuse using the formula $\sqrt{(a^2 + b^2)}$. (3)

9 Let str='String operations in python'. What will be the output of the following expressions: (2)

i. str[: -2] ii. str[:] iii. str[10 :] iv. str[-6 : -2]

10 Write a Python program to read a string and use appropriate string operation to print the string 20 times in a line with no space. Do not use any iterative statement. (3)

11 Write a Python program to read a string and find the number of vowels and consonants in the string. (3)

12 Let *r1* and *r2* be the objects of the class *rank*. Give the output of the following code.

```
>>> r1=rank()
>>> r1.a=44
>>> r1.b=22
>>> r2=rank()
>>> r2.a=44
>>> r2.b=22
>>> r1 is r2
```

(3)

13 What is pickling? Give example. (3)

14 List the different file operating modes in Python? (2)

PART B

Answer any four full questions, each carries 8 marks.

15 a) What are secondary storage devices? Explain any two. (5)

b) Give the functions of accumulator, IR and MBR. (3)

16 Formulate an algorithm and draw a flowchart to solve a quadratic equation. (8)

17 Using 'while', write a Python program to print the multiplication table of n, 2<=n<=10. Replace the 'while' statement with an equivalent 'for' statement to get the same output. (8)

18 Write a Python function to compute the power of a number. Use the function to compute the sum of the series ($1- x^2/2 + x^4/4 - x^6/6+$.....n terms). (8)

19 a) What are the functions of an operating system? (3)

b) Write a Python function to find GCD (greatest common divisor) of two numbers. (5)

PART C

Answer any two full questions, each carries 14 marks.

20 a) Write a Python program to find the transpose of a matrix using list. (7)

b) Write a Python program to read numbers stored in a file and separate the even and odd numbers to two files named Even.txt and Odd.txt respectively. Display both the files. (7)

21 a) Create a dictionary with *items* and *number of units* of each item available in the stock. Write a Python program to show the stock updation as and when the units of the existing items are added or deleted. (7)

b) Explain the concepts of classes, attributes and methods in Python, with suitable examples. (7)

22 a) Write a Python program to create a list of strings. Separate palindromes in the list to another list without using *reverse( )* function. (7)

b) Define a class in Python to store the details of a *ship (name, source,destination*), with the following methods:

i) *get_details()* - to assign values to class attributes

ii) *print_details( )* - to display the attribute values

(7)

Create an object of the class and invoke the methods.

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