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Answers Key:

5 Marks (Answer any 2)

1. (a) Single user operating system
   (b) Multi user operating system
   (c) Multi user operating system (Time sharing)

4 Marks (Answer any 4)

2.

2	781	
2	390	1
2	195	0
2	97	1
2	48	1
2	24	0
2	12	0
2	6	1
2	3	0
	1	1

$781_{10}=1100001101_2$

(b) 101101 . 001, to -10

543210-1-2-3

$= 1 X 2^5 + 0 X 2^4 + 1 X 2^3 + 1 X 2^2 + 0 X 2^1 + 2^0 + 0 X \frac{1}{2} + 0 \times \frac{1}{2^2} + 1 \times \frac{1}{2^3}$

$= 32 + 0 + 8 + 4 + 0 + 1 X \frac{1}{8}$

= 45.15.125

$101101.001_2=45.125_{10}$

(c) 321.7_8 to 2

Use chart

3 2 1 7

011 010 001 111

$321.7_8 = 11010001.111_2$

3. (a) 736_{10}= -16

16	736	
16	46	0
	2	14

$7361_0 = 2EO_{16}$

Step 1: Convert to Binary

246.45_8

010 100 110.100 101

(b) Step 2: Convert to hex by making groups of 4

0	1010	0111	.	1001	0100
	⇓	⇓		⇓	⇓
	10~A	6	.	9	4

A6.94 :. 246.45_8= A6.94

$ABEC_{16}$

1010 1011 1111 . 1100

101 010 111 111 . 110 0

5 2 7 7 . 6 0

5277.60_8

(d) 5756_8= -10

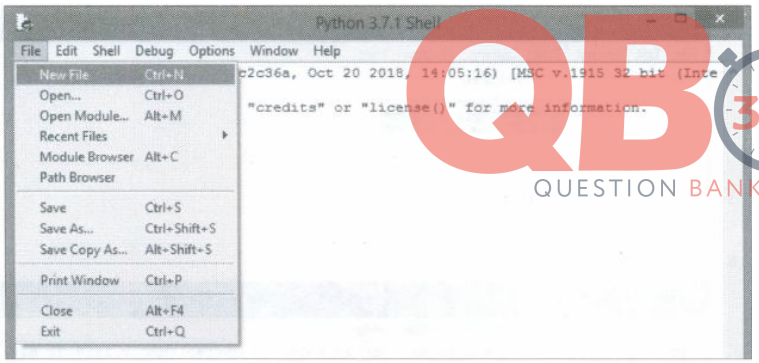
111

210

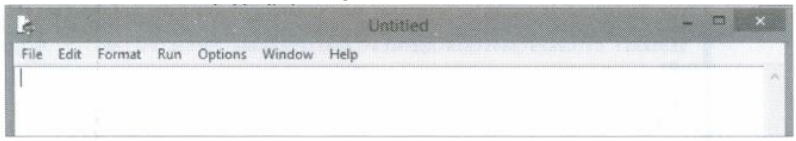
$= 5 \times 8^2 + 7 \times 8^1 + 68$
$= 5 \times 64 + 56 + 6$
$= 320 + 56 + 6$
$= 382_{10}$
$576_8 = 382_{10}$
(e) $A\ 5\ C_{16} = 10$
$= A \times 16^3 + 5 \times 16^2 + C \times 16^1 + 1 \times 16^0$
$= 10 \times 4096 + 256 + 12 \times 16 + 1$
$= 40960 + 1180\ 192 + 1$
$= 42333$
$A5C1_{16} = 42333_{10}$

4. Python's features include -
i) Easy-to-learn - Python has few keywords, simple structure, and a clearly defined syntax. This allows the student to pick up the language quickly.
ii)Easy-to-read - Python code is more clearly defined and visible to the eyes.
iii) Easy-to-maintain - Python-s source code is fairlyeasy-to-maintain.
iv) A broad standard library - Python-s bulk of the library is very portable and cross-platform compatible on UNIX,Windows, and Macintosh.
v) Interactive Mode -:- Python has support for an interactive mode which allows interactive testing and debugging of snippets of code.
vi) Portable - Python can run on a wide variety of hardware platforms and has the same interface on all platforms.
vii)Extendable - You can add low-level modules to the Python interpreter. These modules enable programmers to add to or customize their tools to be more efficient.
viii) Databases - Python provides interfaces to all major commercial databases.
ix) GUI Programming - Python supports GUI applications that can be created and ported to many system calls, libraries and windows systems, such as Windows MFC, Macintosh, and the XWindow system of Unix.
x) Scalable - Python provides a better structure and support for large programs than shell scripting.

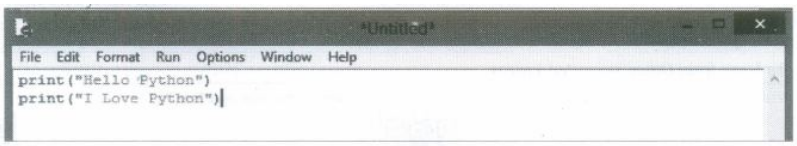
5. In script mode, we type Python program in a file and then use the interpreter to execute the content from the file. Working in interactive mode is convenient for beginners and for testing small pieces of code, as we can test them immediately. But for coding more than few lines, we should always save our code so that we may modify and reuse the code.
First go to File → New File



2.We can see a blank window popping up

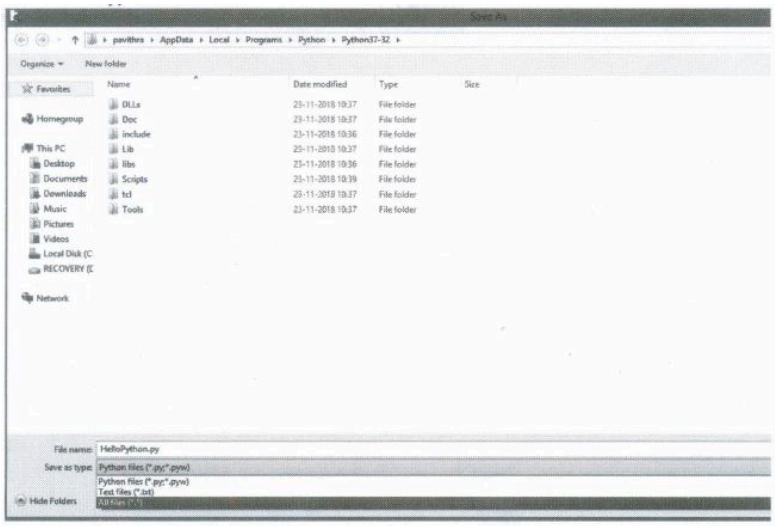


3.Write the python code

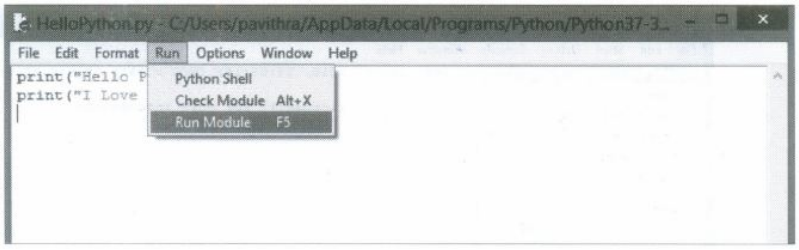


4.Save it with ".py" extension

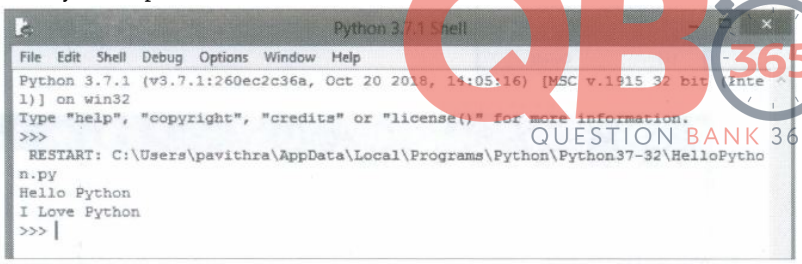
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5.Execute by pressing Shift + F5 key or run option



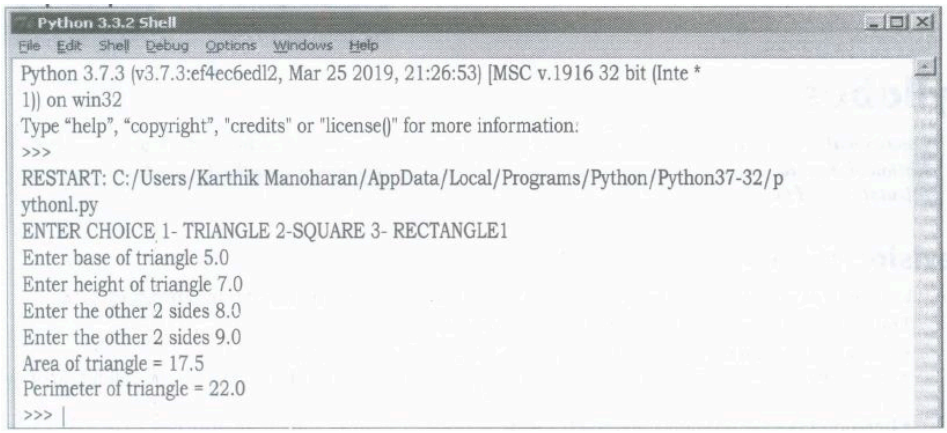
6. Verify the output



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6. import math
choice = int(input(" ENTERCHOICE 1- TRlANGLE 2-SQUARE 3- RECTANGLE"))
if choice= =1:
base = float(input("Enter base of triangle"))
height=float(input("Enter height of triangle"))
area = 0.5 * base * height
a = float(input("Enter the other 2 sides"))
b = float(input("Enter the other 2 sides"))
peri = a + b + base
print("Area of triangle =", area)
print("Perimeter of triangle =", peri)
elif choice = =2:
side = float(input("Enter side of square"))
area = side *side
peri = 4* side
print("Area of square =", area)
print("Perimeter of square =",peri)
elif choice= =3:
length = float(input("Enter length of rectangle"))
breadth = float(input("Enter breadth of rectangle"))
area = length*breadth
peri = 2 *(length + breadth)
print("Area of rectangle =", area)
print("Perimeter of rectangle =",peri)
else:
print("Done")

Sample Output:



7. **(a) IOError:** It is related to incorrect input/output like opening a file which does not exist, deleting a file which is in use,etc.
   (b) NameError: It occurs when a variable is used that does not exist.
   (c) ValueError: It is raised when an operation is performed on an incorrect type of value.
   (d) TypeError: It is raised when an invalid operation for a specified datatype is attempted.

3 Marks(Answer any 3)

8. Operating systems are essential for running a computer. However, as part of the operating system, there are often other programs which are not essential to the running of the computer. These are known as utilities. These help the OS performing its management task efficiently.
9. When we use a program, it sends commands to the computer. But the computer is just a heap of nuts and bolts and computer chips, it can't understand the commands by itself. So the operating system catches the commands and tells the computer what you want it to do.
10.

2	259	Remainder
2	129	1 LBS
2	64	1
2	32	0
2	16	0
2	8	0
2	4	0
2	2	0
2	1	0
	0	1 MBS

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Therefore: $(259)_{10} = (100000011)_2$

11.

Decimal	Binary	Octal
0	000	0
1	001	1
2	010	2
3	011	3
4	100	4
5	101	5
6	110	6
7	111	7

2	57	Remainders
2	28	1 LBS
2	14	0
2	7	0
2	3	1
2	1	1
	0	1 MBS

12.

$5710 = 111001_2$

(b)

2	642	Remainders
2	321	0 LBS
2	160	1
2	80	0
2	40	0
2	20	0
2	10	0
2	5	0
2	2	1
2	1	0
	0	1 MBS

$642_{10}=1010000010_2$

2 Marks(Answer any 7)

13. The computer system consists of two parts:
    (i) Hardware
    (ii) Software
14. CPU or mobile processor is the brain of the CPU. It receives commands, makes instant calculations, plays audio / video, stores information and sends signal throughout the device.
15. An identifier starts with a letter A to Z or a to z or an underscore (_) followed by zero or more letters, underscores and digits (0 to 9).
    Python does not allow punctuation characters such as @, $, and % within identifiers. Python is a case sensitive programming language. Thus, Count and count are two different identifiers in Python.
16. Assigning same value to multiple variables:
    We can assign same value to multiple variables:
    Example: a=b=c=10
    Assigning Multiple values to multiple variables:
    Wecan assign multiple values to multiple variables in single statement e.g. X, Y,Z=10, 20, 30 It will assign the values order wise, i.e. first variable is given first value, second variable the second value and so on.
17. These are the values: 9 30 0.875
18. The various number types are Integers, Floating point, Boolean, complex numbers
19. 2.0
20. Immutable means unchangeable. In Python, immutable types are those whose values cannot be changed in place. Whenever one assigns a new value to a variable referring to immutable type, variable's reference is changed and the previous value is left unchanged.
21. F = (A'.B)'+ (C + D')

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Multiple Choice Question

22. (b) 0011_2
23. (c) 10
24. (b) (X+ Y) (Y+Z)
25. (c) and (d)
26. (b) and (d)
27. (b) print(a, end=" ",b)
28. (a) Read-Only Memory
29. (b) 7
30. (b) Complement Law
31. (b) A+B
32. (a) Inverts the input
33. (c) Keywords
34. (a) Identifiers
35. (c) \n
36. (c) Guido van Rossum
37. (b) yes
38. (c) .py
39. (b) *
40. (b) len()
41. (b) Parenthesis
42. (b) ('P', 'y', 't', 'h', 'o', 'n')