



OSDAV Public School, Kaithal
Second Unit Test (July,2024)
Class :XI
Subject :Computer Science

SET-A

Time: 1 hr 10 min.

M.M. : 35

General Instructions:-

I. All questions are compulsory.

Q.No.	Questions	Marks										
1	Name the software that converts a high level language code into to machine understandable form. (a) Operating system (b) Application software (c) Utility program (d) Language processor	1										
2	Which of the following first and second largest memory unit KB,MB,,YB,GB,TB,EB,TB,PB	1										
3	What is the difference between : (i) num=10 (ii) num==10	1										
4	Consider the given expression and evaluate? not True and False or True (a) True (b) False (c) NONE (d) NULL	1										
5	Which of the following are valid identifiers? (a) _alpha (b)!alpha (c) alpha123 (d) aplha@	1										
Section B												
6	Distinguish Between volatile and non-volatile memory?	2										
7	Verify the following Boolean Expression using truth table:- $X'.Y+X.Y'+X.Y=(X'+Y')$	2										
8	Convert the following (a) $(52)_{10}=()_2$ (b) $(2BC2)_{16}=()_{10}$ (c) $(101111100001)_2=()_{16}$ (d) $(3674)_8=()_{10}$	2										
9	Identify the data types of values given below 3,3j,13.0,'13',"13",2+0j,13,[3,13],(3,13)	2										
10	Rewrite the following program using for loop: i,sum=0 while (i<=40): sum=sum+i i+=2 print("Sum is:",sum)	2										
Section C												
11	Write a Python program to calculate whether number entered is a palindrome or not.	3										
12	State and prove demorgan's law algebraically	3										
13	Write a python program to find factorial of a number	3										
14	Write the following expressions in Python <ul style="list-style-type: none"> $(x-h)^2+(y-k)^2=r^2$ $1/3\pi r^2$ $x = \frac{-b+\sqrt{b^2-4ac}}{2a}$ 	3										
Section D												
15	Write a python code to add the odd numbers up to a given value n and print the result	4										
16	Write a program to find BMI of person after inputting its weight in Kgs and height in meters($bmi=weight/height*height$)and then print the Nutritional status as per table <table border="1" style="width:100%; margin-top: 10px;"> <thead> <tr> <th>Nutritional status</th> <th>BMI cutoff</th> </tr> </thead> <tbody> <tr> <td>Underweight</td> <td><18.5</td> </tr> <tr> <td>Normal</td> <td>18.5-24.9</td> </tr> <tr> <td>Overweighth</td> <td>25-29.9</td> </tr> <tr> <td>Obese</td> <td>>=30</td> </tr> </tbody> </table>	Nutritional status	BMI cutoff	Underweight	<18.5	Normal	18.5-24.9	Overweighth	25-29.9	Obese	>=30	4
Nutritional status	BMI cutoff											
Underweight	<18.5											
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1	Name the software that converts a high level language code into to machine understandable form. (d) Language processor	1																																													
2	Which of the following first and second largest memory unit YB, EB	1																																													
3	What is the difference between : (i) num=10 => assignment operator (ii) num==10 comparator	1																																													
4	Consider the given expression and evaluate? not True and False or True (a) True	1																																													
5	Which of the following are valid identifiers? (a) alpha (c) alpha123	1																																													
Section B																																															
6	Distinguish Between volatile and non-volatile memory? Volatile memory is temporary and loses its data once the power is turned off, whereas Non-Volatile memory is permanent and retains its data even after power loss	2																																													
7	Verify the following Boolean Expression using truth table:- $X'Y + X.Y' + X.Y = (X' + Y')$ <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th>X</th> <th>Y</th> <th>X'</th> <th>Y'</th> <th>XY'</th> <th>X'Y</th> <th>X'Y'</th> <th>XY'+X'Y+X'Y'</th> <th>X'+Y'</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>Hence Proved</p>	X	Y	X'	Y'	XY'	X'Y	X'Y'	XY'+X'Y+X'Y'	X'+Y'	0	0	1	1	0	0	1	1	1	0	1	1	0	0	1	0	1	1	1	0	0	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	2
X	Y	X'	Y'	XY'	X'Y	X'Y'	XY'+X'Y+X'Y'	X'+Y'																																							
0	0	1	1	0	0	1	1	1																																							
0	1	1	0	0	1	0	1	1																																							
1	0	0	1	1	0	1	1	1																																							
1	1	0	0	0	0	0	0	0																																							
8	Convert the following (a) $(52)_{10} = (110100)_2$ (b) $(2BC2)_{16} = (11202)_{10}$ (c) $(101111100001)_2 = (BE1)_{16}$ (d) $(3674)_8 = (1980)_{10}$	2																																													
9	Identify the data types of values given below 3 int 3j complex 13.0 float '13' string "13" string 2+0j complex 13 int [3,13] list (3,13) tuple	2																																													
10	Rewrite the following program using for loop: i,sum=0 for i in range(0,42,2): sum=sum+i i+=2 print("Sum is:",sum)	2																																													
Section C																																															

11	<p>Write a Python program to calculate whether number entered is a palindrome or not.</p> <pre> num = int(input("enter number")) r1 = num % 10 n1 = num // 10 r2 = n1 % 10 n2 = n1 // 10 r3 = n2 % 10 n3 = n2 // 10 reverse = r1*1000+r2*100+r3*10+n3 if num == reverse: print('Palindrome') else: print("Not Palindrome") </pre>	3
12	<p>State and prove demorgan's law algebraically</p> $P + \bar{P} = 1 \text{ and } P \cdot \bar{P} = 0$ <p>(Note: I shall only be using $P + \bar{P} = 1$ as its dual is automatically true)</p> <hr/> <p>First Law:: DeMorgan's 1st law states $\overline{X + Y} = \bar{X} \cdot \bar{Y}$</p> <p>It is sufficient to prove that $(X + Y) + \bar{X} \cdot \bar{Y} = 1$</p> $ \begin{aligned} \text{LHS} &= Y + (X + \bar{X} \cdot \bar{Y}) \\ &= Y + X + \bar{Y} \\ &= (Y + \bar{Y}) + X \\ &= 1 + X \\ &= 1 = \text{RHS} \end{aligned} $ <hr/> <p>Second Law:: DeMorgan's 2nd Law states that $\overline{X \cdot Y} = \bar{X} + \bar{Y}$</p> <p>It is sufficient to prove that $X \cdot Y + (\bar{X} + \bar{Y}) = 1$</p> $ \begin{aligned} \text{LHS} &= \bar{Y} + (\bar{X} + \bar{X} \cdot Y) \\ &= \bar{Y} + (\bar{X} + Y) \\ &= (Y + \bar{Y}) + \bar{X} \\ &= 1 + \bar{X} \\ &= 1 = \text{RHS} \end{aligned} $	3
13	<p>Write a python program to find factorial of a number</p> <pre> num = int(input("enter number")) f=1 for a in range(1,n+1): f=f*a print("factorial =",f) </pre>	3
14	<p>Write the following expressions in Python</p> <ul style="list-style-type: none"> $(x-h)^2 + (y-k)^2 = r^2 \Rightarrow \text{math.pow}((x-h),2) + \text{math.pow}((y-k),2) = r*r$ $1/3\pi r^2 = 1/3 * \text{math.pie} * r*r$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = -b + \text{math.sqrt}(b*b - 4*a*c) // 2*a$ 	3
Section D		
15	<p>Write a python code to add the odd numbers up to a given value n and print the result</p>	4

```

num = int(input("enter number"))
s=0
for a in range(1,n+1,2):
    s=s+a
print("sum of odd numbers",s)

```

16

Write a program to find BMI of person after inputting its weight in Kgs and height in meters($bmi = \text{weight} / \text{height} * \text{height}$) and then print the Nutritional status as per table

Nutritional status	BMI cutoff
Underweight	<18.5
Normal	18.5-24.9
Overweight	25-29.9
Obese	>=30

```

weight= int(input("enter weight"))
height = int(input("enter height"))
bmi=weight/height*height
if bmi<18.5:
    print("Underweight")
elif bmi<18.5 and bmi>24.9:
    print("Normal")
elif bmi<25 and bmi>29.9:
    print("overweight")
elif bmi>=30:
    print("Obese")

```

4



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SET-B

Time: 1 hr 10 min.

M.M. : 35

General Instructions:-

I. All questions are compulsory.

Q.N.	Questions	Marks										
1	Name the software that converts a high level language code into to low level language line by line (a) Operating system (b) Interpreter (c) Utility program (d) Compiler	1										
2	Which of the following first and second smallest memory unit KB,YB,GB,TB,EB,MB,TB,PB	1										
3	What is the difference between : (i) / (ii) //	1										
4	Consider the given expression and evaluate it. not False and False or True (a) True (b) False (c) NONE (d) NULL	1										
5	Which of the following are valid identifiers? (a) alpha (b)!alpha (c) alpha123 (d) aplha@	1										
Section B												
6	Distinguish Between RAM and ROM	2										
7	Draw gate diagram for $F=X'.Y+X.Y'+X.Y'$	2										
8	Convert the following (a) $(62)_{10}=()_2$ (b) $(2CB2)_{16}=()_{10}$ (c) $(101111100001)_2=()_{16}$ (d) $(374)_8=()_{10}$	2										
9	Write all core data types of python with suitable example	2										
10	Rewrite the following program using for loop: I=10,sum=0 while (i>=0): sum=sum+i i-=1 print("Sum is:",sum)	2										
Section C												
11	Write a Python program to calculate whether number entered is an Armstrong or not	3										
12	State and prove demorgan's law algebraically	3										
13	Write a python program to find table of a number using loop	3										
14	Write the following expressions in Python <ul style="list-style-type: none"> • $R=(x-h)^3+(y-k)^3$ • $4/3\pi r^2h$ • $x = \frac{-b-\sqrt{b^2-4ac}}{2a}$ 	3										
Section D												
15	Write a python code to add the square of odd numbers up to a given value n and print the result	4										
16	Write a program to find AQI of air after inputting and then print the status of air as per table	4										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">AIR Status</th> <th style="width: 50%;">AQI</th> </tr> </thead> <tbody> <tr> <td>Very Good</td> <td>≤ 150</td> </tr> <tr> <td>Normal</td> <td>>150 and ≤ 300</td> </tr> <tr> <td>bad</td> <td>>300 and ≤ 500</td> </tr> <tr> <td>Poor</td> <td>>500</td> </tr> </tbody> </table>	AIR Status	AQI	Very Good	≤ 150	Normal	>150 and ≤ 300	bad	>300 and ≤ 500	Poor	>500	
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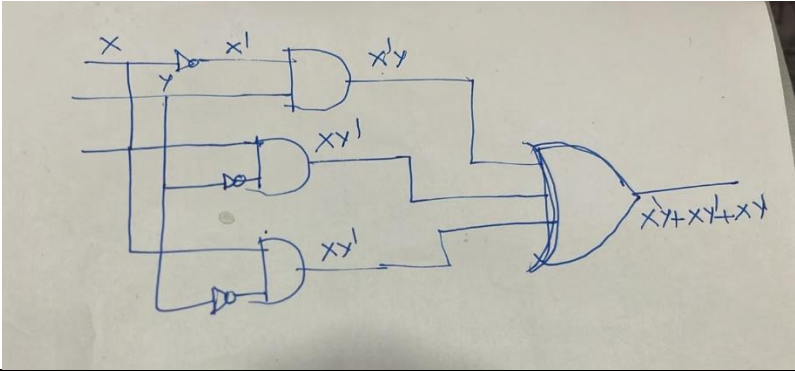
SET-B

Time: 1 hr 30 min.

M.M. : 35

General Instructions:-

I. All questions are compulsory.

Q.N.	Questions	Marks
1	Name the software that converts a high level language code into to low level language line by line (b) Interpreter	1
2	Which of the following first and second smallest memory unit KB,MB,	1
3	What is the difference between : (i) / gives answer in float (ii) // gives answer in int	1
4	Consider the given expression and evaluate it. not False and False or True (a) True	1
5	Which of the following are valid identifiers? (a) alpha (c) alpha123	1
Section B		
6	Distinguish Between RAM RAM :-random access Memory It is volatile memory ROM: Read only memory It is nonvolatile memory	2
7	Draw gate diagram for $F=X'.Y+X.Y'+X.Y'$ 	2
8	Convert the following (a) $(62)_{10}=(111110)_2$ (b) $(2CB2)_{16}=(11442)_{10}$ (c) $(101111100001)_2=(BE1)_{16}$ (d) $(374)_8=(252)_{10}$	2
9	Write all core data types of python with suitable example Int,float,Boolean,string,complex,None	2
10	Rewrite the following program using for loop: sum=0 for I in range(10,0,-1): sum=sum+i print("Sum is:",sum)	2
Section C		
11	Write a Python program to calculate whether number entered is an Armstrong or not <pre>num = int(input("enter number")) r1 = num % 10 n1= num//10</pre>	3

	<pre> r2 = n1 % 10 n2= n1//10 rev = n1**3+n2**3+r2**3 if num == rev: print('armstrong') else: print("not an Armstrong") </pre>	
12	<p>State and prove demorgan's law algebraically</p> $P + \bar{P} = 1 \text{ and } P \cdot \bar{P} = 0$ <p>(Note: I shall only be using $P + \bar{P} = 1$ as its dual is automatically true)</p> <hr/> <p>First Law:: DeMorgan's 1st law states $\overline{X + Y} = \bar{X} \cdot \bar{Y}$</p> <p>It is sufficient to prove that $(X + Y) + \bar{X} \cdot \bar{Y} = 1$</p> $ \begin{aligned} \text{LHS} &= Y + (X + \bar{X} \cdot \bar{Y}) \\ &= Y + X + \bar{Y} \\ &= (Y + \bar{Y}) + X \\ &= 1 + X \\ &= 1 = \text{RHS} \end{aligned} $ <hr/> <p>Second Law:: DeMorgan's 2nd Law states that $\overline{X \cdot Y} = \bar{X} + \bar{Y}$</p> <p>It is sufficient to prove that $X \cdot Y + (\bar{X} + \bar{Y}) = 1$</p> $ \begin{aligned} \text{LHS} &= \bar{Y} + (\bar{X} + \bar{X} \cdot Y) \\ &= \bar{Y} + (\bar{X} + Y) \\ &= (Y + \bar{Y}) + \bar{X} \\ &= 1 + \bar{X} \\ &= 1 = \text{RHS} \end{aligned} $	3
13	<p>Write a python program to find table of a number using loop</p> <pre> num = int(input("enter number")) for a in range(1,11): t=num*a print(t) </pre>	3
14	<p>Write the following expressions in Python</p> <ul style="list-style-type: none"> • $R=(x-h)^3+(y-k)^3 \Rightarrow \text{math.pow}((x-h),3)\text{math.pow}((y-k),3)=r*r$ • $4/3\pi r^2 h \Rightarrow 4/3*\text{math.pie}*r*r*h$ • $x = \frac{-b-\sqrt{b^2-4ac}}{2a} \Rightarrow x=-b-\text{math.sqrt}(b*b-4*a*c)//2*a$ 	3
Section D		
15	<p>Write a python code to add the square of odd numbers up to a given value n and print the result</p> <pre> num = int(input("enter number")) s=0 for a in range(1,n+1,2): </pre>	4

	<pre>s=s+a*a print("sum of odd numbers",s)</pre>											
16	<p>Write a program to find AQI of air after inputting and then print the status of air as per table</p> <table border="1" data-bbox="165 232 1289 423"> <thead> <tr> <th>AIR Status</th> <th>AQI</th> </tr> </thead> <tbody> <tr> <td>Very Good</td> <td><=150</td> </tr> <tr> <td>Normal</td> <td>>150 and <=300</td> </tr> <tr> <td>bad</td> <td>>300 and <=500</td> </tr> <tr> <td>Poor</td> <td>>500</td> </tr> </tbody> </table> <pre>AQI= int(input("enter AQI")) if AQI<150: print("Very Good") elif AQI>150 and AQI<=300: print("Normal") elif AQI>300 and AQI<=500: print("bad") elif AQI>500: print("Poor")</pre>	AIR Status	AQI	Very Good	<=150	Normal	>150 and <=300	bad	>300 and <=500	Poor	>500	4
AIR Status	AQI											
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