[redacted]

Co

Question **1**

Correct

Mark 13.00 out of 13.00

Match the term with the best description.

Contents of memory	binary word stored in memory ✔
Arithmetic/Logic Unit	does calculations ✔
Fetch-Execute cycle	basic sequential processing procedure of the van Neumann machine ✔
S-R Latch	circuit to store values ✔
Gate	configuration of transistors to perform a logical operation ✔
Address of memory	location of a stored binary word ✔
Control Unit	manages the program execution ✔
Computer program	a list of instructions to the control unit ✔
Adder circuit	combinational circuit to do calculations ✔
Transistor	a physical device made out of a semiconductor ✔

The correct answer is: Contents of memory → binary word stored in memory, Arithmetic/Logic Unit → does calculations, Fetch-Execute cycle → basic sequential processing procedure of the van Neumann machine, S-R Latch → circuit to store values, Gate → configuration of transistors to perform a logical operation, Address of memory → location of a stored binary word, Control Unit → manages the program execution, Computer program → a list of instructions to the control unit, Adder circuit → combinational circuit to do calculations, Transistor → a physical device made out of a semiconductor

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:17	Saved: Contents of memory -> binary word stored in memory; Arithmetic/Logic Unit -> does calculations; Fetch-Execute cycle -> basic sequential processing procedure of the van Neumann machine; S-R Latch -> circuit to store values; Gate -> configuration of transistors to perform a logical operation; Address of memory -> location of a stored binary word; Control Unit -> manages the program execution; Computer program -> a list of instructions to the control unit; Adder circuit -> combinational circuit to do calculations; Transistor -> a physical device made out of a semiconductor	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**13.00**

Question **2**

Partially correct

Mark 36.31 out of 45.00

Suppose that you have an A-register (accumulator) of 16 bits; an instruction register of 8 bits; an operand specifier of 16 bits; and a program counter of 16 bits. Assume that memory has been reset. Consider the set of machine language (Pep/8) instructions below:

310022

310024

490020

C10022

800005

700003

710024

E10024

510020

390024

00

(a) Convert each instruction into 24-bit binary string. Do not include any spaces in your answers. Remember to use the correct number of bits in your answer, otherwise it will be marked as incorrect.

310022

001100010000000000100010

✔

310024

001100010000000000100100

✔

490020

010010010000000000100000

✔

C10022

110000010000000000100010

✔

800005

100000000000000000000101

✔

700003

011100000000000000000011

✔

710024

011100010000000000100100

✔

E10024

111000010000000000100100

✔

510020

0101000100000000000100000

✔

390024

00111001000000000000100100

✔

00

(b) What type of addressing is used in each instruction?

310022 Direct-mode addressing ✔

310024 Direct-mode addressing ✔

490020 Direct-mode addressing ✔

C10022 Direct-mode addressing ✔

800005 Immediate-mode addressing ✔

700003 Direct-mode addressing ✖

710024 Direct-mode addressing ✔

E10024 Direct-mode addressing ✔

510020 Direct-mode addressing ✔

390024 Direct-mode addressing ✔

00

Read in the following input:

6 7 Z

Pretend to be a (Pep/8) compiler and run through the program. Include the program counter, instruction register, and other important components of the computer in your layout to help you answer the following questions. Please use the description of machine language instructions and ASCII table provided below.

(c) What is stored in Hex memory locations 22 and 23 at the end of the program? Give your answer in decimal

6

✔ .

(d) What is stored in Hex memory locations 20 at the end of the program? Give your answer in hexadecimal

5A

✔ .

(e) What is stored in the Instruction Register immediately after the third instruction has completed being executed? (Give your answer in binary with the correct bit count)

01001001

✖

(d) What is stored in the program counter while the third instruction is being executed? (Give your answer in hexadecimal with the correct bit count)

C1

✖ .

(e) What is stored in the accumulator before the instruction "710024" is executed? (Give your answer in binary with the correct number of bits)

0000000000000100

✔ .

(f) What is stored in the Status bit N after the instruction "710024" is executed? 0 ✔

(g) What is stored in the Status bit Z before the instruction "C10022" is executed? 1 ✔

(h) What will be the output after the program has completed?

Z11

✔

Instruction	Instruction definition
1100 0000	Load into accumulator (AC) from immediate
1100 0001	Load into AC from memory address
1110 0001	Store from AC into memory
0111 0000	Add AC + immediate (into AC)
0111 0001	Add AC + memory (into AC)
1000 0000	Subtract AC - immediate (into AC)
1000 0001	Subtract AC - memory (into AC)
0100 1001	Character input to memory
0101 0000	Character output from immediate
0101 0001	Character output from memory
0011 0001	Read a decimal number into memory.
0011 1000	Write a decimal number from immediate.
0011 1001	Write a decimal number from memory.

ASCII TABLE

Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char
0	0	[NULL]	32	20	[SPACE]	64	40	@	96	60	`
1	1	[START OF HEADING]	33	21	!	65	41	A	97	61	a
2	2	[START OF TEXT]	34	22	"	66	42	B	98	62	b
3	3	[END OF TEXT]	35	23	#	67	43	C	99	63	c
4	4	[END OF TRANSMISSION]	36	24	$	68	44	D	100	64	d
5	5	[ENQUIRY]	37	25	%	69	45	E	101	65	e
6	6	[ACKNOWLEDGE]	38	26	&	70	46	F	102	66	f
7	7	[BELL]	39	27	'	71	47	G	103	67	g
8	8	[BACKSPACE]	40	28	(	72	48	H	104	68	h
9	9	[HORIZONTAL TAB]	41	29	)	73	49	I	105	69	i
10	A	[LINE FEED]	42	2A	*	74	4A	J	106	6A	j
11	B	[VERTICAL TAB]	43	2B	+	75	4B	K	107	6B	k
12	C	[FORM FEED]	44	2C	,	76	4C	L	108	6C	l
13	D	[CARRIAGE RETURN]	45	2D	-	77	4D	M	109	6D	m
14	E	[SHIFT OUT]	46	2E	.	78	4E	N	110	6E	n
15	F	[SHIFT IN]	47	2F	/	79	4F	O	111	6F	o
16	10	[DATA LINK ESCAPE]	48	30	0	80	50	P	112	70	p
17	11	[DEVICE CONTROL 1]	49	31	1	81	51	Q	113	71	q
18	12	[DEVICE CONTROL 2]	50	32	2	82	52	R	114	72	r
19	13	[DEVICE CONTROL 3]	51	33	3	83	53	S	115	73	s
20	14	[DEVICE CONTROL 4]	52	34	4	84	54	T	116	74	t
21	15	[NEGATIVE ACKNOWLEDGE]	53	35	5	85	55	U	117	75	u
22	16	[SYNCHRONOUS IDLE]	54	36	6	86	56	V	118	76	v
23	17	[ENG OF TRANS. BLOCK]	55	37	7	87	57	W	119	77	w
24	18	[CANCEL]	56	38	8	88	58	X	120	78	x
25	19	[END OF MEDIUM]	57	39	9	89	59	Y	121	79	y
26	1A	[SUBSTITUTE]	58	3A	:	90	5A	Z	122	7A	z
27	1B	[ESCAPE]	59	3B	;	91	5B	[	123	7B	{
28	1C	[FILE SEPARATOR]	60	3C	<	92	5C	\	124	7C	|
29	1D	[GROUP SEPARATOR]	61	3D	=	93	5D	]	125	7D	}
30	1E	[RECORD SEPARATOR]	62	3E	>	94	5E	^	126	7E	~
31	1F	[UNIT SEPARATOR]	63	3F	?	95	5F	_	127	7F	[DEL]

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:43	Saved: part 1: 00110001000000000100010; part 2: 00110001000000000100100; part 3: 01001001000000000100000; part 4: ; part 5: ; part 6: ; part 7: ; part 8: ; part 9: ; part 10: ; part 11: ; part 12: ; part 13: ; part 14: ; part 15: ; part 16: ; part 17: ; part 18: ; part 19: ; part 20: ; part 21: ; part 22: ; part 23: ; part 24: ; part 25: ; part 26: ; part 27: ; part 28:	Incomplete answer	
3	30/05/22, 08:52	Saved: part 1: 00110001000000000100010; part 2: 00110001000000000100100; part 3: 01001001000000000100000; part 4: 11000001000000000100010; part 5: 10000000000000000000101; part 6: 01110000000000000000011; part 7: 01110001000000000100100; part 8: 11100001000000000100100; part 9: 01010001000000000100000; part 10: 00111001000000000100100; part 11: Direct-mode addressing; part 12: Direct-mode addressing; part 13: Direct-mode addressing; part 14: Direct-mode addressing; part 15: Immediate-mode addressing; part 16: Direct-mode addressing; part 17: Direct-mode addressing; part 18: Direct-mode addressing; part 19: Direct-mode addressing; part 20: Direct-mode addressing; part 21: ; part 22: ; part 23: ; part 24: ; part 25: ; part 26: ; part 27: ; part 28:	Incomplete answer	
4	30/05/22, 09:15	Saved: part 1: 00110001000000000100010; part 2: 00110001000000000100100; part 3: 01001001000000000100000; part 4: 11000001000000000100010; part 5: 10000000000000000000101; part 6: 01110000000000000000011; part 7: 01110001000000000100100; part 8: 11100001000000000100100; part 9: 01010001000000000100000; part 10: 00111001000000000100100; part 11: Direct-mode addressing; part 12: Direct-mode addressing; part 13: Direct-mode addressing; part 14: Direct-mode addressing; part 15: Immediate-mode addressing; part 16: Direct-mode addressing; part 17: Direct-mode addressing; part 18: Direct-mode addressing; part 19: Direct-mode addressing; part 20: Direct-mode addressing; part 21: 11; part 22: ; part 23: ; part 24: ; part 25: ; part 26: ; part 27: ; part 28:	Incomplete answer	
5	30/05/22, 09:41	Saved: part 1: 00110001000000000100010; part 2: 00110001000000000100100; part 3: 01001001000000000100000; part 4: 11000001000000000100010; part 5: 10000000000000000000101; part 6: 01110000000000000000011; part 7: 01110001000000000100100; part 8: 11100001000000000100100; part 9: 01010001000000000100000; part 10: 00111001000000000100100; part 11: Direct-mode addressing; part 12: Direct-mode addressing; part 13: Direct-mode addressing; part 14: Direct-mode addressing; part 15: Immediate-mode addressing; part 16: Direct-mode addressing; part 17: Direct-mode addressing; part 18: Direct-mode addressing; part 19: Direct-mode addressing; part 20: Direct-mode addressing; part 21: 6; part 22: 5A; part 23: 01001001; part 24: C1; part 25: 0000000000000100; part 26: 0; part 27: 1; part 28: Z11	Answer saved	
6	**30/05/22, 10:06**	**Attempt finished**	**Partially correct**	**36.31**

Question **3**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(0,0,255)

Select one:

- a. Black
- b. White
- c. Blue ✔
- d. Green
- e. Red
- f. Yellow
- g. Cyan
- h. Magenta
- i. Grey

The correct answer is: Blue

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:19	Saved: Blue	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**1.00**

Question **4**

Correct

Mark 2.00 out of 2.00

When referring to magnetic disks, what is meant by ***latency***?

Select one:

a. Time it takes for read/write head to be over right track

b. Time it takes for sector to be in position ✔

c. Total time required to obtain data

d. Rate at which data is transferred to internal memory

Your answer is correct.

The correct answer is: Time it takes for sector to be in position

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:19	Saved: Time it takes for sector to be in position	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**2.00**

Question **5**

Correct

Mark 18.00 out of 18.00

(a) Using the Huffman encoding technique we did in class, encode the word :

SLEEPLESSNESS

S =

0

✔

L =

110

✔

E =

10

✔

P =

1110

✔

N =

1111

✔

NB. Check that your code has the prefix property.

(b) Calculate the average number of bits required to encode all the characters in your Huffman coding system above. (Round off your final answer to two decimal places)

2.08

✔

(c) Calculate the compression ratio for your coding system. (Round off your final answer to two decimal places)

0.69

✔

(d) Is the compression ratio above or below the accepted theoretical limit? Below theoretical limit ✔

(d) Is this the best binary variable-length compression that is achievable? Yes ✔

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:25	Saved: part 1: 0; part 2: 110; part 3: 10; part 4: 1110; part 5: 1111; part 6: 2.08; part 7: 0.69; part 8: Above theoretical limit; part 9: Yes	Answer saved	

Step	Time	Action	State	Marks
3	30/05/22, 10:03	Saved: part 1: 0; part 2: 110; part 3: 10; part 4: 1110; part 5: 1111; part 6: 2.08; part 7: 0.69; part 8: Below theoretical limit; part 9: Yes	Answer saved	
4	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**18.00**

Question **6**

Correct

Mark 6.00 out of 6.00

Simplify the following Boolean expression as far as possible:

(a' + b')(a' + b)

Select one:

- a. a
- b. b
- c. 0
- d. 1
- e. a' ✔
- f. b'
- g. a+b
- h. a.b

The correct answer is: a'

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:26	Saved: a'	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**6.00**

Question **7**

Correct

Mark 1.00 out of 1.00

Which of the following is an example of analog information?

Select one:

- a. Morse code
- b. The result of fipping a coin
- c. Drawing a card from a deck of playing cards
- d. The frequency of a humans voice in air ✔
- e. The result of a rolled dice

The correct answer is: The frequency of a humans voice in air

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:27	Saved: The frequency of a humans voice in air	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**1.00**

Question **8**

Correct

Mark 6.00 out of 6.00

Simplify the Boolean expression as far as possible:

a(a + b + c + d + e + ...)

Select one:

- a. 0
- b. 1
- c. a ✔
- d. b
- e. a'
- f. b'
- g. a + b + c + d + ...
- h. a.b.c.d. ...

The correct answer is: a

Response history

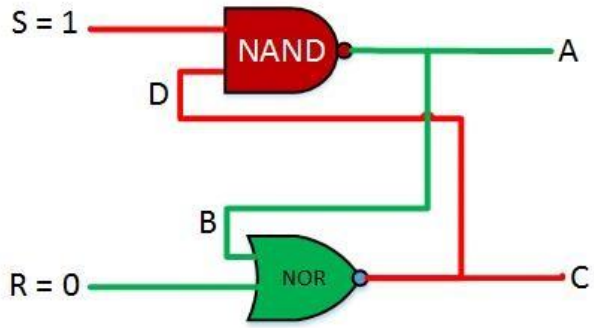
Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:44	Saved: a	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**6.00**

Question **9**

Partially correct

Mark 4.00 out of 8.00

Consider the circuit shown below and suppose that S= 1 and R =0.



a) What will be the final values of A, B, C and D?

A= 0 ✔

B = 0 ✔

C = 1 ✔

D = 1 ✔

b) Following the state of the sequential circuit from (a) above, suppose we switched S to be 0. What will be the final values of A, B, C and D?

A= 1 ✖

B = 1 ✖

C = 0 ✖

D = 0 ✖

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:46	Saved: part 1: 0; part 2: 0; part 3: 1; part 4: 1; part 5: 1; part 6: 1; part 7: ; part 8:	Incomplete answer	
3	30/05/22, 08:52	Saved: part 1: 0; part 2: 0; part 3: 1; part 4: 1; part 5: 1; part 6: 1; part 7: 0; part 8: 0	Answer saved	
4	**30/05/22, 10:06**	**Attempt finished**	**Partially correct**	**4.00**

Question **10**

Correct

Mark 2.00 out of 2.00

What is the minimum number of transistors required to implement an **AND** gate?

Answer: 3 ✔

The correct answer is: 3

Response history

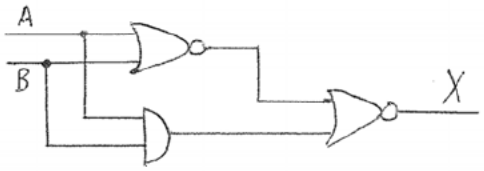
Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:28	Saved: 3	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**2.00**

Question **11**

Correct

Mark 2.00 out of 2.00

Which of the following is a Boolean expression for the output X of the circuit below?



Select one:

- ((A+B)'+AB)' ✔
- (A+B)'+AB
- (A+B)'+AB'
- (A+B)'.AB'
- A'B'+AB'

The correct answer is: ((A+B)'+AB)'

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:29	Saved: ((A+B)'+AB)'	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**2.00**

Question **12**

Correct

Mark 4.00 out of 4.00

Complete the truth table below to prove that A.B + C = (A + C).(B + C)

A B C	A+C	B+C	(A+C).(B+C)	A.B	A.B+C
0 0 0	0	0	0	0	0
0 0 1	1	1	1	0	1
0 1 0	0	1	0	0	0
0 1 1	1	1	1	0	1
1 0 0	1	0	0	0	0
1 0 1	1	1	1	0	1
1 1 0	1	1	1	1	1
1 1 1	1	1	1	1	1

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:32	Saved: part 1: 0; part 2: 0; part 3: 0; part 4: 0; part 5: 0; part 6: 1; part 7: 1; part 8: 1; part 9: 0; part 10: 1; part 11: 0; part 12: 1; part 13: 0; part 14: 0; part 15: 0; part 16: 1; part 17: 1; part 18: 1; part 19: 0; part 20: 1; part 21: 1; part 22: 0; part 23: 0; part 24: 0; part 25: 0; part 26: 1; part 27: 1; part 28: 1; part 29: 0; part 30: 1; part 31: 1; part 32: 1; part 33: 1; part 34: 1; part 35: 1; part 36: 1; part 37: 1; part 38: 1; part 39: 1; part 40: 1	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**4.00**

Question **13**

Correct

Mark 2.00 out of 2.00

Using the Huffman code table below, find the code for the word 'BRAHMS'.

Huffman Code	Character
00	A
01	B
100	S
110	T
111	H
1010	R
1011	M

Answer: 011010001111011100 ✔

The correct answer is: 011010001111011100

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:32	Saved: 01101001111011100	Answer saved	
3	30/05/22, 09:48	Saved: 011010001111011100	Answer saved	
4	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**2.00**

Question **14**

Correct

Mark 2.00 out of 2.00

Simplify the following Boolean expression as far as possible:

(a + a')'

Select one:

- a. 0 ✔
- b. 1
- c. a
- d. a'
- e. a' + a'a

The correct answer is: 0

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:33	Saved: 0	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**2.00**

Question **15**

Correct

Mark 2.00 out of 2.00

Using the Huffman code table below, decode the string 1101001010101111100.

Huffman Code	Character
00	T
01	B
100	O
110	M
111	R
1010	Z
1011	A

Answer: MOZART ✔

The correct answer is: MOZART

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:34	Saved: MOZART	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**2.00**

Question **16**

Correct

Mark 1.00 out of 1.00

Where is the **Arithmetic Logic Unit** located in the *von Neumann* architecture?

Select one:

- a. In the Input Device
- b. In the Output Device
- c. In Main Memory
- d. In the Central Processing Unit ✔
- e. In Auxiliary Storage (Memory)

Your answer is correct.

The correct answer is: In the Central Processing Unit

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:34	Saved: In the Central Processing Unit	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**1.00**

Question **17**

Correct

Mark 5.00 out of 5.00

Which of the following Boolean expressions represents an XOR gate which, because of its logical structure, can be implemented with only 8 transistors.

Select one:

- a. A'B + AB'
- b. (AB)'(A+B) ✔
- c. (A+B')(A'+B)
- d. (AB)(A+B)'
- e. (A'B')(A+B)
- f. (A.B)'
- g. A+B
- h. A'(B+A)

The correct answer is: (AB)'(A+B)

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:35	Saved: A'B + AB'	Answer saved	
3	30/05/22, 09:51	Saved: (AB)'(A+B)	Answer saved	
4	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**5.00**

Question **18**

Correct

Mark 6.00 out of 6.00

Simplify the following Boolean expression as far as possible:

A'B + BA + AA + BB' + AB'

Select one:

- a. A
- b. B
- c. A+B ✔
- d. A'
- e. B'
- f. AB + A

Your answer is correct.

The correct answer is: A+B

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:37	Saved: A+B	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**6.00**

Question **19**

Correct

Mark 1.50 out of 1.50

What would be the resulting color from the following RGB color code?

(255,255,0)

Select one:

- a. Black
- b. White
- c. Blue
- d. Green
- e. Red
- f. Yellow ✔
- g. Cyan
- h. Magenta
- i. Grey

The correct answer is: Yellow

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:37	Saved: Yellow	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**1.50**

Question **20**

Incorrect

Mark 0.00 out of 3.00

An image is 1024 by 1024 pixels. How many bytes will we need to store a grayscale image if we use 8 bits to store each value associated with each pixel? (Give you answer in bytes)

Answer: 8388608 ✖

The correct answer is: 1048576

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:56	Saved: 26	Answer saved	
3	30/05/22, 09:56	Saved: 8388608	Answer saved	
4	**30/05/22, 10:06**	**Attempt finished**	**Incorrect**	**0.00**

Question **21**

Correct

Mark 6.00 out of 6.00

Use the rules of Boolean algebra to simplify the expression

(A'. (B + C'))' + B.C

so that it can be implemented using only **one gate.**

Select one:

- A+ B
- A+ C ✔
- B+C
- A.B
- B.C
- A.C
- A'
- B'
- C'
- A XOR B
- A XOR C
- B XOR A

The correct answer is: A+ C

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:39	Saved: A+ C	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**6.00**

Question **22**

Correct

Mark 1.50 out of 1.50

What would be the resulting color from the following RGB color code?

(127,127,127)

Select one:

- a. Black
- b. White
- c. Blue
- d. Green
- e. Red
- f. Yellow
- g. Cyan
- h. Magenta
- i. Grey ✔

The correct answer is: Grey

Response history

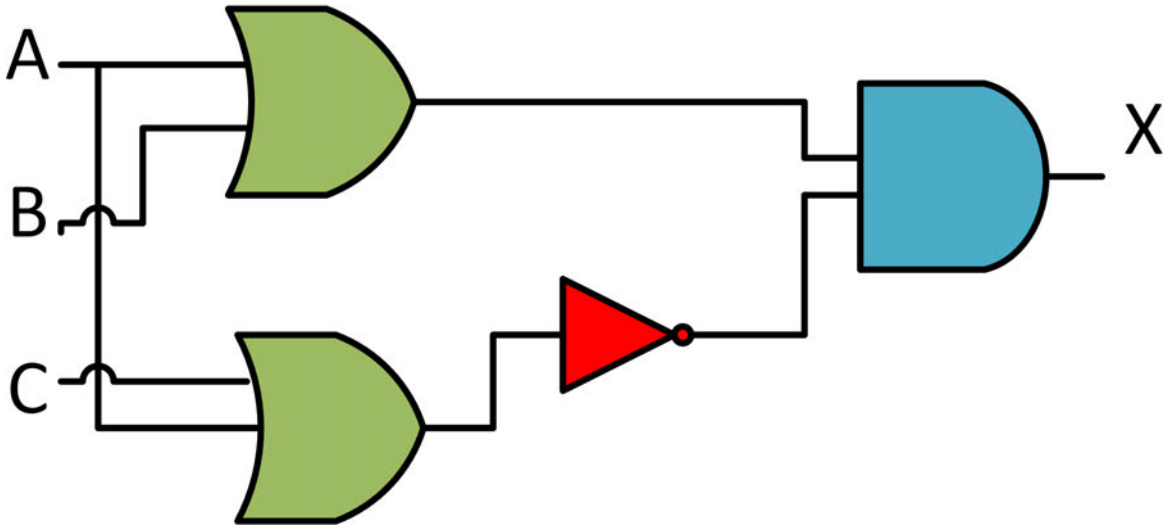
Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:39	Saved: Grey	Answer saved	
3	**30/05/22, 10:06**	**Attempt finished**	**Correct**	**1.50**

Question **23**

Partially correct

Mark 13.00 out of 18.00

Consider the graphic given below:



What would be the output of the circuit given that

A = 0; B = 1; C = 1 then X =

0

✔ .

A = 0; B = 1; C = 0 then X =

1

✔ .

Complete the following truth table for the **full-subtractor**, where A is the first digit, B is the subtracting digit, B_{in} is the borrow-in, B_{out} is the borrow-out, and Diff is the difference.

A	B	Bout	B_{in}	Diff
0	0	0	0 ✔	0 ✔
0	0	1	1 ✔	1 ✔
0	1	0	0 ✖	1 ✔
0	1	1	0 ✖	0 ✔
1	0	0	1 ✖	1 ✔
1	0	1	1 ✖	0 ✔

1	1	0	0 ✔	0 ✔
1	1	1	0 ✖	1 ✔

Response history

Step	Time	Action	State	Marks
1	30/05/22, 08:11	Started	Not yet answered	
2	30/05/22, 08:41	Saved: part 1: 0; part 2: 1; part 3: ; part 4: ; part 5: ; part 6: ; part 7: ; part 8: ; part 9: ; part 10: ; part 11: ; part 12: ; part 13: ; part 14: ; part 15: ; part 16: ; part 17: ; part 18:	Incomplete answer	
3	30/05/22, 08:59	Saved: part 1: 0; part 2: 1; part 3: 0; part 4: 0; part 5: ; part 6: ; part 7: ; part 8: ; part 9: ; part 10: ; part 11: ; part 12: ; part 13: ; part 14: ; part 15: ; part 16: ; part 17: ; part 18:	Incomplete answer	
4	30/05/22, 09:23	Saved: part 1: 0; part 2: 1; part 3: 0; part 4: 0; part 5: 1; part 6: 1; part 7: 0; part 8: 1; part 9: 0; part 10: 0; part 11: 1; part 12: 1; part 13: 1; part 14: 0; part 15: 0; part 16: 0; part 17: 0; part 18: 1	Answer saved	
5	**30/05/22, 10:06**	**Attempt finished**	**Partially correct**	**13.00**

◄ Test Allocation (hidden)

Jump to...

Session 2: Test 2 (hidden) ►