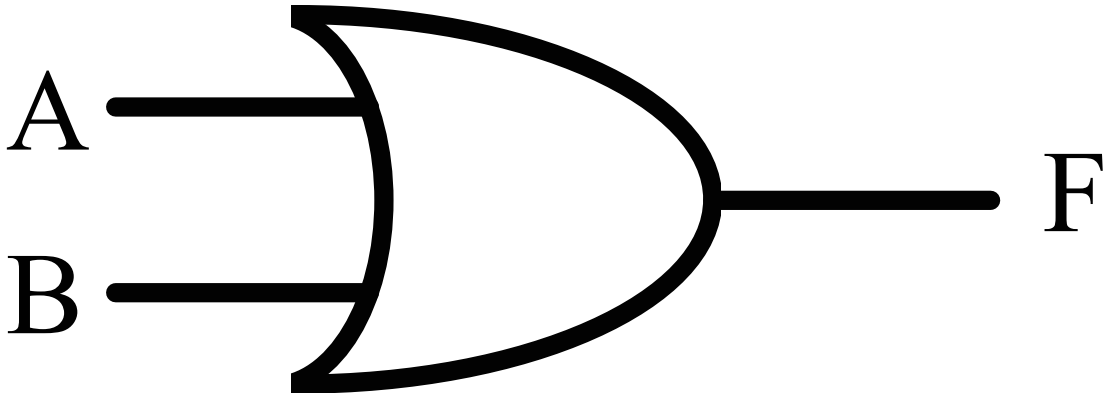
Informasjon

1 Kopi av Gates



Which gate(s) is /are on the above figure:
Select one or more alternatives:

- [ ] NOR-gate
- [ ] XOR-gate
- [ ] OR-gate
- [ ] XNOR-gate
- [ ] NOT-gate
- [ ] NAND-gate
- [ ] AND-gate

Maximum marks: 1

2 Kopi av Boolean functions

With which gate can the following function be implemented:

$$F = A + B + C$$

Select one or more alternatives:

- [ ] Only NOT-gate(s)
- [ ] Only NOR-gate(s)
- [ ] Only NAND-gate(s)
- [ ] Only XNOR-gate(s)
- [ ] Only AND-gate(s)
- [ ] Only XOR-gate(s)
- [ ] Only OR-gate(s)

Maximum marks: 1

3 Kopi av Technology development

The technological development will reduce the number transistors on a chip.
Select one alternative:

- ○ Untrue
- ○ True

Maximum marks: 1

4 Kopi av ALU

A 64-bits ALU contains Cache.
Select one alternative:

- True
- Untrue

Maximum marks: 1

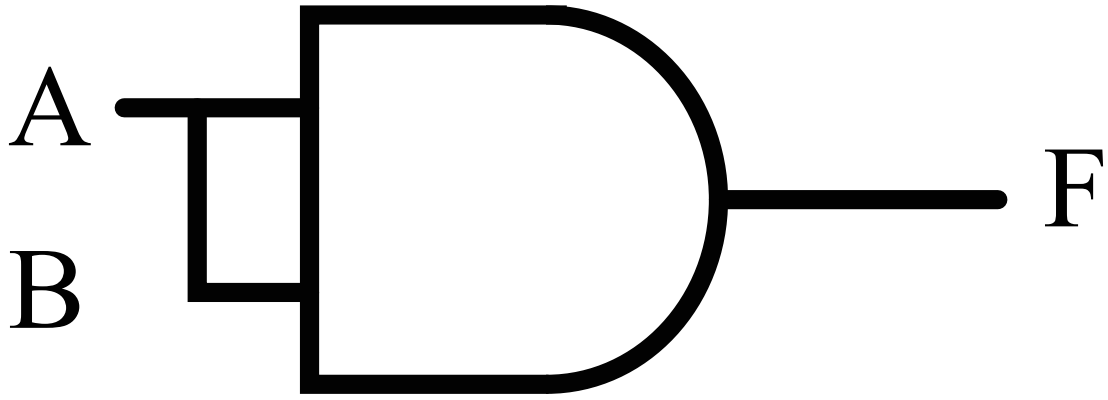
5 Kopi av Pipeline

Is it possible to make a 3-stage pipeline?
Select one alternative:

- True
- Untrue

Maximum marks: 1

6 Kopi av Function



Select one or more alternatives:

- $\overline{A}$
- B
- BB
- AB
- $\overline{B}$
- A
- $\overline{AA}$
- $\overline{A}B$
- BA
- AA
- $\overline{BB}$
- $\overline{A} \cdot \overline{B}$

Maximum marks: 5

7 Kopi av Cache

Assume that there are 1000 instructions left and that one instruction takes 1 clock cycle, except for any cache misses. Furthermore, you can assume that there will be 50% cache miss where it will take a total of 10 clock cycles for each instruction in cache miss.

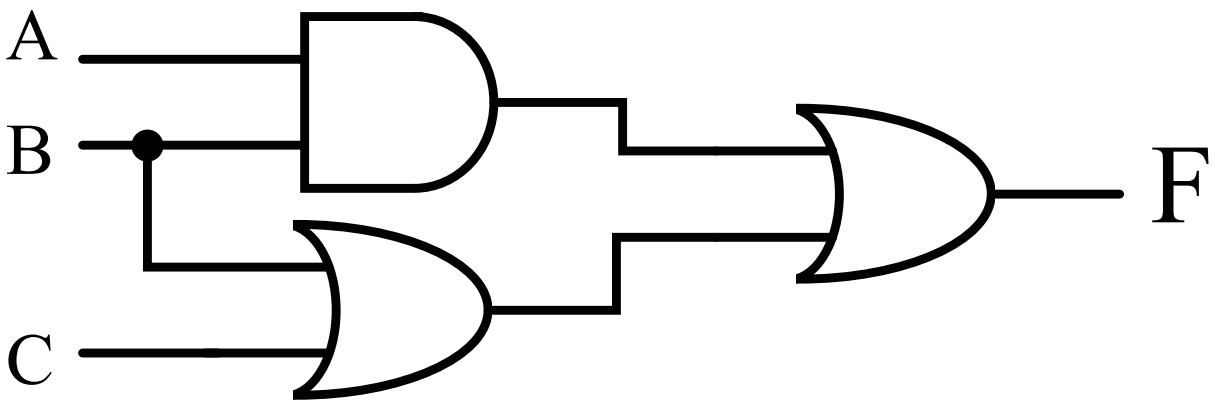
What is the total time required?

Select one or more alternatives:

- [ ] 9000
- [ ] 15000
- [ ] 13250
- [ ] 8250
- [ ] 7500
- [ ] 10000
- [ ] 6600
- [ ] 5000
- [ ] 5500
- [ ] 3000

Maximum marks: 5

8 Kopi av Circuit analysis



The function F is given by:

Select one or more alternatives:

- [ ] F = A + B
- [ ] F = A + B + C
- [ ] F = AC
- [ ] F = B + C
- [ ] F = A + BC
- [ ] F = BC
- [ ] F = C + AB
- [ ] F = A + C
- [ ] F = ABC
- [ ] F = B + AC
- [ ] F = AB

Maximum marks: 10

9 Sikkerhetsmål

Security services are essential in information security. Which of the following is defined as a security service:

Select one or more alternatives:

- [ ] Authorization
- [ ] Firewall
- [ ] Worm
- [ ] Integrity
- [ ] Data authenticity

Maximum marks: 2

10 Tilgangskontroll

Which are the basic elements of a system for access control?

Select one alternative:

- ( ) User identity and authentication
- ( ) Multifactor authentication
- ( ) Authentication and authorization
- ( ) Password, access and cryptography

Maximum marks: 4

11 Sikkerhetskopiering

Which of the following should a good strategy for backup include:
Select one or more alternatives:

- [ ] Keep backups physically separated from the rest of the system.
- [ ] Provide spare parts for all important network infrastructure.
- [ ] Have a copy of all the hardware your business software needs to operate.
- [ ] Make a copy of all the critical data a business needs to operate.
- [ ] Make a copy of all the software and configuration needed to process a business' data.

Maximum marks: 5

12 Kryptering: Hash-algoritmer

Assume a message has a checksum (hash value). How does this checksum protect the message during transmission over a data network?
Select one or more alternatives:

- [ ] If the message has changed during transmission, the checksum will no longer be correct, and the recipient will thus know that the message has changed.
- [ ] A hash algorithm encrypts the message so that only the owner of the key will be able to decrypt and read the message.
- [ ] A checksum makes it technically impossible to change the message during the transmission.
- [ ] A hash algorithm corrupts the message so it cannot be read by unauthorized persons.

Maximum marks: 5

13 Trusselmodellering - HTTP

A small doctor's practice has set up a simple website with information about their offer as well as contact information (telephone number and email address) for the doctor's practice and the doctors who work there. Because the content is not confidential, and they do not provide services that require login from users, they have chosen an affordable and simple solution, where HTTP (unencrypted connection) is the only supported protocol.

Determine if the following statements are true or false, given the information above.

	True	False
Unauthorized persons will be able to eavesdrop and read data traffic between the doctor's practice's web server and a user's browser.	○	○
If a user uses an encrypted connection to their wireless home router, all eavesdropping and reading of the data traffic between the user's browser and the doctor's practice's web server is prevented.	○	○
As a user, you can be sure that the website displayed to you contains correct information about the doctor's practice.	○	○
In this case, unencrypted network traffic does not pose a security risk, as the information from the doctor's practice is publicly available.	○	○
The integrity of data sent between the doctor's practice's web server and a user's browser is maintained.	○	○

Maximum marks: 6

14 Konfidensialitet

Confidentiality is a essential requirement in Norwegian Privacy Act. Which of the following security services will ensure the confidentiality of personal data in an IT system:
Select one or more alternatives:

- [ ] Backup of all data
- [ ] Identify all the users of the IT system
- [ ] Good routines for data recovery
- [ ] Encrypt all stored data
- [ ] Introduce access control in the IT system

Maximum marks: 3

15 ARP

The protocol ARP is used for:
Select one or more alternatives:

- [ ] Connecting addresses in the network layer with addresses in the link layer.
- [ ] Make sure that data packets don't go in an endless loop in the network.
- [ ] Allocate IP-addresses to machines connecting to the network.
- [ ] Translate domain names to IP-addresses.

Maximum marks: 2

16 DHCP

How many DHCP-servers should you have in a LAN (broadcast domain)?
Select one or more alternatives:

- [ ] Depending on the number of machines connecting to the network.
- [ ] It depends if you are using NAT in the network.
- [ ] As many as you want.
- [ ] One.

Maximum marks: 2

17 CDN

Which of these statements are correct for a Content Delivery Network (CDN)?
Select one or more alternatives:

- [ ] It can reduce the delay by moving data closer to the client.
- [ ] It increases security because it works like a firewall to the server that has the original data.
- [ ] It saves hardware and energy by virtualizing the network services.
- [ ] It can offload the server that has the original data if there are many concurrent users.

Maximum marks: 2

18 Linjesvitsjing

Which of these statements are correct for a network that uses circuit switching?
Select one or more alternatives:

- [ ] No dedicated connection between sender and receiver
- [ ] Connectionless service.
- [ ] Dedicated connection between sender and receiver.
- [ ] Connection-oriented service.
- [ ] No guarantees for delivery, only best-effort.

Maximum marks: 2

19 Overføringshastighet

You want to download a 250-megabyte file, and the maximum transfer speed on your Internet connection is 25 megabit per second. What is the shortest theoretical transfer time?

Select one alternative:

- ( ) 25 seconds
- ( ) 10 seconds
- ( ) 80 seconds
- ( ) 120 seconds

Maximum marks: 4

20 Punktnotasjon til CIDR

A computer has the IP-address: 192.168.100.14
The netmask is: 255.255.255.248
What is the IP-address to the machine written in CIDR notation?
Select one alternative:

- 192.168.100.14/29
- 192.168.100.1/26
- 192.168.100.1/29
- 192.168.100.14/26

Maximum marks: 4

21 Antall IP-adresser

A subnet as the network mask 11111111.11111111.11110000.00000000
How many valid IP-addresses can be allocated to hosts in the subnet?
Select one alternative:

- 4094
- 1022
- 1024
- 256

Maximum marks: 4

22 UDP

Which of these services is offered by UDP?
Select one or more alternatives:

- [ ] Connection-oriented.
- [ ] Flow-control.
- [ ] Data will be delivered in the same order as sent.
- [ ] None of these services.
- [ ] Connectionless.
- [ ] Checksum.

Maximum marks: 5

23 Kopi av Tallsystemer del 1

The value 42_{10} (that is, 42 in base 10) can also be represented in other number bases. Which of these values are equal to 42_{10}?

We assume that for bases > 10, the letters A, B, C, ... Z are utilized.
Select one or more alternatives:

- [ ] 200_4
- [ ] $2A_{16}$
- [ ] 101010_2
- [ ] 55_3
- [ ] 46_9

Maximum marks: 5

24 Kopi av Tallsystemer del 2

We now consider our own numeral system, with base 6, where we utilize the following symbols: 0, 1, 2, A, B, C. We write a value N in this numeral system as N_{6x} to mark (with the x) that we are not using the ordinary digits for base 6 (which would be 0 - 5).

The value 17_{10} (that is, 17 in base 10) can also be expressed in our new numeral system. Which of the options below are equal to 17_{10}?

Select one alternative:

- $1B_{6x}$
- $3C_{6x}$
- 11100_{6x}
- $2C_{6x}$

Maximum marks: 5

25 Kopi av Binær representasjon

A byte contains the following bits:

1	0	1	1	0	1	1	0

Which values (in base 10) can be represented by these bits?

Select one or more alternatives:

- 182
- 172
- -46
- -74

Maximum marks: 5

26 Kopi av LMC del 1

The following program has been written in an imaginary edition of LMC, which has an extra instruction AX2. This instruction will multiply the value in the accumulator by 2, and write the result back to the accumulator.

Consider the following LMC program:

```
INP
STA 50
INP
STA 51
AX2
OUT
HLT
```

Given that the user enters the numbers 2 and 5 as input, what will be the output?

Select one alternative:

- Nothing
- 100
- 10
- 102
- 4

Maximum marks: 5

27 Kopi av LMC del 2

Gitt følgende LMC-program:

What must the user provide as input for this program to output a smiley? That is a :) and then stop? There might be more than one correct answer.

```
start   INP
        STA start
load    LDA colon
        OTC
        LDA load
        ADD one
        STA load
        BRA start
stop    HLT

index   DAT colon
colon   DAT 58 // :
paren   DAT 41 // )
one     DAT 1
```

If the user provides input multiple times, these are separated by commas in the alternatives below:

Select one or more alternatives:

- [ ] 902
- [ ] 102, 102, 102
- [ ] 901, 901, 0
- [ ] 102

Maximum marks: 5