Test Answer Sheet

Surname:	Subject:	
Name:	Date:	
ID number:	Time:	

Invigilated by:

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Date:

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Remarked by:

Date:

Do not write in this space, it is provided for marking

Exam 2 Memo Hardware 321.

Q1

1. F	2. F	3. F	4. F	5. F
6. F	7. F	8 T.	9. T	10 F

Q2:

(a)

Serial	Parallel
- one bit @ a time	- multiple bits at a time
- less lines	- more lines
- less crosstalk	- susceptible to crosstalk
- less bulky interfaces	- bulky interfaces
- less electromagnetic interference [EMI]	- more susceptible to EMI.

(b) Odd Parity: parity bit is transmitted as a 1 if the number of preceding marks is an odd number. For the binary value of 0110 0011 the parity bit will be 1.

Even Parity - affords a small amt of error checking, parity bit is transmitted with a value of 0 if the number of preceding marks is an even number. For the binary value 0110 0011 the parity bit will be 0

(c) Uses of Caps:

- storing energy
- timing circuits
- Stabilising DC
- Blocking DC
- Coupling

Q3:

SERVO	STEPPER
- closed loop sys	- open loop system.
- no power is used at standstill	- draws max current constantly
- precise position control	- not very precise
- relatively costly	- cheaper
- no easy control from computer	- easy to control from a computer.
- no slippage	- develops slippage

(b) Indication

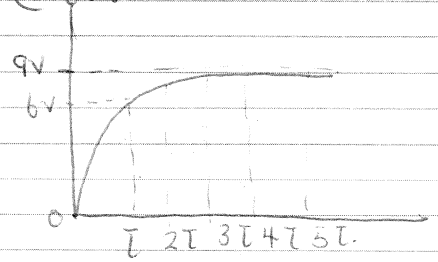
Illumination

(c)

Microprocessors	Microcontrollers
- contains a CPU only	- has a CPU, memory I/O pins, timers, counters
- Bulkier	- Compact
- more power is consumed	- less power is consumed
- more versatile	- less versatile
- may not be programmed to handle real time tasks	- can handle real time tasks as they are self sufficient
- equivalent to a brain	- equivalent to the entire body.

QN 4.

(a) Current will pass through resister R1 and charge capacitor C1. As the voltage across C1 increases, the current reduces. This means the rate of charging becomes progressively slower. After about 5 time constants C1 is fully charged to as close as possible to the battery supply voltage [9V]. The relationship between voltage and time is shown below:



(b) $\tau = RC$

$= 33 \times 10^{3} \times 1 \times 10^{-6}$

$= 33 \times 10^{-3}\ s \simeq 33\ mS.$

(c) Time constant is the time it takes for the charging current to fall to 1/e of the initial value ($\simeq 37\%$)

OR: the time it takes for the charging voltage to increase to 63% of the initial value.