

MAE Robotics Club

Trivia Night AY19/20

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Format: 19 Questions

Random

- 5 General Tech
- 3 Electrical
- 3 Mechanical/Design
- 3 Coding
- Final Mystery Question

Random

Random

Random

Rules of the game

- No shouting of answers – your points will **not** be counted for that round
- Do not reveal your answers until told by the Host
- No googling/consulting notes
- Keep things civilized,
it's trivia night not battlebots

General Tech Questions

Which Company Logo is this





Ans:

Which one of these companies does not have their (APAC) HQ in Singapore?

dyson





Ans:

Which one of this is **not** a browser?

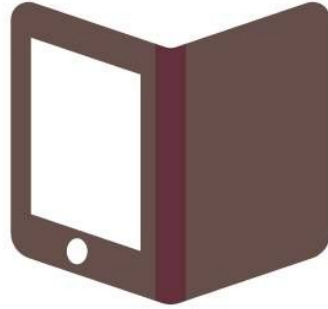


- A. Puffin
- B. Comodo Dragon
- C. Notebook
- D. Opera



NOTEBOOK





NOTEBOOK

Ans: Notebook

Which of these is the name of a Facebook feature?

- Poke
- Tap
- Ping
- Tickle

Poke!

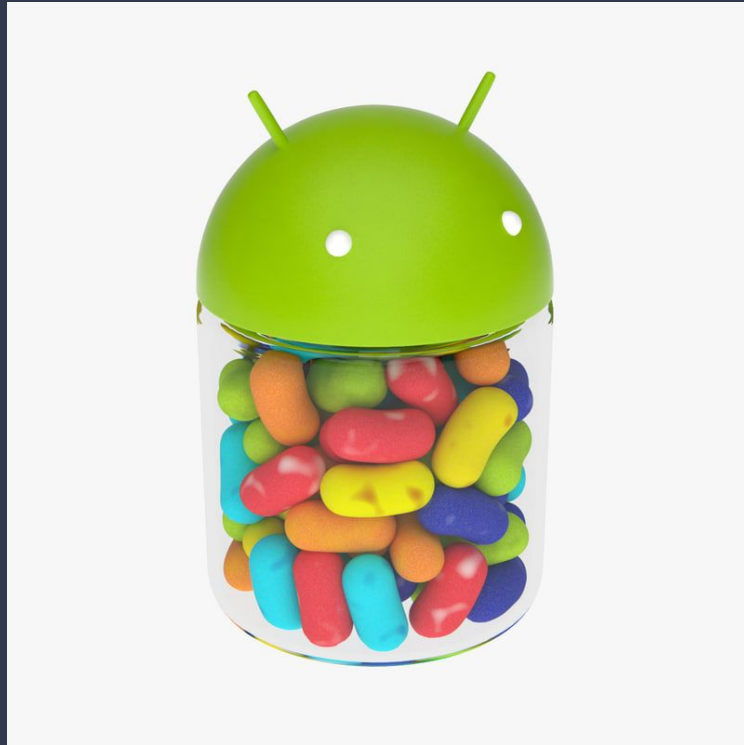
Ans:



Which is NOT one of the names for an Android version

- Lollipop
- Jello
- Froyo
- Kitkat

Jello -> Jelly Bean



Ans:

Checkpoint!

Time for a Random Question~

What's the phobia of cats?

- A. Ailurophobia
- B. Aerophobia
- C. Escalaphobia
- D. Claustrophobia

Ailurophobia – Fear of Cats

Aerophobia – Fear of flying

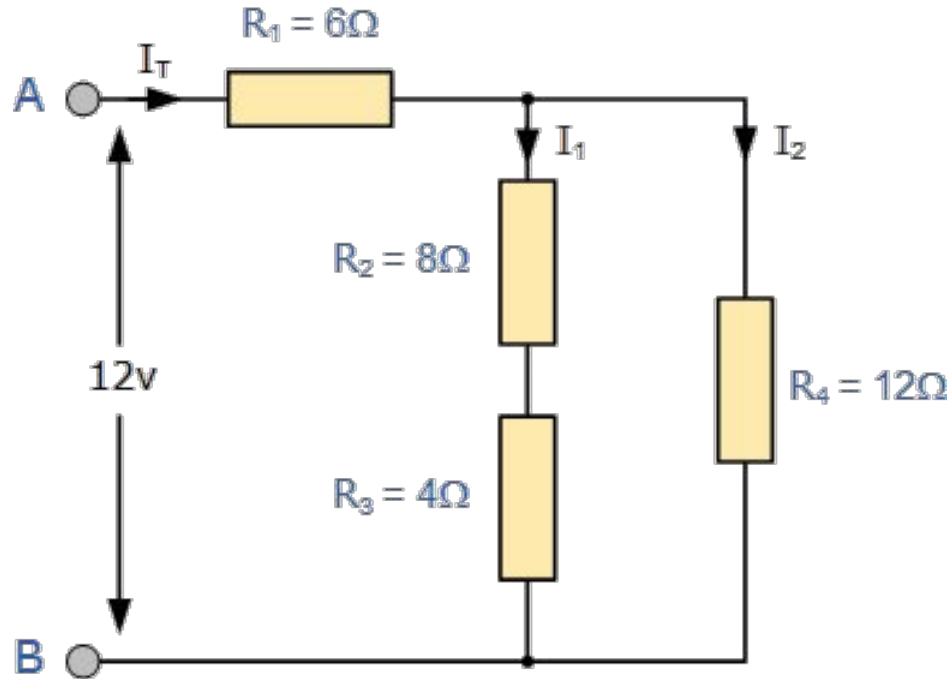
Escalaphobia – Fear of escalators

Claustrophobia – Fear of confined places

Ans: A: Ailurophobia

Electrical Questions

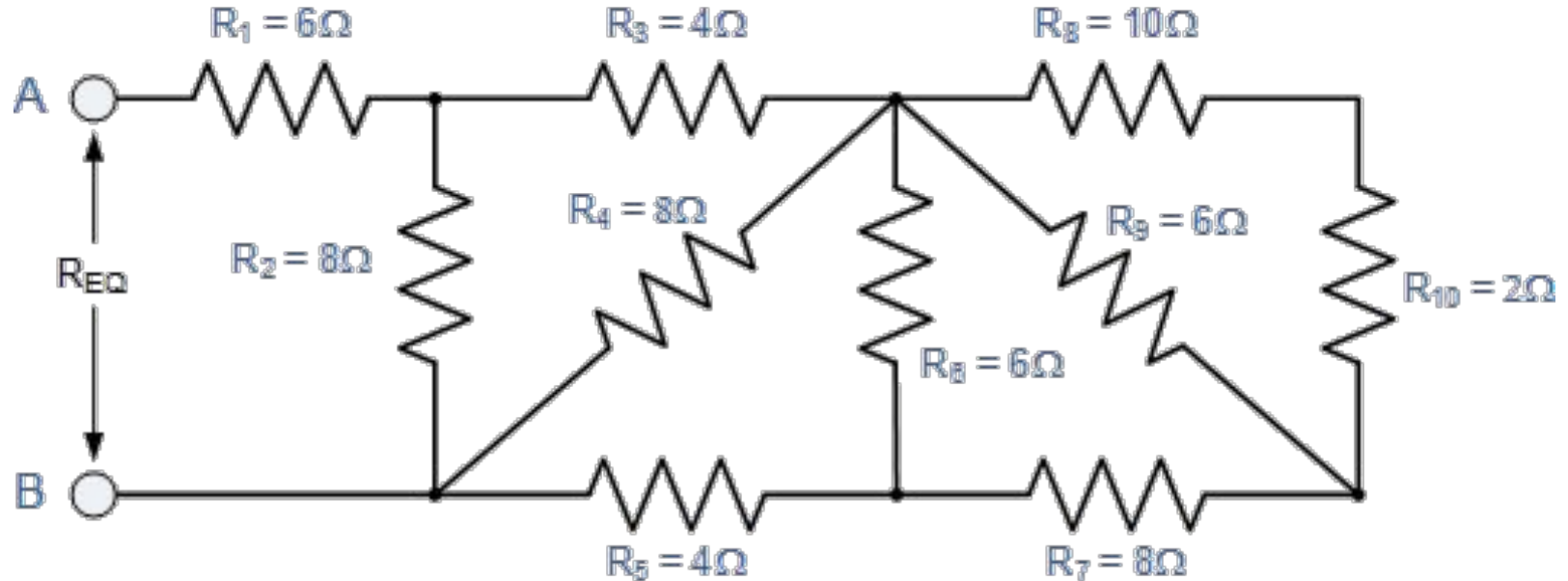
How much is Main Circuit Current (I)?



1 Ampere

Ans:

Find equivalent resistance, R_{EQ}



$$R_{EQ} = 10\Omega$$

Ans:

A parallel plate capacitor separated 10 cm by an air barrier is connected to a 100V battery. The capacitance of the capacitor is 1 picofarad while the battery is connected. Without disconnecting the battery, the parallel plates are moved so they are now 20 cm apart. What happens to the energy stored in the capacitor?

- A. It increases fourfold
- B. It increases by half
- C. It decreases fourfold
- D. It decreased by half

D: It decreases by
half

Ans:

Checkpoint!

Time for a Funny Question~

In all transformers movies, we never saw the parents of the transformers. Who are the parents of transformers?



TransPARENT

Ans:

Mechanical/Design Questions

Which of the following is the most elastic material at 21 degrees celsius?

- A. Rubber
- B. Carbon Steel ($C \leq 0.3\%$)
- C. Cast Iron
- D. Aluminum

Elasticity:

(10⁶ psi)

Rubber	0.001 – 0.01
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Carbon Steel (C≤0.3%)	29.5
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Cast Iron	13.4
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Aluminum	10.0
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1 psi (lb/in²) = 6,894.8 N/m² (Pa)

Ans: B – Carbon Steel

Which law of motion is involved in the recoil of gun? Choose an answer and state the law.

- A. Newton's first law of motion
- B. Newton's second law of motion
- C. Newton's third law of motion
- D. None of these

C: Newton's third law of motion

“Each action has an equal & opposite reaction”

Ans:

Which of the following screws you cannot get from hardware shops? (ISO standard)

- A. M2.5
- B. M5
- C. M7
- D. M12

Ans: C – M7

ISO 262 selected sizes for screws, bolts and nuts

Nominal diameter <i>D</i> (mm)		Pitch <i>P</i> (mm)		Nominal diameter <i>D</i> (mm)		Pitch <i>P</i> (mm)	
1st choice	2nd choice	Coarse	Fine	1st choice	2nd choice	Coarse	Fine
1		0.25	0.2	16		2	1.5
1.2		0.25	0.2		18	2.5	2 or 1.5
	1.4	0.3	0.2	20		2.5	2 or 1.5
1.6		0.35	0.2		22	2.5	2 or 1.5
	1.8	0.35	0.2	24		3	2
2		0.4	0.25		27	3	2
2.5		0.45	0.35	30		3.5	2
3		0.5	0.35		33	3.5	2
	3.5	0.6	0.35	36		4	3
4		0.7	0.5		39	4	3
5		0.8	0.5	42		4.5	3
6		1	0.75		45	4.5	3
	7	1	0.75	48		5	3
8		1.25	1 or 0.75		52	5	4
10		1.5	1.25 or 1	56		5.5	4
12		1.75	1.5 or 1.25		60	5.5	4
	14	2	1.5	64		6	4

Checkpoint!

Time for a Random Question~

In greek mythology who is the god of war?

- A. Kratos
- B. Athena
- C. Artemis
- D. Ares
- E. Zeus

Ans: D – Ares



Coding Questions

What does this code do [Python]

```
a = [1,2,3,4,5]  
new_a = a[::-1]  
print(new_a)
```

Reverses the array

Ans:

Which data structure allows you to get the middle value the fastest?

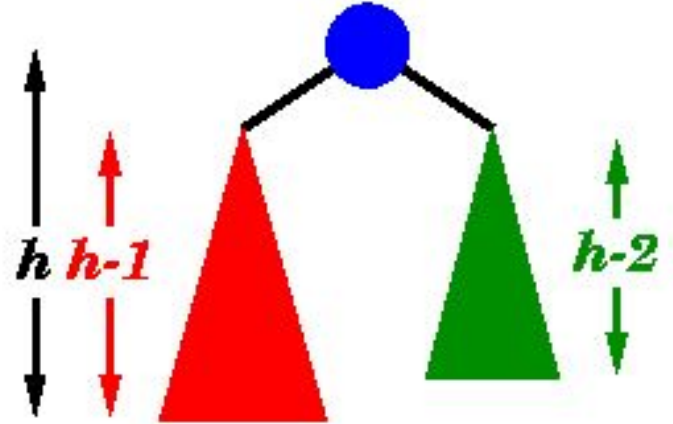
- A. Array
- B. Linked-List
- C. Queue
- D. Stack

Array search is in
Constant time $O(1)$

Ans: A – Array

An AVL tree is another balanced binary search tree. They were the first dynamically balanced trees to be proposed. Like red-black trees, they are not perfectly balanced, but pairs of sub-trees differ in height by at most 1. What is the worst case time complexity of an AVL tree?

- A. $O(n)$
- B. $O(\log n)$
- C. $O(n^2)$
- D. $O(n!)$



B: $O(\log n)$

Ans:

Final Checkpoint!

Time for a Random Question~

Which of animal has the fastest top speed?

- A. Ostrich
- B. Peregrine Falcon
- C. Cheetah
- D. Golden Eagle
- E. SailFish



Ans: B – Peregrine Falcon

FINAL Mystery Bonus Question!!!

2 + 2 Points!

What is the name of our club's president?

(Bonus 2 points for Surname)

Yang Haoning

Ans: