

Theory of Flight

Question 1:	It is possible to stall at any...
A)	Velocity
B)	Speed
C)	Angle of Attack
D)	Load Factor
Question 2:	A helicopter tail rotor is responsible for And is controlled through the
A)	Directional Control, Collective
B)	Lift generation, throttle
C)	Pitch and Roll, Cyclic
D)	Reducing Drag, Spoiler
Question 3:	Choose the most correct statement about wake turbulence.
A)	RPAS do not create wake turbulence
B)	Wake turbulence is created when air moves around a structure
C)	Helicopters operate at low speeds and thus their wake turbulence is high
D)	Aircraft moving at slow speeds create high wake turbulence
Question 4:	If a fixed wing is decreasing its speed, which action can increase lift?
A)	Moving the elevator upwards
B)	Moving the ailerons down
C)	Moving the rudder left
D)	Activating the spoiler
Question 5:	Which attitude puts the fixed wing at the greatest risk of stalling?
A)	When the aircraft is level
B)	When the aircraft is slowly ascending
C)	When the aircraft is banking
D)	When the aircraft is on a nose-up attitude
Question 6:	Which attributes contribute to lift on a wing?
A)	The humidity of the air
B)	What material the wing is made of
C)	The shape of the airfoil and relative airflow over the wing
D)	The chord line

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Question 7:	There are Axis on which an RPA will move. They all pass through what point on the RPA?
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- A) Three; Centre of gravity
- B) Three ; The Focal point
- C) Six ; The Center of Gravity
- D) Six ; The focal Point

Question 8:	How do flap slots impact flight?
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- A) The slots increase the lift and delay the stall
- B) Flap slots allow air to pass through them
- C) The slots grow or shrink to influence drag
- D) Flap slots are used to control roll

Question 9:	What will be the effect on the max distance, of a strong wind blowing at 90 degrees over an aircraft ?
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- A) It will increase the relative airspeed
- B) It will increase the relative ground speed
- C) It increases risk of the vortex ring state
- D) Decreases the max distance

Question 10:	A fixed wing RPA is loaded with the CoG to far aft, the RPA may assume a nose Attitude. To correct this you will require the elevator to be deflected.....
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- A) Down ; Up
- B) Down; left
- C) Up ; Right
- D) Up ; Down

Question 11:	How does the tail rotor of a helicopter contribute to flight?
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- A) The tail rotor contributes to lift
- B) The tail rotor aids in pitch/roll
- C) Disperses wake turbulence behind the aircraft
- D) The tail rotor compensates for the torque of the main rotor

Question 12:	How does a radio wave change over distance?
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- A) Wavelength decreases over time
- B) The waves propagate slower
- C) Wavelength remains constant but amplitude will decrease
- D) The wave will shift to a lower frequency over distance

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| Question 13: | How does the cyclic control the flight of a helicopter? |
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- A) Changes the pitch of the rotor blades independently to create directional control.
 - B) It increases or decreases the RPM of the helicopter
 - C) It influences the elevation of the aircraft
 - D) It directly controls the rotation of the tail rotor in order to yaw the aircraft
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| Question 14: | What is the benefit of a small pitch propeller on a fixed wing? |
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- A) Higher top speed of aircraft
 - B) A shorter take-off distance
 - C) It functions optimally at higher altitudes
 - D) It only stalls at very high speeds
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| Question 15: | What is the camber of an airfoil? |
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- A) The overall surface area
 - B) The ratio between lift/drag
 - C) The curvature of the upper and lower surfaces of the airfoil
 - D) The ratio of the wing width and the wing length
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| Question 16: | When flying at extremely high altitude how would your propeller perform? |
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- A) Propeller efficiency is decreased
 - B) Low air density means less drag and more lift
 - C) The propeller is unaffected
 - D) High air density means less drag and more lift
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| Question 17: | A stall occurs when smooth airflow over the wing is disrupted and lift degenerates rapidly. This is caused when the wing... |
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- A) Has laminar airflow over its surface
 - B) Has a difference in the upper and lower camber of the airfoil
 - C) Rotates at very high speeds
 - D) Exceeds its critical angle of attack
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| Question 18: | How does icing influence a wings ability to perform? |
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- A) It exaggerates the camber increasing lift and drag
 - B) Icing disrupts laminar airflow
 - C) Icing increases weight decreasing energy efficiency
 - D) 30% decrease lift and 40% increased drag

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Question 19: What is the main limitation of VHF radio waves?

- A) require LoS to operate
- B) They require a repeater to be effective
- C) They interfere with Wi-Fi signals
- D) They are absorbed by moisture, limiting effective range

Question 20: With constant speed, what wing generates the most lift?

- A) Square wing, weak camber
- B) Swept back wing, strong camber
- C) Square wing, strong camber
- D) Swept back wing, weak camber

Question 21: Spoilers are designed to?

- A) Increase lift
- B) Eliminate lift
- C) Increase drag on take-off
- D) Decrease drag in flight

Question 22: What is the effect of moving the Centre of Gravity (CoG) forward, how would the imbalance be corrected with control surfaces?

- A) If the CoG is forward the aileron would correct
- B) If the CoG is too far forward the nose will pitch up, elevator correct
- C) If the CoG is too far forward nose will pitch down, elevator corrects
- D) If the CoG is forward the rudder would correct

Question 23: What action can save you when trapped in a Vortex ring state?

- A) Increase the throttle to overcome the downwash
- B) Yaw quickly to try and spin out of the vortex
- C) Trigger the RTH function
- D) Move horizontally into "Clean" air

Question 24: If attempting to Yaw Clockwise with a multi-rotor, which motors will increase their RPM?

- A) Two side motors
- B) Clockwise rotating motors
- C) Counter clockwise rotating motors
- D) The two front motors