VII.A. Maneuvering During Slow Flight

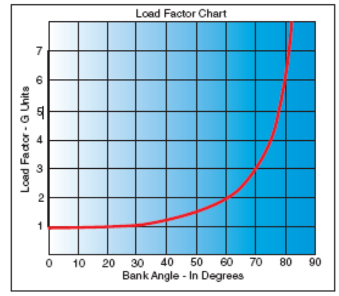
References: Airplane Flying Handbook (FAA-H-8083-3), Risk Management Handbook (FAA-H-8083-2), POH/AFM

KNOWLEDGE

The applicant demonstrates understanding of:

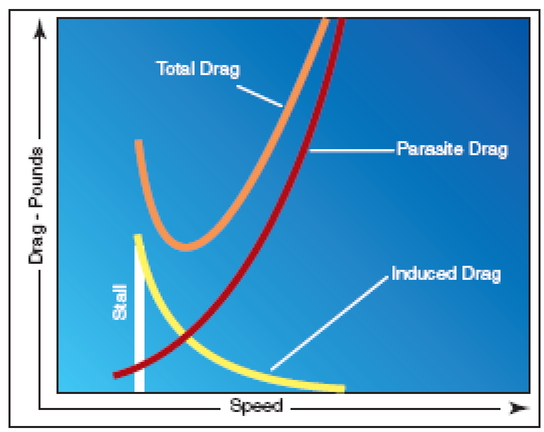
1. **Aerodynamics Associated with Slow Flight in Various Aircraft Configurations, to include the Relationship Between:**
   A. Angle of Attack (AOA)
      i. Defined: The acute angle between the chord line of the airfoil and the direction of the relative wind
         a. As the airspeed slows, the angle between the chord line and the relative wind increases (assuming everything else remains the same)
            - For example, imagine straight and level flight at 100 knots. As the aircraft slows to 60 knots, in order to maintain straight and level flight, the nose must be raised (the lift lost due to the decreasing airspeed is replaced by increasing the angle of attack). Therefore, the relative wind remains the same (the aircraft is still straight and level), but the angle of attack is considerably higher than at 100 knots.
      ii. AOA and Airspeed
         a. As mentioned above, decreasing airspeed necessitates an increasing AOA to maintain lift and vice versa (increasing airspeed, requires a decreasing angle of attack to maintain the same amount of lift)
      iii. AOA and Load Factors
         a. As the load factor ("weight") increases, the AOA must be increased to compensate for the additional weight and the opposite applies (less load factor = less AOA)
      iv. AOA and Configuration
         a. When the flaps are lowered, the AOA increases because the chord line moves to a steeper angle, therefore more lift is generated at the same pitch attitude
            - For this reason, the nose of the aircraft has to be lowered to maintain altitude when the flaps are lowered and airspeed remains the same
      v. AOA and Weight
         a. Increased weight results in an increased AOA to maintain altitude. The heavier the plane the more lift required and vice versa
      vi. AOA and Attitude
         a. Changing the AOA usually is a direct change in the aircraft attitude, specifically the pitch of the aircraft
   B. Airspeed
      i. An increase or decrease in airspeed increases or decreases lift and thus can have an effect on AOA and the attitude of the aircraft
         a. AOA would have to increase with a loss of airspeed and vice versa
         b. The aircraft attitude would change simply because the pitch is being adjusted to increase the AOA to compensate for the loss of airspeed
      ii. In relation to slow flight, the slower the airspeed, the higher the AOA required to compensate for the decreased lift
   C. Load Factor

i. Load factor is the ratio of the total load acting on the airplane to the gross weight of the airplane
   a. Expressed in terms of G's



ii. Turns
   a. Increased load factors are a characteristic of all banked turns
   b. Load factor increases at a high rate after 45°-50° of bank
iii. An increased load factor effectively increases the weight of the aircraft during the time that the load factor is imposed
   a. For example, in cruise flight an aircraft may be at 1 G and weigh 2,000 lbs. In a 60-degree banked turn holding altitude the aircraft is at 2 G's and effectively has increased its weight to 4,000 lbs. while at 2 G's
   b. The increased load factor requires a higher AOA or airspeed or both to compensate for the additional load during the maneuver
iv. An increase or decrease in the load factor effectively increases or decreases the weight of the aircraft and thus can affect the AOA, airspeed, weight, and attitude of the aircraft
   a. An increased load factor effectively makes the aircraft seem heavier to the flight controls and therefore, to maintain altitude the AOA would have to be increased to generate the additional lift required
   b. An increased load factor could also be compensated for by increasing the airspeed
      - This would generate additional lift to compensate for the "increased weight" and thus allow the AOA to stay the same

D. Power Setting
i. When performing slow flight, it is important to know the relationship between parasite drag, induced drag, and the power needed to maintain a given altitude at a selected airspeed



   a. As airspeed decreases from cruise to L/D_{MAX}, total drag and thrust required decrease to maintain a constant altitude
   b. As airspeed decreases below L/D_{MAX}, additional power (thrust) is required to maintain a constant altitude
      - Total drag is now increasing because induced drag increases faster (due to higher the angle of attack) than parasite drag decreases
      - This is known as the 'backside of the power curve' or the 'region of reverse command'
         a The Region of Reverse Command means that more power is required to fly at slower airspeeds while maintaining a constant altitude
ii. While straight and level flight is maintained at a constant airspeed, thrust is equal in magnitude to drag, and lift is equal to weight, but some of these forces are separated into components
   a. In slow flight, thrust no longer acts parallel to and opposite to the flight path and drag.
      - In slow flight, thrust has two components:
         a One acting perpendicular to the flight path in the direction of lift
         b One acting along the flight path
   b. Because the actual thrust is inclined, its magnitude must be greater than drag if its component acting along the flight path is equal to drag

        - The forces acting upward (wing lift and the component of thrust) equal the forces acting downward (weight and tail down force)
      c. Wing loading is actually less during slow flight because the vertical component of thrust helps support the airplane
   iii. The flight controls in slow flight are less effective than at normal cruise due to the reduced airflow over them
      a. As airspeed decreases, control effectiveness decreases disproportionately
         - There is a loss of effectiveness when the airspeed is reduced from 30 to 20 knots above the stall speed, but there is a considerably greater loss as the airspeed is reduced to 10 knots above the stall speed
      b. Anticipate the need for right rudder to counteract the left turning tendencies in a low airspeed, high power setting condition
      c. Large control movements may be required
      d. This does not mean rough or jerky movements

E. Aircraft Weight
   i. An increase in weight is similar to an increase in load factor, except that the increased weight exists throughout the entire flight, rather than during the specific maneuver that will change the aircraft's load factor (G's)
      a. Increasing weight requires an increased AOA or airspeed to compensate for the additional lift required

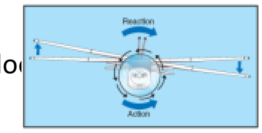
F. Center of Gravity
   i. An airplane with forward loading
      a. The aircraft acts heavier, and consequently slower than the same airplane with a further aft CG
         - Nose up trim is required which requires the tail surfaces to produce a greater download which adds to the wing loading and the total lift required to maintain altitude
      b. Requires a higher angle of attack, resulting in more drag and a higher stall speed
      c. The aircraft is more controllable though
         - This is due to the longer arm from the elevator to the CG
   ii. With aft loading (aircraft acts lighter), the airplane requires less download allowing for a faster cruise speed
      a. Faster cruise because of reduced drag
         - Reduced drag is a result of a smaller angle of attack and less downward deflection of the stabilizer
      b. The tail surface is producing less down load, relieving the wing of loading and lift required to maintain altitude
         - Results in a lower stall speed
      c. Recovery from a stall becomes progressively more difficult as the CG moves aft
         - Moving the CG aft shortens the arm from the elevator, reducing the amount of force it can apply

G. Aircraft Attitude
   i. A change in attitude is simply a change in the aircraft's position in space. Everything else remaining the same, all of the factors will have some effect on the aircraft's attitude and most likely will result in an increase or decrease in pitch

H. Yaw Effects

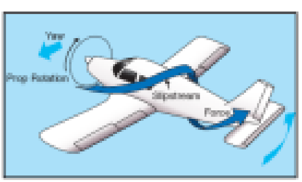
i. Torque (the left turning tendency of the aircraft) is made up of 4 elements which produce a twisting axis around at least 1 of the aircraft's 3 axes
   a. Torque Reaction, Corkscrew Effect of the Slipstream, Gyroscopic Action of the Prop, and P-Factor

ii. Torque Reaction



   - Although torque reaction is more of a rolling tendency than a yaw effect, it do
     contribute to the left turning tendencies of the aircraft
   b. Newton's 3rd Law – For every action there is an equal and opposite reaction
      - The engine parts/propeller rotate one way; an equal force attempts to rotate the plane the opposite direction
   c. When airborne, this force acts around the longitudinal axis, resulting in a left rolling tendency
   d. On the ground, during takeoff, the left side is being forced down resulting in more ground friction
      - This causes a turning moment to the left that is corrected with rudder
         a Strength is dependent on engine size/hp, propeller size/rpm, plane size and ground surface
            1. The higher the power setting, the greater the left turning tendency
   e. Torque is corrected by offsetting the engine, and using aileron trim tabs, and aileron/rudder use
      - Most aircraft engines are not installed on the centerline of the aircraft (on the longitudinal axis), they are offset in order to counteract a portion of the rolling motion caused by torque
      - Trim tabs can be adjusted to counter the turning tendency in level flight
      - Torque that is not countered by the engine and trim tab position must be corrected with coordinate rudder and aileron inputs

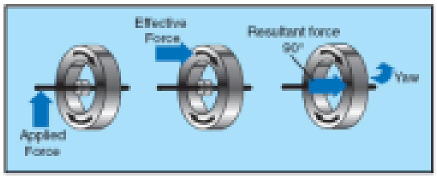
iii. Corkscrew/Slipstream Effect
   a. The high-speed rotation of the propeller sends the air in a corkscrew/spiraling rotation to the rear of the aircraft
      - The air strikes the left side of the vertical stabilizer, pushing the nose of aircraft left
   b. At high propeller speeds/low forward speeds (like in slow flight) the rotation is very compact



      - This exerts a strong sideward force on the vertical tail causing a left turn around the vertical axis
      - The corkscrew flow also creates a rolling moment around the longitudinal axis
         a The rolling moment is to the right and may counteract torque to an extent
   c. As the forward speed increases, the spiral elongates and becomes less effective
   d. The slipstream effect is countered with coordinate rudder and aileron and is most pronounced in climbs (high prop speed and low forward speed)
   e. In relation to slow flight, the high propeller speed and low forward speed results in a relatively pronounced slipstream effect which should be countered with right rudder, and aileron as necessary

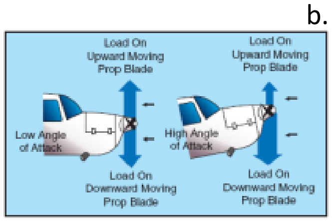
iv. Gyroscopic Action
   a. Gyroscopes are based on two fundamental principles:
      - Rigidity in space (not applicable to this discussion)
      - Precession - The resultant action of a spinning rotor when a force is applied to its rim

- a If a force is applied, it takes effect 90° ahead of, and in the direction of turn
  1. This causes a pitch/yaw moment or combo of the two depending on where applied
  2. Ex: This most often occurs with tail wheel aircraft when the tail is being raised on the takeoff roll
     a. The change in pitch (lifting the tail wheel) has the same effect as applying a forward force to the top of the propeller
        i. This force is felt 90° in the direction of rotation (clockwise as viewed from the cockpit)
     b. The forward force will take effect on the Right side of the propeller, yawing the aircraft Left



b. In relation to slow flight, lifting the nose would result in a left yawing motion on the aircraft
   - Any yawing around the vertical axis results in a pitching moment
   - Any pitching around the lateral axis results in a yawing moment
   - Correction is made with necessary elevator and rudder pressures

v. Asymmetric Loading (P Factor)
   a. When flying with a high AOA, the bite of the down moving blade is greater than the up moving blade
      - This moves the center of thrust to the right of the propeller disc area (causing a yaw to the left)
   b. This is caused by the resultant velocity, which is generated by the combination of the prop blade velocity in its rotation and the velocity of the air passing horizontally through the prop disc
      - At positive AOA, the right blade is passing through an area of resultant velocity greater than the left
      - Since the prop is an airfoil, increased velocity means increased lift
        - a Therefore, the down blade has more lift and tends to yaw the plane to the left



   c. EXAMPLE: Visualize the prop shaft mounted perpendicular to the ground (like a helicopter)
      - If there were no air movement at all, except that generated by the prop, identical sections of the blade would have the same airspeed
      - But, with air moving horizontally across the vertically mounted prop, the blade proceeding forward into the flow of air will have a higher airspeed than the blade retreating
        - a The blade proceeding is creating more lift or thrust, moving the center of lift toward it
      - Visualize rotating the prop to shallower angles relative to the moving air (as on an airplane)
        - a The unbalanced thrust gets smaller until it reaches zero when horizontal to the airflow
   d. Summary: The descending blade of the propeller has a higher AOA, resulting in a bigger bite of air, therefore the center of thrust is moved to the right side of the aircraft's centerline and the aircraft will have a tendency to yaw to the left
   e. In relation to slow flight, the high angle of attack associated with slow flight results in an increase in p-factor which needs to be compensated for with right rudder

I. Configuration

i. In the case of configuration changes, we'll look simply at flaps and the gear
    a. Flaps
        - When the flaps are lowered the AOA increases because the chord line moves to a steeper angle, therefore more lift is generated at the same pitch attitude
            a For this reason, the nose of the aircraft has to be lowered to maintain altitude when the flaps are lowered and airspeed remains the same
        - Flaps also result in additional drag due to the increased lift and additional surface area protruding into the wind
        - Adding flaps can change the AOA, airspeed, and attitude of the aircraft
            a As mentioned above, the AOA changes since flaps are designed to influence the AOA
            b The airspeed will decrease due to the additional drag, and therefore power will have to be increased to maintain the same speed
            c Attitude will change due to the changing configuration, and AOA
    b. Gear
        - In the case you have retractable gear, lowering the gear will result in additional drag and in some cases, it may affect the pitch of the aircraft and therefore make a small change to the AOA
        - As gear is lowered, additional power is required to maintain airspeed and in the case that the gear does have an effect on the AOA, the pitch/attitude will have to be adjusted to compensate

RISK MANAGEMENT

The applicant demonstrates the ability to identify, assess, and mitigate risks, encompassing:

1. Inadvertent Slow Flight and Flight with a Stall Warning, which could Lead to a Loss of Control

A. Understand the slow flight maneuver in order to recognize and develop a feeling for, and control of the aircraft at airspeeds close to a stall
    i. Be familiar with the pitch and power settings to maintain the slow flight airspeed desired
    ii. Make small controlled corrections, use pitch for airspeed and power for altitude
        a. Keep your scan moving. Primarily outside, while glancing inside to confirm the desired performance/instrument indications
    iii. Slow Flight and the Senses
        a. Visually
            - As you pitch up, you will be looking at more sky (nose above the horizon)
                a There will be few if any visual references at this point
                    1. Possibly a couple of clouds
            - Hearing
                a Initially, with the reduction of power, sound will decrease
                b As you approach the stall, the stall warning horn will sound
                c When power is reintroduced, the sound of the engine increases
                    1. The sound of the plane moving through the air stays softer due to the slower airspeed
            - Feel
                a As the aircraft's speed continues to decrease, the controls will become progressively less responsive

1. Larger control movements will be necessary to control the airplane as the air flow over the control surfaces has been reduced

b Right rudder will be necessary as the plane begins to yaw to the left

1. This is due to the left turning tendencies upon reintroduction of power
2. Due to reduced control effectiveness, more right rudder than normal is required

c Just prior to stalling the aircraft will begin to buffet

B. Recovery to Normal Flight
   i. Just like a stall recovery
      a. Full Power
      b. Nose Down (forward pressure)
      c. Clean up the airplane
         - Flaps
         - Gear (If necessary)
   ii. Increase the power and lower the nose to begin building airspeed
      a. Don't dive, apply forward pressure to maintain altitude as the aircraft accelerates
   iii. If configured, remove the first increment of flaps
      a. Anticipate the change in lift to maintain altitude
      b. The aircraft will have a tendency to sink, increase back pressure slightly to counter this
   iv. As airspeed increases and the aircraft exceeds V_Y remove the second increment of flaps
      a. Again, anticipate the change in lift to maintain altitude
   v. As airspeed increases, right rudder pressure will need to be reduced to maintain coordination
   vi. Reestablish a pitch and power setting appropriate for the phase of flight

C. Spin Recovery
   i. Recovery (PARE)
      a. Power - Idle
      b. Ailerons - Neutral
      c. Rudder - Full rudder opposite the spin direction
      d. Elevator - Brisk, positive forward pressure (nose down)
      e. Once the spin has stopped, neutralize the rudders and gently raise the nose, being careful not to stall the aircraft again
      f. This is a generic spin recovery, different aircraft respond differently to spins and spin recoveries, follow the recommended recovery procedures in the flight manual

2. Range and Limitations of Stall Warning Indicators

A. Stall Warning Horn
   i. The stall warning horn usually comes on prior to the stall onset to provide warning and time for recovery. Different stall warning horns have limited ranges and limitations associated with their operation. Reference the POH for more specifics on the stall warning horn installed on your aircraft.

3. Failure to Maintain Coordinated Flight

A. Slow flight, by definition, means the aircraft will be operated very close to its stall speed. Any increase in back pressure could potentially result in a stall. This can be hazardous, especially if the aircraft is not coordinated
   i. A stall & yaw are the ingredients necessary for a spin (basically, an uncoordinated stall)
   ii. Generally, the phases of flight in which the aircraft is in slow flight are close to the ground (takeoff and landing). A spin at these low altitudes may not be recoverable

B. Spins

i. Prevention
   - Maintain coordination
   - Do not use abrupt, excessive pressure inputs (especially back elevator pressure)
   - Recover at the first sign of a stall

b. Spin Recovery (PARE)
   - Power - Idle
   - Ailerons - Neutral
   - Rudder - Full rudder opposite the spin direction
   - Elevator - Brisk, positive forward pressure (nose down)
   - Once the spin has stopped, neutralize the rudders and gently raise the nose, being careful not to stall the aircraft again
   - This is a generic spin recovery, different aircraft respond differently to spins and spin recoveries, follow the recommended recovery procedures in the flight manual

4. Effect of Environmental Elements on Aircraft Performance

A. Turbulence

i. When flying more slowly than minimum drag speed (LD/MAX) the aircraft will exhibit a characteristic know as speed instability

a. If the aircraft is disturbed by even the slightest turbulence, the airspeed will decrease. As airspeed decreases, the total drag also increases resulting in further loss in airspeed. The total drag continues to rise and speed continues to fall
   - Unless more power is applied and/or the nose is lowered, the speed will continue to decay right down to the stall

ii. The pilot must understand that, at speed less than minimum drag speed, the airspeed is unstable and will continue to decay if allowed to do so

B. Microbursts

i. A strong downdraft which normally occurs over horizontal distances of 1 NM or less and vertical distances of less than 1,000'. In spite of its small horizontal scale, an intense microburst could induce windspeeds greater than 100 knots and downdrafts as strong as 6,000 fpm.

ii. In a situation such as slow flight, when the aircraft is in a high angle of attack, high power, slow speed, there is minimal ability for the aircraft to climb, especially in the case of a microburst

a. Do not fly in or around thunderstorms or heavy rain showers where microbursts are most common. In the case of a microburst, recover from slow flight and establish the best climb configuration and climb airspeed for your aircraft

iii. The FAA has developed a Pilot Windshear Guide Advisory Circular (AC 00-54)

a. Included is information on how to recognize the risk of a microburst encounter, how to avoid an encounter and the best flight strategy for successful escape should an encounter occur

C. Density Altitude

i. Pressure Altitude

a. Pressure Altitude: Altitude above the standard 29.92" Hg plane
   - $1{,}000(29.92 - \text{Alt}) + \text{Elev}$

b. As air masses move, they carry different levels of pressure. Those different pressure levels affect engine performance
   - A higher air pressure (more air in a given volume) results in better engine performance (more combustion). Less pressure results in poorer performance.

        a Therefore, aircraft takeoff and climb performance will improve with higher air pressure (shorter takeoff distance, and increased climb performance)
    - High air pressure is often associated with good weather, low air pressure is often associated with storms and poor weather

ii. Density Altitude/Temperature
  a. Density Altitude: Pressure altitude corrected for nonstandard temperature. Density altitude is used in computing the performance of aircraft and its engines.
    - $120(°C - 15°C) + PA$ (this is an approximation)
  b. Pressure altitude corrects for non-standard pressure, whereas density altitude takes it at step further and corrects pressure altitude for non-standard temperatures
    - Lower temperatures (the air is more compressed) result in better performance
    - Higher temperatures (the air is less compressed) result in poorer performance
    - Although a low-pressure system may come through, very cold weather has an opposite effect on performance
      a Lower temperatures result in better performance (shorter takeoff run and increased climb performance)
      b Overall, high pressure, cold days result in the best takeoff and climb performance

iii. Humidity
  a. Although not directly accounted for on the performance charts, humidity decreases performance

iv. In relation to slow flight, the aircraft will perform better in lower pressure and density altitudes as well as with lower amounts of humidity and will perform worse in the opposite conditions
  a. Therefore, the aircraft will have a more difficult time maintaining airspeed and altitude in poorer atmospheric conditions

5. Collision Hazards, to Include Aircraft, Terrain, Obstacles and Wires

A. Collision Hazards and Slow Flight
  i. Slow flight can be a mentally taxing maneuver and is often performed in the busiest phases of flight (takeoff and landing). The combination of these two factors can result in the pilot becoming overly task saturated and increasing the risk of a collision
    a. Always divide attention between the aircraft and the environment
    b. Be aware of terrain and obstacles that may be in the aircraft's path

B. Collision Avoidance
  i. Operation Lights On
    a. A voluntary FAA safety program to enhance the see and avoid concept
    b. Pilots are encouraged to turn on their landing lights during takeoff and whenever operating below 10,000', day or night, especially when operating within 10 miles of any airport, or in conditions of reduced visibility, and in areas where flocks of birds may be expected (coastal areas, lake area, refuse dumps, etc.)
  ii. Right-of-Way Rules (FAR 91.113)
    a. An aircraft in distress has the right-of-way over all other traffic
    b. Converging Aircraft
      - When aircraft of the same category are converging at approximately the same altitude (except head on), the aircraft to the other's right has the right-of-way.
      - If they are different categories:
        a A balloon has the right of way over any other category

        b. A glider has the right of way over an airship, powered parachute, weight-shift controlled aircraft, airplane, or rotorcraft
        c. An airship has the right-of-way over a powered parachute, weight-shift-controlled aircraft, airplane, or rotorcraft
        d. However, an aircraft towing or refueling other aircraft has the right-of-way over all other engine driven aircraft
    c. Approaching Head-on
        - Each pilot shall alter course to the right
    d. Overtaking
        - The aircraft being overtaken has the right-of-way and each pilot of an overtaking aircraft shall alter course to the right to pass well clear
    e. Landing
        - Aircraft on final approach to land or landing have the right-of-way over aircraft in flight or operating on the surface
            a. Do not take advantage of this rule to force an aircraft off the runway surface which has already landed and is attempting to make way for an aircraft on approach
        - When two or more aircraft are approaching for landing, the aircraft at the lower altitude has the right-of-way
            a. Don't take advantage of this rule to cut in front of another aircraft
iii. Minimum Safe Altitudes (FAR 91.119)
    a. Except when necessary for takeoff and landing, no aircraft may operate below the following altitudes:
        - Anywhere: At an altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface
        - Over Congested Areas: 1,000' above the highest obstacle within 2,000' of the aircraft when over any congested area of a city, town, or settlement, or over any open-air assembly of persons
        - Over other than Congested Areas: 500' above the surface, except for over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500' to any person, vessel, vehicle, or structure
iv. Clearing Procedures
    a. In the Descent: Execute gentle banks to allow visual scanning of other traffic above/below the wings as well as other blind spots
    b. Straight-and-Level Flight: Execute clearing procedures at appropriate intervals
        - This is also more applicable to cruise, but can be used while the pattern, if necessary
    c. Traffic Patterns: Enter at pattern altitude. Do not enter while descending to prevent descending onto another aircraft
v. Scanning
    a. Use a series of short, regularly spaced eye movements that bring successive areas of the sky into the central visual field
        - Each movement should not exceed 10 degrees, and each area should be observed for at least one second to enable detection

C. Terrain
  i. Be aware of terrain in the vicinity of the airfield, and any terrain that could cause a hazard during the climb or descent into the airfield
    a. Study sectionals and terminal area charts

        b. To avoid terrain and obstacles, especially at night or in low visibility, determine safe altitudes in advance by using the altitudes shown on VFR and IFR charts during preflight planning.
        c. Use maximum elevation figures (MEFs) and other easily obtainable data to minimize chances of an inflight collision with terrain or obstacles.
    ii. Day vs Night flying over terrain
        a. Be extra vigilant at night, when terrain may be impossible to see until it is too late
            - Know safe altitudes to fly and verify your position to ensure you remain clear of hazardous terrain
        b. A personal minimum may be to only fly over high terrain during daylight
D. Obstacle and Wire Strike Avoidance
    i. Many structures exist that could significantly affect the safety of flight when operating below 500’ AGL and particularly below 200’ AGL
        a. This becomes a large factor at the low altitudes associated with the traffic pattern and approach to landing
        b. Become familiar with any obstacles on the approach and departure path
        c. Obstacles can be found in the NOTAMs, as well as in the Terminal Procedures (IFR Document)
        d. At and below 200’ AGL there are numerous power lines, antenna tower, etc. that are not marked and lighted as obstructions and therefore may not be seen
        e. NOTAMs are issued on lighted structures experiencing light outages
    ii. Antenna Towers
        a. Extreme caution should be exercised below 2,000’ AGL due to numerous antennas that extend over 1,000’-2,000’ AGL. Most structures are supported by guy wires which are very difficult to see
            - Avoid all structures by at least 2,000’ as these wires can extend 1,500’ horizontally from a structure
    iii. Overhead Wires
        a. Often overhead transmission wires and lines span departures from runways and other landmarks pilots frequently follow or fly over (lakes, highways, railroad tracks, etc.)
        b. These wires and lines may or may not be lighted
        c. Be extremely vigilant on takeoff and landing
    iv. When taxiing scan vigilantly during taxi for other aircraft and obstacles that may interfere with your taxi or damage the aircraft
        a. Ensure proper clearance between the aircraft and obstacle
            - If unsure of clearance, stop until you’re sure it is safe to pass
    v. If necessary, radio ground to inform them of your intentions or ask for assistance

6. Distractions, Loss of Situational Awareness, and/or Improper Task Management

A. Distractions
    i. During slow flight, whether being practiced as a maneuver or when being used on takeoff or landing, the pilot’s attention should be focused on the tasks at hand (flying, looking for traffic, communication with ATC, etc.)
    ii. Fly first!
        a. Aviate, Navigate, Communicate
    iii. If something is too distracting remove it from your field of view or, in the case of a person, explain the situation and ask them to stop whatever they are doing.
    iv. Distractions can lead to various dangerous situations (slow airspeeds, collisions, disorientation, missed radio calls, unsafe descents or climbs, etc.)

a. Manage tasks appropriately to stay ahead of the aircraft and ensure all necessary checklists have been completed, and both you and the aircraft are prepared for the approach and landing

B. Situational awareness is extremely important when operating at the speeds associated with slow flight. A loss of situational awareness can lead to unsafe situations, mishaps, as well as incursions on the ground or in the air
   - i. Always be aware of other traffic. Build a 3d picture based on what you can see, and what you hear on the radio
   - ii. Maintain situational awareness
     - a. If it is lost, admit it. If there's another pilot, let him or her take over while you catch up. If not, get the aircraft in a safe position (if landing, go around; accelerate out of slow flight if necessary) and then solve the problem

C. Task Management
   - i. Attention needs to be divided between the various required tasks
     - a. No one responsibility should take your full attention full more than a short period
       - Continually move between tasks to ensure everything is being taken care of
     - b. Safety is your number one priority
       - Aviate, Navigate, Communicate
   - ii. Understand what tasks need to be accomplished and when. Prioritize them based on importance and time available.
     - a. Checklists are extremely helpful in properly managing tasks
   - iii. Recognize when you are getting behind the aircraft, and find a way to catch up
     - a. If more time is needed, find somewhere to hold/circle, or slow down
     - b. Ask for assistance, if possible
       - a Don't give up or overstress yourself. Take it one step at a time.

SKILLS

The applicant demonstrates the ability to:

1. Clear the area.
2. Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL (ASEL) or 3,000 feet AGL (AMEL).
3. Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., aircraft buffet, stall horn, etc.).
4. Accomplish coordinated straight-and-level flight, turns, climbs, and descents with landing gear and flap configurations specified by the evaluator without a stall warning (e.g., aircraft buffet, stall horn, etc.).
5. Maintain the specified altitude, ±100 feet; specified heading, ±10°; airspeed +10/-0 knots; and specified angle of bank, ±10°.