

# Citation 500 Systems Test

1. With the Battery as the only source of power and the battery switch in the EMER position, the following bus(es) are powered:
  - a. battery bus, hot battery bus
  - b. emergency bus, hot battery bus
  - c. emergency bus only
  - d. emergency bus, battery bus, hot battery bus
  
2. Which of the following statements is *correct*?
  - a. With external power connected and the battery switch OFF, all DC buses will be powered from the external power unit.
  - b. The battery switch must be out of the OFF position before the voltmeter will indicate the voltage of the hot battery bus
  - c. With external power connected and the battery switch OFF, all DC buses will be powered from the external power unit except the battery itself.
  - d. The battery will continue to charge with the generators on the line regardless of the battery switch position.
  
3. Regarding ignition during the start sequence:
  - a. It occurs immediately when the start button is depressed
  - b. It is initiated automatically by the speed sensing switch at 8-10% N2
  - c. It occurs when the throttle is brought to idle
  - d. It is terminated by the fuel control step modulator when it senses ITT above 300°C
  
4. Which statement concerning the fuel system is *incorrect*?
  - a. The Electric Fuel Boost Pump switches do not have to be ON for engine start.
  - b. With the Fuel Boost Pump switches in the OFF position, the respective boost pump will automatically be activated whenever the respective starter button is depressed or crossfeed from that tank is selected.
  - c. It is normal for both electric boost pumps to operate during crossfeed operation
  - d. The electric fuel boost pumps will be automatically activated anytime the control switches are in NORM and the starter button is depressed, crossfeed is selected, or low pressure (5 psi) is sensed in the engine supply line.
  
5. If the engine driven pump fails,
  - a. The engine will flame out
  - b. The primary ejector pump will fail also, but the boost pump will be activated ON by low pressure and it will sustain the engine
  - c. The transfer ejector pumps will be inoperative also
  - d. Crossfeed must be selected in order to get high pressure motive flow from the opposite engine.

- 6 When the engine is shut down with the throttle (normal shutdown)
- The FUEL BOOST ON is triggered by low fuel pressure
  - The fuel is shut off at the firewall shutoff valve
  - The fuel is cut off at the flow divider
  - The fuel is shut off at the fuel control unit
- 7 The majority of thrust produced by the JT15D engine is obtained by
- The expanding exhaust gases coming from the combustion chamber only
  - The fan which is driven by the high pressure turbine
  - The compressor which is driven by the low pressure turbine
  - The air which bypasses the combustion process
- 8 If the inner turbine shaft should shift to the rear by as much as .070 inches,
- The engine would automatically shut down
  - The associated vibration detector would illuminate the MASTER WARNING lights
  - The synchronizer would shut the engine down
  - Nothing would occur
- 9 The maximum allowable oil consumption for the JT15D engine is
- 1qt. every 10 hours
  - 1qt. every 4 hours (measured over a 10 hour period)
  - .5gal. every 4 hours (measured over a 10 hour period)
  - No specified figure is published since oil is changed periodically.
- 10 The aircraft hydraulic system provides pressure to operate the following systems:
- Landing gear and speed brakes only
  - Anti-skid wheel brakes, landing gear, flaps
  - Speed brakes, landing gear, thrust reverser
  - Flaps speed brakes, landing gear
- 11 The wheel brakes
- Will be inoperative with a HYD LEVEL LO light illuminated
  - Must be applied with the emergency system if a HYD LEVEL LO light is illuminated
  - Use a different type of approved fluid from the aircraft system
  - Are totally independent of the open center aircraft hydraulic system
- 12 The landing gear handle is prevented from movement on the ground by
- Mechanical detents
  - Hydraulic pressure
  - Locking solenoid
  - Manual lock

- 13 Which statement is *incorrect* regarding the landing gear
- The AUX GEAR CONTROL is inoperative with a loss of DC electrical power
  - The pneumatic system should be used to assure positive locking of the actuators following a free-fall gear extension even though all three green lights are illuminated
  - The LDG GEAR warning circuit breaker on the LH circuit breaker panel controls the power to the landing gear position light, warning horn, and solenoid lock.
  - The GEAR CONTROL circuit breaker on the LH circuit breaker controls the power to the landing gear control valve and, if open, the gear cannot be extended or retracted normally.
- 14 When the emergency brakes are used
- The handle should be pumped in order to build up pressure sufficient to stop the aircraft
  - The normal toe brakes must also be applied to allow the bottle pressure to reach the brakes
  - No differential braking is available
  - They will not be available if the gear has been extended pneumatically since that process will take all of the bottle pressure
- 15 The thrust reversers
- May be deployed only when the throttles are in IDLE
  - Must have both EMER STOW switches in EMER for takeoffs to guard against inadvertent deployment during that critical phase of flight
  - May be left in IDLE REVERSE until the aircraft is brought to a complete stop
  - Both A and C
- 16 The emergency dump valve
- Will fail save open if electrical power is lost
  - Will function whether vacuum is available or not
  - Is intended for ground use only in the event of a vacuum failure
  - Depends upon vacuum to have any effect on pressurization
- 17 While cruising at FL 290, the aircraft vacuum system fails, the cabin altitude
- Immediately goes to 13,500 feet
  - Remains at approximately 10,000 feet (as set by the limiters)
  - Rapidly approaches 29,000 feet
  - Decreases to a value as determined by the maximum differential pressure

- 18 The OAT is 90°F and as the aircraft passes through 4000 feet, the EMER PRESS ON light illuminates and the noise level in the cockpit increases
- The air cycle machine (ACM) has probably failed due to an overheat; select the EMER position with the pressurization source selector and select a cooler temperature with the automatic temperature selector
  - The ACM has probably shut itself off; turn the bleeds off and call for the checklist
  - The ACM has shutdown due to an overheat; select EMER with the pressurization source selector and call for the checklist
  - The ACM has shut down; select MANUAL and full cold to cool the ACM down
- 19 The following action should be taken when the AIR DUCT O'HEAT light illuminates
- Turn off W/S bleed air
  - Turn off engine anti ice
  - Place the temperature selector switch to MANUAL and select COLD with the manual temperature control
  - Select GND position with the source selector to increase air flow through the heat exchanger
- 20 Which statement is *incorrect* regarding the PS HTR OFF light?
- It will illuminate if power is lost to the angle of attack probe
  - It will illuminate if the PITOT-STATIC switch is OFF
  - Illumination of this light could mean the loss of power to one of the pitot tubes
  - If power is lost to both heated static ports on the pilots system, the light would illuminate
- 21 Regarding the windshield anti-ice system
- The W/S BLEED switch controls volume (HI or LOW)
  - The W/S BLEED switch controls temperature
  - Electrical power must be available to open the solenoid valve in the tailcone
  - Temperature is controlled by manual valves
- 22 Which statement is correct concerning the surface de-ice system
- The Surface De-Ice switch must be held in the ON position for 12 seconds to insure that all deice boots receive inflation pressure
  - The Surface De-Ice switch must be cycled to RESET to reset the timer circuit after each use
  - The system should not be used below -40°C
  - Illumination of the white SURF DE ICE light after the deice switch has been cycled to ON indicates a lack of bleed air pressure to the boots

- 23 Turning on the engine anti-ice switches with the engines idling at 50% N2, the following indications should be produced
- An increase in ITT, amperage, and ENG ICE FAIL annunciator lights for at least 5 minutes
  - An increase in ITT and amperage
  - Illumination of the ENG ICE FAIL annunciator lights and an increase in amperage
  - Drop in N2 RPM and a rise in ITT
- 24 Which of the following is correct
- Speedbrake extension is limited to  $V_{mo}/M_{mo}$
  - Maneuvering speed ( $V_a$ ) is the same as turbulent air penetration speed
  - A tailwind component of 10 knots is a limitation
  - A crosswind component of 25 knots is a limitation
- 25 Regarding the gust lock
- The engines may be started with it engaged
  - The aircraft should not be towed beyond 60° with it engaged
  - It makes no difference if it is engaged for towing
  - Both A and C

**KEY**

1 C

2 B

3 C

4 C

5 A

6 B

7 D

8 A

9 B

10 C

11 D

12 C

13 A

14 C

15 D

16 D

17 D

18 C

19 C

20 A

21 B

22 C

23 C

24 C

25 B

Hazmat

Alternate

Weather changes enroute

ESTMP

Late pax

No ops at night

Gen fail during ice

Radar fail

Situation #1

Plan a trip using the following information

Planned flight is from SAT to ASE to drop 4 passengers and baggage

Passengers weigh 150, 200, 220, 250. Baggage is 200. One passenger(250) is in an electric wheelchair with a battery and an escort (150). It will fold to fit in baggage compartment.

Some passengers will be hunting and wish to transport firearms.

Passengers are 2 hours late

SAT weather for departure is RVR 3500

Forecast at ASE is scheduled to be 50% chance of 4 miles in snow.

Denver is forecast to be clear with chance of snow overnight.

During flight RH GEN fails

Radar fails

ASE calls for 3 miles in snow, then ½ mile after FAF, aircraft in front goes missed

DEN weather is 6000 RVR freezing fog, ATC asks for LAHSO

Upon landing in DEN, what is procedure? MEL, Dispatch,

Inop items fixed, quick turn, contamination exists on AC from approach, while fueling wheelchair pax wants to remain onboard during fueling. Ops manual, AI/DI procedure.