PHENOM 300 SYSTEMS QUESTION BANK

ENGINE

1. What engines are on the Phenom 300? How many lbs of thrust?

   * Pratt & Whitney PW535E; 3360 lbs of thrust.

2. How are the engines controlled?

   * By a dual channel Full Authority Digital Electronic Control, (FADEC) system. Each engine is controlled and monitored by two FADEC channels. When one channel is in control, the other is in standby mode.

3. What supplies power to the FADEC?

   * A 28VDC airframe power is required to enable operation of the control system and to start the engine. Once the engine is running, the FADEC takes its primary power from either the engine driven PMA or the 28VDC airframe power, whichever provides more power. The 28VDC airframe power bus is available for back-up supply purposes.

4. What are some of the functions of the FADEC?

   * During START, it accelerates the operating engine’s N2 to 72% to protect the gear box from damage.
   * Ensures no limits are exceeded on hot, hung or no start.
   * Controls Automatic Thrust, (ATR).
   * Provides WHSAIS envelope information to the AMS controller.
   * Schedules fuel flow during starting based on N2 speed and ambient conditions.
   * Controls the igniters.
   * Calculates an N1 speed setting corresponding to the Thrust Lever Angle, (TLA) position selected, and compensates this setting for ambient temperatures and pressures, aircraft bleed off-takeoffs and operating modes. The FADEC then governs the engine to this N1 value.

5. During start, when are both igniters automatically energized?

   * The FADEC energizes one igniter for ground engine starting when TT0 is above 0°C and both igniters when TT0 is below 0°C or for in-flight engine starting.
6. How does the FADEC assist an In-Flight Start?

FADEC automatically actuates both igniters during starting and disables the abort starting logic. In this case, the decision on whether to abort an unsuccessful start is at the pilot’s discretion.

7. How does the FADEC assist for an Auto Relight?

The FADEC continuously monitors the engine parameters and automatically turns on both igniters and schedules the relight fuel flow in case an engine flameout is detected, assuming the ENG START/STOP knob is out of the STOP position.

8. How is dry motoring performed?

By setting the ENG IGNITION switch to OFF, while the engine is in shutdown state, and by setting the ENG START/STOP knob to START.

9. What is the purpose of the Permanent Magnetic Alternator, (PMA)?

The PMA is the primary source of AC power to both channels of the FADEC when the engine is running above idle. Below this speed, the primary source of AC power to the FADEC is the airframe 28VDC power, which is used during engine starting and as a backup source for the PMA.

10. What is the purpose of the ATR?

The ATR, controlled by the FADEC, automatically provides maximum engine thrust (TO RSV or GA RSV) whenever it is armed, thrust levers are at least at the TO/GA position, and one of following conditions occurs:

- Difference of N1 values is greater than 20% between both engines (one engine fails);
- Loss of communication between both engines.
The TO RSV thrust is also provided whenever both engines are operating and both thrust levers are positioned to MAX, if the ATR is armed.

The ATR status (ON/OFF) may be selected via MFD bezel on the Takeoff Data Set Menu. However, if no selection is made before takeoff, the system assumes status ON.

Whenever the ATR is activated, the green ATR indication on the MFD disappears and the cyan thrust mode will be displayed with an additional “RSV” indication.

When ATR is commanded, the FADEC will send a discrete hardwired command to close the ECS flow control valve. This will have the effect that no bleed to the airplane air conditioning system will be extracted from the engine. The ECS OFF will also be commanded if one bleed fails during takeoff or go-around with wing and horizontal stabilizer anti-ice ON.

11. What will happen if the START/STOP knob is moved to STOP and the TLA is not at idle?
   The FADEC will disregard the STOP selection and not shut down the engine.

12. Under normal operating conditions what color are the engine instruments pointers and digits?
   Green.

13. What does an “E1/2 OIL IMP BYP” CAS message indicate?
   There is an impending blockage of an oil filter.
ELECTRICAL SYSTEM

1. How many batteries power the airplane? Two.

2. What type are they? Lead-Acid.

3. Where are they located? #1 in the nose; #2 behind rt. wing root.

4. How many volts and amps for each? 24VDC; 34 Ah, 36 Ah, or 42 Ah (after serial #15).

5. Which battery provides electrical power for engine starting? #2 battery (if 42 Ah, 2 extra starts are available)

6. What is the minimum voltage for starting? 24 volts Charging? 27 volts


8. What are the generator loads? Ground=330A In-Flight=390A

9. What is the minimum battery temperature for normal operation? -10C (14F)

10. What function in the electrical system allows the engine to start without causing surges in the Avionics? Quiet Start Contactor.

11. If a single generator fails in-flight, what happens? Both SHED BUSES lose power.

12. What does it mean if the GPU is plugged in, but there is no GPU AVAIL light illuminated on the button? DC power requirement from the GPU of between 26V and 29V is not being met.

13. What are we looking for when we push in the Electrical Emergency Button on the before taxi checklist? That the batteries show at least 23.5 volts.
(The generators continue to power the DC busses in this scenario, but certain other relays open in order to confirm battery voltage).

14. If the GPU is powering the airplane, when do the generators come on line? 
*When the GPU is disconnected (from the Central Bus) which can be confirmed on the electrical synoptic page.*

15. If the GPU is connected and the Electrical Emergency Button is pushed in, what happens? 
*Because the generators are not on-line yet, the electrical system is forced into electrical emergency, connecting the batteries directly to the emergency buss.* 
(The GLC 1, GLC 2, SBC 1 and SBC 2 will be commanded to open, and BTC 1 and BTC 2 will be hardwire locked out, EBC 1 will open and EBC 2 will close). 
The Batteries 1 and 2 will supply power to the HOT BATT BUSES, EMERGENCY BUS and the CENTRAL BUS.

16. If a Dual Generator failure occurs in flight, what remains powered? 
*The aircraft wiring logic will automatically configure the electrical emergency scenario. The Batteries 1 and 2 will supply power to the HOT BATT BUSES, EMERGENCY BUS and the CENTRAL BUS providing engine starting.*

17. For approximately how long? 45 minutes max.

18. If while in flight, the CAS message ELEC XFR FAIL appears, what is the memory item and why is this procedure necessary? 
*ELEC EMER BUTTON.........PUSH IN* 
A complete in-flight loss of the main generating system has occurred, but the automatic transfer logic has failed to configure the electrical emergency condition, so pushing in the button allows the pilot to override the automatic transfer failure and enable the load shedding process by forcing the system into the electrical emergency condition.

19. What is normally powered by Starter Generator 1? 
*DC BUS 1, SHED BUS 1, EMERGENCY BUS and HOT BATT BUS 1.*
20. What is normally powered by Starter Generator 2?

*DC BUS 2, SHED BUS 2, CENTRAL BUS, HOT BATT BUS 2.*
FUEL SYSTEM

1. Where is the fuel stored? *Two integral wing tanks.*

2. How many pumps are found in each tank and what are they called? *Three; one ejector pump, one scavenge ejector pump, one electric fuel boost pump.*

3. What is normally used to supply fuel from the wing to the engine fuel control unit in flight? *Ejector pumps.*

4. How is the primary fuel ejector pump powered? *Motive flow from the respective engine.*

5. What is the primary purpose of the scavenge jet pump? *Maintains the fuel level in the collector tank ensuring a constant flow of fuel to the engine during normal flight.*

6. When is the electric fuel pump activated if in the auto position? *Engine start, crossfeed operation, if primary ejector pump fails.*

7. What ensures that the differential pressure between the tank and ambient remains within structural limits and prevents fuel spillage? *A vent system including a NACA air inlet/outlet.*

8. How is crossfeeding performed? *Select the XFEED switch to the wing tank with the low fuel quantity (LO 1 or LO 2). This opens the XFEED valve and turns on the electric DC pump in the wing tank with the highest level of fuel. Both engines will utilize fuel from that tank.*

9. What is the restriction on crossfeed operation? *Shall not be performed during takeoff and landing.*
10. When fuel becomes balanced and the XFEED valve is still open, what CAS message will be annunciated? "FUEL EQUAL".

11. Will the total tank quantity indication be lost if only one wing tank quantity indicator fails? Yes.

12. The fuel shutoff valves are normally open. What is the only way to close one of these valves? By pushing the fire shutoff pushbutton.


15. Is there de-fueling capability? Yes, by means of a dump valve located under each wing.

16. While fueling, what monitors the fuel quantity in the tanks and controls refueling flow into each tank? EFCU, Electronic Fuel Control Unit.

17. How long is maximum refueling time from empty to full? Less than 12 min, at 50 psig.

18. Explain the two critical tests that should be accomplished on the control panel before re-fueling begins?
Lamp Test – When the LAMP TEST switch is held up, the LH TANK and RH TANK indicator lights stay on or come on according to the status of these lights, the FAIL indicator light turns on and the digits light up.
Shut-Off Test – When the SHUT-OFF TEST switch is held up during pressure refueling operation, the LH TANK and RH TANK indicator lights must come on, indicating that the shut-off valve closes, and the FAIL indicator light must be off.
19. What action is necessary to accomplish on the refueling panel if external power is not being utilized?

*The POWER SWITCH must be selected to BATT.*
HYDRAULIC SYSTEM

1. What systems require hydraulic pressure?
   *Landing Gear, Wheel Brakes, Pusher, Rudder Boost, Spoiler/Speed Brakes.*

2. What provides variable flow and pressure to the system? And at what rate?
   *Two engine-driven hydraulic pumps at 3000psi (located on the accessory gear box of each engine).*

3. In case of a hydraulic pump malfunction, what prevents rotation without interfering with the continued operation of the engine?
   *The hydraulic pump connecting shaft to the AGB has a recess designed to work as shaft shear point if the torque imposed by the hydraulic pump to the AGB exceeds limits.*

4. What is the function of the Priority Valve?
   *It guarantees hydraulic power to the spoilers, stick pusher, rudder spring actuator or brakes by restricting the flow to the landing gear, if being used simultaneously.*

5. What encases the hydraulic fluid?
   *A (spring-biased bootstrap diaphragm type) reservoir.*
   *(50psi reservoir pressure, 3000psi system pressure)*

6. How much can it hold?
   *Maximum 1.3 gals.*

7. What provides contamination protection for the system?
   *Two disposable filter elements located on the lower portion of the manifold (one for low pressure return and one for the high pressure line; the filter can capture any particle greater than 5 microns).*

8. What would happen if the filter fails or is blocked by too much contamination?
   *A bypass valve will open to allow continued flow though the hydraulic system.*
9. What is available to indicate that the filters need to be replaced?

The filters have red “pop-up” differential pressure indicators to provide a visual indication when the filters need to be replaced.

10. How are the Fire Shutoff Valves closed?

Manually by the engine fire extinguisher shutoff buttons, automatically in case of hydraulic system high temperature, or through the shutoff switches on the hydraulic panel.

11. What does a “HYD HI TEMP” CAS message indicate?

The hydraulic fluid temp has risen (to above 235+/- 7F) and both FSOV automatically close.

12. What does a “HYD LO PRES” CAS message indicate?

The system is not capable of providing flow at rated pressure.

13. What does a “HYD SOV ½ FAIL” CAS message indicate?

A Fire Shut Off Valve (FSOV) was commanded to close and did not close. (or a FSOV position does not agree with its switch position).
LANDING GEAR

1. The landing gear is *electrically actuated* and *hydraulically operated*.

2. Where is the landing gear emergency handle located?
   *Under the cockpit floor between the pilot seats.*

3. What holds the landing gear in the up position?
   *An uplock box on each gear.*

4. Explain the Emergency Extension process.
   *Pull out the free-fall handle that activates the free-fall selector valve and releases all residual hydraulic pressure from the landing gear lines to the return line, and mechanically releases the landing gear uplocks. Gravitational and aerodynamic forces extend the landing gear (the gear free fall). The downlock mechanism then locks the gear in its fully extended position.*

5. When the flap lever is set to either 0, 1, or 2 position, when would the landing gear aural warning sound?
   *Difference between pressure altitude and LFE is less than 700’, or radio altimeter indication less than 700’ AGL; and
   *Airspeed is below 160kts; and
   *Either thrust lever is set below 40 degrees for two operative engines; and
   *Thrust lever of operative engine is set below 40 degrees for a one-engine inoperative condition.*

6. When would the landing gear aural warning sound at flap lever 3 position or FULL?
   *Regardless of thrust lever position, airspeed and altitude, the landing gear aural warning cannot be silenced by pushing the WRN INHIB button.*

7. When would the landing gear aural warning sound if flaps failed?
   *The landing gear aural warning will sound when the difference between pressure altitude and LFE is less than 700’ while descending.*
8. What is the primary input to the Air/Ground System?  
*Weight-on-Wheels (WOW)*

9. Name some of the aircraft systems that utilize the WOW signals:

   - *Brake Control System*
   - *Landing Gear Control Lever*
   - *FADEC (Full Authority Digital Engine Control)*
   - *Electrical System*
   - *Lights (Baggage Compartment)*
   - *Air Conditioning and Pressurization*
   - *Fuel System (Fuel Indication)*
   - *Flight Controls (Flaps and Spoilers);*
   - *Avionics (Data Concentrator Unit and GEA (Garmin Engine/Airframe unit) 3).*

10. What is the maximum turning radius?  
*Rudder pedals give up to 20 degrees of steering authority with another 23 degrees thru differential braking and thrust.*

11. What would a “LG WOW SYS FAIL” CAS message indicate?  
*There is disagreement between the signals from right and left WOW sensors for more than 3 seconds.*
BRAKES

1. What type of brake system does the Phenom 300 utilize?
   Carbon Brakes and Brake-by-Wire (Rudder pedals actuate the pedal transducers that send the brake inputs to the Brake control Unit (BCU)).

2. The brake system includes what functions:
   1) **Locked Wheel Protection** – prevents the main landing gear tire from bursting. (If a locked wheel condition is detected, where the wheel speed is 30% or less of the other wheel reference speed, a full pressure dump is applied to the locked wheel. The pressure dump is cancelled when the wheel speed or the “locked wheel” attains 70% of the paired wheel reference speed. The dropout speed for this functionality is 30kts, allowing differential braking for steering purposes).
   2) **Anti-Skid Protection** – prevents tire skidding and maximizes brake efficiency (The system controls the amount of hydraulic pressure applied to the brakes and reduces the wheel brake pressure, if necessary, to prevent skidding. The system provides antiskid protection when both wheel speed reference speeds are above 30kts. Below 10kts, anti-skid is deactivated, allowing the pilot to pivot on a wheel).
   3) **Touchdown Protection** – prevents brake application prior to airplane on ground; allows the wheels to spin up at touchdown in order to avoid tire blow out, even if pedals are being pushed.
   4) **Gear Retract Braking** – provides a brake pressure application during gear retraction to stop the rotating wheels before entering the wheel well.
   5) **Initiated Built In Test (IBIT)** – it exercises the pressure loop components throughout their full range in order to ensure correct operation of the SOV, BCV, and PT.

3. What happens if the wheel speed input fails?
   Anti-Skid is not available.

4. What would a “BRK FAIL” CAS message indicate during an approach?
   Only the emergency/parking brake will be available for stopping. (Actuating the T-Handle in the cockpit ports brake accumulator pressure to each brake assembly proportional to the amount the handle is pulled).
5. Is Anti-Skid available for the emergency/parking brake? *No.*

6. How many applications does the emergency/parking brake provide? *Six.*
FLIGHT CONTROLS

1. What are the primary flight controls?
   *Aileron, elevator, and rudder.*

2. What are the secondary flight controls?
   *Flaps, spoilers, horizontal stab and gust lock.*

3. What do each of the Flight Control Electrical (FCE) systems control?
   - FCE 1 controls Pitch Trim Backup and Flaps
   - FCE 2 controls Normal Pitch Trim and Spoilers

4. What are the flap position degrees and airspeed limitations?
   - Flap 1 is 8 degrees, 180 kts
   - Flap 2 and 3 are each 26 degrees, 170 kts

5. What are the (3) functions of the spoilers?
   1) **Roll Spoiler** – When flaps are at any position other than 0, and the control wheel is rotated more than 30 degrees left or right, the spoiler on the respective side deploys, providing increased roll authority.
   2) **Ground Spoiler** – increases drag and dump lift on landing and rejected takeoff to reduce required stopping distance.
   3) **Speed Brake** – increases drag and dump lift while in the air; only available with flaps retracted

6. What conditions must be met for ground spoilers to deploy?
   1) aircraft on the ground
   2) thrust levers idle
   3) ground spoilers armed
      *(Ground spoilers deploy to 35 degrees at approximately 1.2 seconds)*

7. Will the speed brakes function in conjunction with flaps?
   *No. The spoilers will not extend if flaps are beyond 0 degrees. If open, they will retract if flaps are commanded to extend.*
8. What prevents the spoilers from opening further than their original position in the event of loss of hydraulic fluid?
A Hold-Down Lock Valve (HDLV). Its purpose is to trap hydraulic fluid in the retract chamber of the PCU in the event of hydraulic fluid loss. It shuttles to the by-pass position allowing the check valve to close and block fluid from exiting the retract chamber or the PCU, thereby preventing the control surface opening further than its original position.

9. If extended, at what airspeed will the speed brakes retract?
110kts.

10. Will the speed brakes retract if the power is advanced?
Yes. If the speed brakes are deployed, or open, and you advance the power, they automatically retract. A CAS message confirms speed brake retraction. Placing the speed brake switch to up extinguishes the CAS message.

11. Describe the flaps.
Four-position, four-panel trailing edge Fowler Flaps mechanically actuated by jackscrews, which are powered by a DC electric motor. The Flight Control Electronics (EFC) operates one Power Drive Unit (PDU) which drives 6 flexible shafts, which operate the flap actuators.

12. What is the purpose of the Spring Loaded Rudder Booster system?
It provides force assistance to the pilot in case of thrust asymmetry by controlling the spring preload of two tension springs. When the rudder spring actuator is energized, the actuator is fully extended due to the external load from the tension springs. When the actuator solenoid valve is commanded by the FADECs during an asymmetric thrust operation, the actuator is in fully retracted position, which rotates the actuator bellcrank, forcing the tension springs to equally extend, and increasing their pre-loads. The tension springs supply a force on the spring fork, which transmits a hinge moment to the rudder torque tube through the connection rod and bellcrank.
The FADEC sends a signal to command the SLRB actuator when the thrust asymmetry between the engines is greater than 500 lbs and the airspeed is greater than 60 kts. The system will only be activated if at least one of these two conditions are met:
* asymmetry between the engines equal to or lower than 250lbs
* airspeed equal to or lower than 50kts

13. What besides the aircraft’s yaw damper provides yaw damping capability?

**Ventral Rudder Surface.**

*It is a small auxiliary rudder behind the tail-mounted ventral fin. It’s automatically activated via air data inputs once airspeed reaches 60 KIAS on the takeoff run and any time the primary yaw damper is OFF. With the yaw damper engaged, the ventral rudder locks in trail. Inputs generated by the AFCS commands a dedicated autopilot servo, which transmits commands directly to the ventral rudder torque tube through steel control cables; it is not connected to the rudder control system, so has no interface with pilot command. The VRS lets you dispatch the airplane without a functioning yaw damper.*

14. Which trims are commanded by the Trim Actuation System (TAS) through the trim panel?

**Aileron and Rudder.**

15. Describe the 3 second timer on the roll trim and rudder trim.

*After 3 seconds of continuous trimming, the actuator will not move, so it is necessary to release the switch before commencing trimming. This warning system mitigates spontaneous or commanded movement of the trim surface beyond safe limits.*

16. Where is the roll trim actuator installed?

**On the left wing tip.**

17. How would roll or rudder trim failure be detected?

*Switch activation will not move the trim tab; it will not function. There is no CAS message to indicate its condition.*

18. Where are the auto-tab surfaces located and what do they do?

*The auto-tab surfaces are installed in the elevator surface trailing edge. The auto-tab surfaces are automatically deflected whenever there is an elevator surface deflection.*
PNEUMATICS – AMS

1. What is the function of the Air Management System Controller, (the dual-channel, software based, electronic digital controller)?
   *It continuously monitors the performance of the pneumatic system components, the WHSAIS as well as the airflow schedule of the ACS and maintains system functionality through system logic.*

2. What sub-systems are considered pneumatic?
   *Air conditioning, cabin pressurization, wing and horizontal stab anti-ice system*

3. How is the bleed system controlled?
   *By two bleed Pressure Regulating Shutoff Valves (PRSOV) located in each pylon.*

4. What are the functions of the two Pressure Regulating Shutoff Valves (PRSOVs)?
   *They regulate the hot bleed air released to the ECS and AIVs and provide a firewall shutoff capability for the bleed air lines.*

5. What would you expect regarding the AMS if the temperature were above 30°C?
   *A white crew awareness CAS message stating that one or both bleed valves has closed, which can be verified on the ECS schematic page.*

6. Does a PRSOV automatically close in case of a single engine takeoff condition?
   *Yes.*

7. Can the remaining bleed air then supply all of the bleed air required by the system?
   *Yes, via the Cross Bleed Valve, (XBV).*

8. How can the pilot override the RH PRSOV to the closed position?
   *By placing the pneumatic Bleed 2 toggle switch to the OFF position.*

9. What does turning the ECS knob to OFF VENT do?
   *Opens the Ram Air Valve (RAV) in the rear fuselage providing fresh air to both the cabin and cockpit, closes both FCSOVs (ECSs), and closes both PRSOVs (bleeds).*
10. What two modes control cockpit and cabin temperature?
*Auto and manual mode.*

11. How does the crew transfer cabin temp control to the passengers?
*By dialing the Cabin Temp Knob full counter-clockwise into the detent.*

12. How is temperature of the air to the cabin controlled?
*Temperature Modulating Valves (TMVs) mix cooled air from the heat exchangers with hot bleed air based on temperature selection on the cockpit control panel.*

13. What is the function of the Vapor Cycle System, (VCS)?
*Provides cooling air for the cabin and cockpit and is operated automatically by the ECS controller. (The VCS uses a refrigerant, evaporators, condenser and a fan to produce the cold air).*

14. When can the VCS be operated on the ground?
*With GPU power, or one engine operating.*

15. What is used to cool the heat exchanger?
*Ground cooling fan on the ground or ram air in flight.*

16. For the pressurization system to operate automatically, what input is required by the flight crew prior to departure?
*LFE must be set.*

17. What is the purpose of the Dump Button?
*Provides cabin depressurization by opening the outflow valve. If pressed a second time, the system returns to normal. It also turns off the recirculation fans.*

18. Where is the Outflow Valve located?
*It is mounted on the aft pressure bulkhead.*

19. What is the purpose of the negative and positive relief valves?
*They are designed to prevent over or under pressurization of the fuselage; they are not actuated during normal operation.*
ICE AND RAIN

1. Which subsystems do the ice and rain protection include?
   Wings, horizontal stab, engine air intakes, pitot and static, windshields.

2. What heats the engine nacelle intake?
   Engine bleed air.

3. With the loss of electrical power, what is the default position of the engine anti-ice valves?
   Open, providing continuous bleed air the engine inlet.

4. What does a “A-I E ½ Fail” indicate?
   Loss of anti-ice protection to that engine; must avoid icing conditions.

5. How are the wings and horizontal stab heated?
   Each side is heated using bleed air from the respective side engine; if one bleed source fails the entire system is heated from the remaining source. (The pneumatic system supplies bleed air at controlled temperature and pressure to the WHSAIS, (Wing and Horizontal Stabilizer Anti-Icing System), using controlled hot bleed air from the compressor engines. The hot air is then delivered to piccolo tubes for heating the wings and stab).

6. In order to deal with engine bleed air flow limitations, how is the WHSAIS operation limited?
   By a WHSAIS envelope. (Temperature and altitude are the two variables that determine the envelope’s parameters. If the aircraft is flying inside the envelope and the wingstab switch is ON, the FADEC increases the engine idle levels to provide the minimum engine bleed pressure and temperature required for proper operation).

7. What does “A-I WINGSTB INHB” CAS message indicate?
   WHSAIS switched ON outside the icing envelope. Or, aircraft is in single bleed configuration and above the 15,000 ft. icing envelope when WHSAIS is switched on.
8. At what altitude is the WHSAIS operation limited to in a single-bleed source scenario?

15,000ft
FIRE

1. How many hand held fire extinguishers do we keep in the airplane?
   *Two, one in the back of the cabin and one behind the co-pilot’s seat.*

2. What occurs by pushing a fire shutoff button?
   *Closes the respective side fuel and hydraulic shutoff valves and the bleed valves (PRSOVs) and enables fire extinguisher discharging bottle.*

3. How many fire-extinguishing bottles are on the airplane?
   *One.*

4. When the fire detection system is tested on the Power Up checklist, what indications will confirm the system is working properly?
   *Voice message: “FIRE”,
   CAS message: “ENG 1/2 FIRE”
   FIRE message in the ITT field and red light in the shutoff pushbutton*

5. What does continued illumination of the engine shutoff pushbutton indicate, after completing the Engine Fire procedure and extinguishing the fire bottle?
   *The overheat/fire on that engine still persists.*
1. What are the three positions of the oxygen supply control knob and their functions?

**CREW ONLY**: disables automatic deployment of passenger oxygen masks.

**PAX AUTO**: enables automatic deployment of passenger oxygen masks when cabin pressure altitude is above 14700 ft (+300/-300 ft), if the OXYGEN SUPPLY handle is pushed.

**PAX OVRD**: deploys the passenger oxygen masks regardless of cabin altitude, if the OXYGEN SUPPLY handle is pushed.

2. What is the purpose of the Auto Dilution Valve?

When pulled, the flight crew will breathe cabin air, when oxygen supply is not required. When pushed, the flight crew will breathe oxygen according to the position of the regulator knob.

3. When will the valve automatically close?

In case of cabin decompression. Also, the ADV is capable of closing automatically even without cabin decompression. (Normally, cabin pressure altitudes from 8300 to 10000 ft cause the valve to close).

4. When do the passenger oxygen masks automatically deploy?

14700 ft (+300/-300 ft).

5. What does a “CAB ALTITUDE HI” CAS message indicate?

Cabin altitude is 10,000 ft or higher.
FLIGHT INSTRUMENTS

1. How is PFD and MFD backlighting controlled with the CKPT panel dimmer in the OFF position?
   *Photocell technology is used to automatically adjust backlighting for ambient lighting conditions.*

2. How many ADS systems are available?
   *Three, ADS 1, ADS2 and STBY.*

3. The airspeed trend vector shows what the airspeed will be in how many seconds?
   *6 seconds.*

4. What does a yellow altimeter setting indicate?
   *The right and left altimeter settings differ by 0.02Hg.*

5. What does the green circle on the airspeed indicator indicate?
   *1.3 Vs.*

6. What happens to the PFD2 and the MFD in the event the left side PFD fails?
   *The MFD enters reversionary mode and PFD 2 remains normal.*

7. What is the primary source of navigation in the Phenom 300?
   *GPS.*

8. How many GPS receivers does the airplane have?
   *Two, one in each GIA.*

9. What is the function of the CPL pushbutton?
   *Swaps autopilot between the PF and PM.*

10. When in T/O of G/A mode, what must be true for ALT Pre-Selected Mode to arm?
    *The preselected altitude must be greater than or equal to 400ft. from the aircraft altitude.*
11. During what approach condition will the FD not level at a preselected altitude?

*When coupled to a Glideslope or Glidepath.*
RVSM

1. Where is the data required to operate the Phenom 300 in RVSM airspace found?
   AFM supplement 1.

2. If one ADS fails in flight, is the plane in compliance with RVSM?
   NO, two RVSM compliant air data systems, one autopilot with altitude hold mode,
   one altitude alterter, and one transponder must be operating.

3. Does the equipment failure need to be reported to ATC?
   Yes, and a new clearance requested.

4. What is the maximum difference between the two primary altimeters if planning
   to fly in RVSM?
   +/- 75ft.

5. Can the IESI be used for RVSM operation?
   No.
COMMUNICATIONS

What pilot action automatically tunes 121.5 as the active COM frequency?
*Pressing the COM frequency toggle key for 2sec.*

What automatically happens if the PTT key becomes stuck?
*The COM transmitter stops transmitting after 35sec of continuous operation.*