Air Traffic Control Procedures Homework

Answer Set:

- “Contact Minneapolis Center 118.5”
- Sector to Sector
- “Southwest 5-2-1, descend and maintain six-thousand, report leaving ten-thousand, and report reaching six thousand”
- “Southwest 5-2-1, descend and maintain six-thousand”
- “United 2-1-4 Pappa Alpha, taxi to runway 3-5 via taxiway Bravo and Charlie”
- “American nine-twenty-one, cleared to land runway one-niner”
- “United seven twelve, runway two-four, cleared for takeoff”
- Blocking-out
- Separating aircraft by issuing altitude, heading and speed changes
- Receiving Controller
- “Victor” airways
- “Be advised traffic at three o’clock”
- Center to Center
- Assisting radar controller separate aircraft below or outside of radar coverage
- Twenty-four
- Updating flight strips with information: position, altitude, route of flight
- Center to TRACON
- Twenty
- Transmission and then reception of high frequency impulses that are reflected by the aircraft
- Assists Radar Controller and Non-radar controller by passing information
- TRACON to Tower
- Transmission of high frequency interrogation signal, followed by reception of response telegram from aircraft responder (on another frequency)
- Low Altitude Airspace
- Transferring Controller
- “Jet” airways
- High Altitude Airspace
- “Be advised traffic at twelve o’clock”
- Change heading, change altitude, change speed.
- Direction, height, and distance
- latitude/longitude, altitude, heading, intended route
- a. Vertical, b. Lateral, c. Longitudinal, d. Holding Patterns
- a. separate landing and departing aircraft, b. provide taxi instructions
- Ground Controller
- Land on the runway and stop (or exit) before reaching the intersection with the other runway
- Local Controller
- Radar Contact
- Radar Contact Lost
- Clears aircraft to land and takeoff with sufficient time separation
- Directs aircraft on taxiways and ramps
Hand-off Procedures:

1) What is an example of the phraseology used for a “handoff” to Minneapolis Center

_________________________________________________________________

2) Give 4 examples of boundary crossings in which a hand-off is required

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

3) During a hand-off …
   a) the old ATCo is known as the _____________ controller
   b) the new ATCo is known as the _____________ controller

Traffic Advisories

4) ATCo advisory when aircraft is straight ahead of the aircraft:
   “___________________________________________________________”

5) ATCo advisory when aircraft is a-beam of the right wing of the aircraft
   “___________________________________________________________”

ARTCC

6) The U.S. operates a total of ___________ centers. The number of centers in the contiguous (lower 48 states) is ___________.

7) Center airspace is divided vertically. Each vertical slice has it’s own set of airways:
   a. Airspace below FL 180 is known as _____________ with airways designated as _____________ airways
   b. Airspace above FL180 is known as _____________ with airways known as _____________ airways

8) ARTCC controllers are responsible for separating aircraft in a sector. There are three types of controllers with the following responsibilities:
   a. Flight Data Controller who is responsible for _________________
   b. Radar Controller who is responsible for _________________
c. Non-radar controller who is responsible for ________________, ________________, and taking over if radar fails.

**Radar**

9) Primary radar operates by
   _________________________________________________________________
   _________________________________________________________________

10) Secondary radar operates by
   _________________________________________________________________
   _________________________________________________________________

11) Primary radar provides the controller with the following information:
   ________________, ________________, and ________________

12) Secondary radar provides the controller with the same information as the primary radar as well as ________________, ________________, ________________, and ________________

**Radar Operations**

13) When an aircraft transition from out-of-radar contact to radar contact, the ATCo advises the pilot” ____________________________ ”

14) When an aircraft transition out of radar contact, the ATCo advises the pilot” ____________________________ ”

15) When aircraft are in radar coverage, ATCo’s can see the exact position of the aircraft on the radar screen. ATCo’s sequence and separate aircraft in radar coverage using the following three types of instructions:
   ________________, ________________, ________________

16) Typical ATCo clearance to aircraft in-radar coverage to descend from 10,000’ to 6’000’
   “ ____________________________ ”

**Non-radar Operations**

17) When aircraft are NOT in radar coverage, ATCo’s cannot see the exact position of the aircraft on a radar screen. Instead ATCO’s have track aircraft from position reports from the aircraft. ATCo’s sequence and separate aircraft that are NOT in radar coverage by:
18) Airspace is blocked-out in the following four ways:
   a. ______________ separation: aircraft are separated by 1000’ below FL290, and by 2000’ above FL290.
   b. ______________ separation: aircraft are using adjacent airspace at the same altitude.
   c. ______________ separation: aircraft at same altitude on same route.

ATCo’s provide non-radar keep track of aircraft position from pilot reports. Pilots report leveling off at the assigned altitude with the following communication
   “_________________________________________
   d. _______________: aircraft is “parked” in an airspace as it flies an elliptical pattern anchored at a fix.

19) Typical ATCo clearance to aircraft in non-radar coverage to descend from 10,000’ to 6’000’
   “__________________________________________________________________
   “__________________________________________________________________”

**Control Towers**

20) Two main functions of Control Towers
   a. ________________________________
   b. ________________________________

21) Two main positions in a Tower and their responsibilities:

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<thead>
<tr>
<th>Position</th>
<th>Responsibilities</th>
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**Control Tower Operations**

22) Typical Ground Controller phraseology to instruct United Airlines Flight 214 PA, to go down taxiway B, then C to get to runway 35.
   “__________________________________________________________________”
23) Typical Local Controller phraseology to instruct United Airlines Flight 712 that they are cleared for takeoff on runway 24

___________________________________________________________________

24) Typical Local Controller phraseology to instruct American Airlines Flight 21 that they are cleared to land on runway 09.

___________________________________________________________________

25) When using “Land and Hold Short Operations (LAHSO)” Tower controllers can improve throughput at airports by using two intersecting (crossing) runways at the same time. Aircraft landing on intersecting runways must ______________________________________________________________________.

26) Download animation of a runway incursion incident at Providence Rhode Island Airport (PVD) from http://www.ntsb.gov/Events/2000/incursion/incur_video.htm [Go down to third animation labeled PVD animation]. This animation require Real Player. If you do not have this, you may have to download it as well.

The animation shows a Runway Incursion incident at PVD.

At the time of the incident, it was dark and the reported visibility was one-quarter mile.

After United 1448 landed on runway 5 Right, the tower controller instructed the flight crew to proceed to the terminal using taxiways November and Tango, and report crossing runway 16.

During their taxi in the fog, the flight crew became disoriented and turned onto taxiway Bravo by mistake.

1) They then provided incorrect position reports to the tower controller.
2) The airplane ended up at the intersection of Runway 16 and Runway 23 left.

Note that Runways 23 Left and 5 Right are opposite ends of the same runway.

Shortly afterward, a Federal Express aircraft taking off from runway 5 Right passed very close to United 1448.

The subsequent conversation between the tower controller and United 1448 shows continued uncertainty about the aircraft's position. For example, there will be several references to Runway 23 Right while the airplane is actually on 23 Left.
ANSWERS TO THESE QUESTIONS ARE NOT IN THE ANSWER SET ABOVE

a. How is the Ground/Local Controller keeping track of the aircraft on the airport

___________________________________________________________

b. On the airport diagram (next page), show where United 1448 was supposed to go “After United 1448 landed on runway 5 Right, the tower controller instructed the flight crew to proceed to the terminal using taxiways November and Tango, and report crossing runway 16”

c. On the airport diagram (next page) show the path United 1448 took. “During their taxi in the fog, the flight crew became disoriented and turned onto taxiway Bravo by mistake …The airplane ended up at the intersection of Runway 16 and Runway 23 left.”

d. On the airport diagram (next page) show the path taken by the departing Fed Ex aircraft

e. On the airport diagram (next page) show the location of the Northwest flight that was cleared for departure

f. There no accident/collision. Who took a decisive action and what action did they take.

___________________________________________________________

___________________________________________________________