EAST AFRICAN SCHOOL OF AVIATION

FINAL EXAMS

FLIGHT PLANNING

Course: Flight dispatch 23

Duration: 2 hrs

DAY/DATE: 14/11/2016 **TIME:9.00 – 11.00 AM**

INSTRUCTION TO CANDIDATES

1. Attempt **ALL** Questions

Part 1 (40mks)

1. A piston aircraft has a taxi fuel of 45lbs, trip fuel of 500lbs, hold fuel flow rate of 120kgs/ hr, flight time 1hr 45 min, alternate fuel of 250lbs and contingency was 5% of trip fuel, what was the minimum required take off fuel? **(5mks)**

2. A piston aircraft has a taxi fuel of 45lbs, cruise fuel flow rate of 550 lbs/hr, hold fuel flow rate of 85 lbs/hr, flight time of 2hrs 30 min, alternate fuel of 220lbs, assuming minimum fuel uplift normal, enroute diversions available and that contingency fuel not used enroute, what will be your fuel on arrival at alternate after a 20 minutes hold? **(5mks)**

3. The total distance from A-B is 3500nm ,the aircraft average TAS is 400kts ,the wind component out is 50kts tailwind, the wind component remains contant, if the actual time of departure is 0945Z,calculate the distance to the point of equal time and the expected time of arrival at PET. **(5mks)**

4. Aircraft mass at **'A':** 49,600kgs
   ISA:+15^{o}C
   Wind component: light and variable
   Cruising using L.R.C at FL360
   The aircraft is to fly for 55 minutes
   What is the fuel consumed from **''A"**
   (Use fig 4.5.3.1) **(5mks)**

5. An aircraft is to fly from A to B a distance of 2500nm (ngm) using:
   Long range cruise (L.R.C) at FL360
   Aircraft mass at '**A':** 61,400kgs
   OAT -42^{0}C
   Wind component: 25kts headwind
   Fig (**4.5.3.1**)
   What is the TAS (true air speed) and the fuel required? **(5mks)**

6. An aircraft has a total fuel load of 7,500kgs, the average fuel flow is 800kg/hr, what is the distance to point of no return (PNR)?, if reserves of 300kg are kept, where the TAS is 350 kts, wind component out is 50 kt tailwind and wind component return is 50kts headwind. **(3mks)**

7. Given: Brake release weight:58,500kg
   Airport elevation: 4500ft
   Cleared cruise pressure level: 32,500ft
   Wind component: 25kts tailwind
   OAT: I.S.A -46^{o}C
   (Fig4.5.1)
   Determine the following:
   a. Trip time
   b. Nautical ground miles
   c. Fuel burned in kgs

d. Average TAS **(4mks)**

8. The still air distance in climb is 450 nautical miles and time 48minutes, what ground distance would be covered in 25kts Tailwind? **(3mks)**
9. **A flight is to be conducted using long range cruise at flight level 350,**
   Aircraft mass at A: 58,700KG
   Aircraft mass at B: 55,300kg
   ISA: +18^{o}C
   W/C 35 kts tailwind
   Calculate:
   TAS, Ground distance, specific fuel consumption, specific air range and air distance (NAM)

PART 2 (30MKS)

1. The fuel burn off is 200kg/hr. with relative fuel density of 0.8,if the relative density is 0.75 ,the fuel burn will be?
   a. 213kg/hr.
   b. 200kg/hr.
   c. 188kg/hr.
   d. 267kg/hr. **(1mk)**
2. With respect to the optimum altitude, which of the following statements is correct?
   a. An aeroplane flies most time above optimum altitude because this yields the most economic results.
   b. An aeroplane always flies at the optimum altitude because this is economically seen as the most attractive altitude.
   c. An Aircraft always flies below the optimum altitude because mach buffet might occur.
   d. An Aircraft sometimes flies above or below the optimum altitude because optimum altitude increases continuously during flight. **(1mk)**

3. In the cruise at FL155 at 260kts TAS,the pilot plans for a 500feet/min descent in order to fly overhead GG VOR AT 2000feet(QNH1030hpa),TAS remain constant during descent, wind is negligible ,temperature is standard, the pilot must start the descent at a distance from GG of :
   a. 130nm
   b. 110nm
   c. 120nm
   d. 140nm

4. The fuel burn of a turbine engine is 220ltrs/hr with a density of 0.80. If the density is 0.75 the fuel burn will be:

a. 235ltrs/hr
b. 176ltrs/hr
c. 220ltrs/hr
d. 206ltrs/hr **(1mk)**

5. The quantity of fuel which is calculated to be necessary for a jet aircraft to fly IFR from departure aerodrome to the destination aerodrome is 5352kg fuel consumption in holding mode is 6000kg/alternate fuel is 4380kg, contingency should be 5% of trip fuel.
   What is the minimum required quantity of fuel which should be on board at take off?
   a. 13370
   b. 13220
   c. 13000
   d. 14500. **(1mk)**
6. The final reserve fuel for aero planes with turbine engines is :
   a. Fuel to fly for 45 minutes at holding speed at 1500ft(450m)above aerodrome elevation in standard conditions
   b. Fuel to fly for 45 minutes at holding speed at 1000ft(300m)above aerodrome elevation in standard conditions
   c. Fuel to fly for 60 minutes at holding speed at 1500ft(450m)above aerodrome elevation in standard conditions
   d. Fuel to fly for 60 minutes at holding speed at 1500ft(450m)above aerodrome elevation in standard conditions

   (1mk)
7. When calculating the fuel required to carry out a given flight, one must take into account:
   1. The wind
   2. Other weather forecast
   3. Foreseeable airborne delays
   4. Any foreseeable condition which may delay landing
   The combination which provides the correct statements is:
   a. 1-2-3-4
   b. 1-2
   c. 3-4
   d. 1-2-3 **(1mk)**
8. Which of the following statements is relevant for forming route positions in intergraded range flight planning?
   a. No segment shall be more than 30 minutes of flight time.
   b. Each reporting points requires a new segments.
   c. Small change of temperature 2°C can divide segment.
   d. The distance from take off up to the top of climb has to be known. **(1mk)**

9. In the ATS flight plan item 15,when entering a route for which standard departure (SID) and standard arrival (STARS)procedures exist:

a. SIDs should be entered but not STARs
b. STARs should be entered but not SIDs
c. Both should be entered in the ATS flight plan where appropriate.
d. Neither SIDs nor STARs should be entered

(1mk)

10. Given:

Maximum usable fuel: 15,000
Minimum reserve fuel: 3500kg
Out bound: TAS 425kt
Fuel flow: 2150kg/hr.
Return: TAS 430 kts
Tailwind component 20kts
Fuel flow 2150kg/hr.

Find the distance to the point of safe return (PSR) from departure point?

a. 1463nm
b. 1491nm
c. 1125nm
d. 1143nm **(1mk)**

11. Given :
Distance X to Y 2700nm
Mach number: 0.75
Temperature: -45^{o}c
Mean wind component onwards: 10 kts tailwind
Mean wind component back: 35kt tailwind

The distance from X to the point of equal time (PET) between X and Y is ?

a. 1386nm
b. 1350nm
c. 1313nm
d. 1425nm

12. Procedure that should be followed?
a. ETOPS
b. Long Range Cruise Descent
c. Drift down procedures
d. Emergency Descent Procedure **(1mk)**

13. In the event that SELCAL, is prescribed by an appropriate authority, in which section on an ATC flight plan, will the **SELCAL code** be entered?
a. Route
b. Aircraft identification
c. Other information

d. Equipment

14. Item 9 of the ATS flight plan includes "**NUMBER AND TYPE OF AIRCRAFT**" in this case "NUMBER" means?
    a. The number of aircraft flying in a group
    b. The registration number of the aircraft
    c. ICAO type designator number as set out in ICAO Doc 8643
    d. The number of aircraft which will separately be using a repetitive flight plan

(1mk)

15. Given:

Dry Operating Mass: 5,320 kgs
Zero Fuel Mass: 6,790 kgs
Trip fuel: 770kgs
Take off fuel: 1,310 kgs
The Traffic load is:

a. 1610 kgs
b. 3080 kgs
c. 1470 kgs
d. 2940 kgs **(1mk)**

16. From which of the following would you expect to find the dates and times when temporary areas are active ?
    a. RAD/NAV charts
    b. AIP only
    c. NOTAMS and SIGMETS
    d. SIGMETS **(1mk)**

17. The take of mass of an aircraft is 66,700kg,which includes a traffic load of 14,200kg and usable fuel load of 10,500kg, if the standard mass for crew is 545kg the dry operating mass is:
    a. 56,200kgs
    b. 41,455kgs
    c. 42,000kgs
    d. 42545kgs **(1mk)**

18. Given the following

Maximum structural take off mass: 48,000kgs
Maximum structural landing mass: 44,000kgs
Maximum zero fuel mass: 36,000kgs
Taxi fuel: 600kgs
Contingency: 900kgs
Alternate fuel: 800kgs
Final reserve fuel: 1,100kgs
Trip fuel: 9,000kgs
The actual take off mass can never be higher than:

a. 48,000kgs
b. 48,400kg
c. 47,800kgs
d. 53,000kgs **(1mk)**

19. What is the equation for the climb gradient expressed as percentage during un accelerated flight(applicable to small angles only)

    a. Climb gradient=(thrust-mass/lift)×100
    b. Climb gradient=(thrust –drag/mass)×100
    c. Climb gradient=(thrust-drag/lift)×100
    d. Climb gradient=(thrust-drag/weight)×100 **(1mk)**

20. Departure aerodrome elevation 1500ft;QNH=1023hpa,temperature=ISA,1hpa=30ft
    a. 6600ft
    b. 6300ft
    c. 7800ft
    d. 6000ft **(1mk)**

21. Given :
    Maximum allowable take off mass: 64400kg
    Maximum landing mass: 56,200kg
    Maximum zero fuel mass: 53,000kg
    Dry operating mass: 35,500kg
    Traffic load 4900kg
    Minimum take off fuel: 7400

    a. 11,100kg
    b. 11,400kg
    c. 14,400kg
    d. 8,600kg

    (1mk)

22. Unless otherwise shown on charts for standard instrument departure the routes are given with?
    a. True course
    b. True heading
    c. Magnetic course
    d. Magnetic heading **(1mk)**

23. An executive pilot is to carry out a flight to a French aerodrome, spend the night there and return the next day. Where will he find the information concerning parking and landing fees?
    a. In the FAL section of French AIP
    b. In the AGA chapter of French AIP
    c. In the GEN chapter of French AIP

d. By telephoning the aerodrome 's local chamber of commerce, this type of information not being published **(1mk)**

24. VFR flight shall not be flow over the congested area of cities a height less than?
    a. The highest obstacle
    b. 2000ft above the highest obstacle within a radius of 6ooft from the aircraft
    c. 500ft above the highest obstacle
    d. 1000ft above the highest obstacle within a radius of 600m from the aircraft **(1mk)**
25. A jet aeroplane has a cruising fuel consumption of 4060kg/hr and 3690kg/hr during holding, if the destination is an isolated airfield, the aeroplane must carry ,in addition to contingency reserves, additional fuel load of:
    a. 1845kg
    b. 8120kgs
    c. 7380kg
    d. 3500kg **(1mk)**
26. Following in- flight depressurization, a turbine powered aircraft is forced to divert to an en-route alternate airfield. If actual flight conditions are as forecast, the minimum quantity of fuel remaining on arrival at the airfield will be?
    a. At least equivalent to 45 minutes flying time
    b. At least equivalent to the quantity required to fly to another aerodrome in the event that weather conditions so require.
    c. Laid down by the operator, with the quantity being specified in the operations manual
    d. At least equivalent to 30 minutes flying time **(1mk)**
27. When using decision point procedure ,you reduce the :
    a. Holding fuel by 30%
    b. Contingency fuel by adding contingency from the burn off between decision point and destination.
    c. Contingency fuel by adding contingency only from the burn off between decision airport and destination.
    d. Reserve fuel from 15% to 10% **(1mk)**
28. Piston aircraft ,taxi fuel 20 lbs, cruise fuel flow, 150lbs/hr, hold fuel flow 60lbs/ hr flight time 1hr 20min,alternate fuel 40lb,assuming minimum fuel uplift, normal en-route diversions available and that contingency fuel is not used enroute, what will be your fuel on arrival at destination after a 20min hold?
    a. 85lb
    b. 95lb
    c. 55lb
    d. 75lb **(1mk)**

29. The planned departure time from the parking area is 1815UTC
    The estimated take off time is 1825 UTC
    The IFR flight plan must be filed with ATC at least at?
    a. 1755 UTC
    b. 1715 UTC
    c. 1725 UTC
    d. 1745 UTC **(1mk)**

30. On a VFR flight plan, the total estimated time is :
    a. The estimated time from take- off to landing at the alternate airport
    b. The estimated time from engine start to landing at the destination airport
    c. The estimated time from take -off to overhead the destination airport
    d. The estimated time from take -off to overhead the destination airport, plus 15 minutes