EAST AFRICAN SCHOOL OF AVIATION EXAMINATION

SAFETY SECTION

DIPLOMA IN FLIGHT DISPATCH

FLD 39

FINAL EXAMINATION

SUBJECT: FLIGHT PLANNING

Duration: 02 Hrs: 30 Min

DAY/DATE: TIME: 1400HRS – 1600HRS

PART A 45 MARKS

1) (For this question use Flight Planning Manual MRJT 1 Figure 4.3.6)
In order to find ALTERNATE FUEL and TIME TO
ALTERNATE, the AEROPLANE OPERATING MANUAL shall be entered with:
A distance in nautical air miles (NAM), wind component, landing mass at alternate
B distance in nautical miles (NM), wind component, zero fuel mass
C distance in nautical miles (NM), wind component, dry operating mass plus holding fuel
D distance in nautical miles (NM), wind component, landing mass at alternate

2) (For this question use Flight Planning Manual MRJT 1 Figure 4.5.4)
Planning an IFR-flight from Paris to London for the twin jet aeroplane.
Given: Estimated Landing Mass 49700 kg, FL 280, W/V
280°/40 kt, Average True Course 320°, Procedure for descent .74 M/250 KIAS
Determine the fuel consumption from the top of descent to London (elevation 80 ft).
A 210 kg
B 320 kg
C 273 kg
D 263 kg

3. (Refer to CAP 697 - figure 2.4)
Given the following find the total ground distance covered:
Pressure height: 12000 ft
Temp. deviation: +8° C
Power setting: Full throttle / 2500 rpm
W/C: +25kt

A) 875 NM B) 960.8 NM
C) 741.6 NM D) 1010 NM

4. (Refer to CAP 697 - figure 3.3)
Power 65%
2600 RPM
FL 60

Give manifold pressure and fuel flow for ISA conditions:
A) 30.0 in HG; 23.8 gphB) 30.3 in HG; 23.3 gph
C) 30.4 in HG; 23.3 gphD) 30.3 in HG; 23.5 gph

5. The route fuel is 270 lb, contingency fuel is 7.5% of the route fuel, alternate fuel is 12 lb, final reserve fuel is 25 lb, and taxi fuel is 25 lb, the take off fuel is:

A) 292 lbB) 312.55 lb
C) 352.25 lbD) 327.25 lb

6. (Refer to CAP 697 figure 3-5)
Given:
FL 75
Lean mixture
Economy Power setting

Find: Endurance in hours with no reserve.

A) 06:12 B) 05:11
C) 05:01 D) 06:06

7. (Refer to CAP 697 figure 2.2.2)
What is the fuel flow (lb/hr) and KIAS for an aircraft at FL70, ISA +10° C deviation?

A) 61.9 gph / 134 ktsB) 63 gph / 134 kts
C) 64 gph / 137 ktsD) 62 gph / 132 kts

8. (Refer to CAP 697 figure 3.3)
A flight has to be made with a multi engine piston aeroplane. For the fuel calculations take 5 US gallons for the taxi, and an additional 13 minutes at cruise condition to account for climb and descent. Calculated time overhead to overhead is 2h37min.

Power setting is 65%, 2500 RPM
Calculated reserve fuel is 30% of the trip fuel
FL 120, Temperature 1° C

Find the minimum block fuel:

A) 76 US gallons B) 91 US gallons
C) 86 US gallons D) 118 US gallons

9. (Refer to CAP 697 figure 2.2 - table 2.2.3)
A flight has to be made with the single engine sample aeroplane. For the fuel calculation allow:

10 lbs fuel for start up and taxi

3 minutes and 1 gallon of additional fuel to allow for the climb
10 minutes and no fuel correction for the descent
Planned flight time (overhead to overhead) is 02 hours and 37 minutes
Reserve fuel 30% of the trip fuel
Power setting is 23 in.HG (or full throttle), 2300 RPM, 20° C lean
Flight level is 50 and the OAT -5° C

The minimum block fuel is:
A) 265 lbsB) 270 lbs
C) 208 lbsD) 250 lbs

10. A multi engine piston aeroplane is on an IFR flight. The fuel plan gives a trip fuel of 65 US gallons. The alternate fuel, final reserve included, is 17 US gallons. Contingency fuel is 5% of the trip fuel. The usable fuel at departure is 93 US gallons. At a certain moment the fuel consumed according to the fuel gauges is 40 US gallons and the distance flown is half of the total distance. Assume that fuel consumption does not change. Which statement is right?
A) The remaining fuel is not sufficient to reach the destination with reserves intact
B) At departure the reserve fuel was 28 US gallons
C) At destination the required reserves remain intact
D) At the destination there will still be 30 US gallons in the tanks

11. For a planned flight the calculated fuel is as follows:
Flight time: 2h42min
Taxi fuel: 9 kg
Block fuel: 136 kg
The reserve fuel, at any time, should not be less than 30% of the remaining trip fuel.

How much fuel should remain after 2 hours flight time?
A) 23 kg trip fuel and 10 kg reserve fuel B) 33 kg trip fuel and no reserve fuel
C) 25 kg trip fuel and 8 kg reserve fuel D) 33 kg trip fuel and 10 kg reserve fuel

12. During an IFR flight in a Beech Bonanza the fuel indicators show that the remaining amount of fuel is 100 lbs after 38 minutes. The total amount of fuel at departure was 160 lbs. For the alternate fuel, 30 lbs is necessary.
The planned fuel for taxi was 13 lbs. Final reserve fuel is estimated at 50 lbs. If the fuel flow remains the same, how many minutes can be flown to the destination with the remaining fuel?

A) 63 minutes B) 44 minutes

C) 4 minutes D) 12 minutes

13. Given:
TAS: 273 kts
Distance NGM: 30
Time: 6 minutes
Calculate Wind component, Ground speed and NAM:

A) +27 kts; 300 kts; 27 NAM B) +20 kts; 293 kts; 33 NAM

C) -20 kts; 253 kts; 27 NAM D) -27 kts; 300 kts; 33 NAM

14. A descent is planned from 7500 ft MSL so as to arrive at 1000 ft MSL 6 NM from a VORTAC. With a GS of 156 kts and a rate of descent of 800 ft/min. The distance from the VORTAC when descent is started is:

A) 15,0 NM B) 11,7 NM

C) 27,1 NMD) 30,2 NM

15. After flying for 16 min at 100 kt TAS with a 20 kt tail wind component, you have to return to the airfield of departure. You will arrive after:

A) 20 min B) 16 min

C) 24 min D) 10 min 40 sec

16. An aircraft flying at 7500 ft is cleared to descend to be level at 1000 ft, 6 NM before reaching a beacon. If ground speed is 156 kt and Rate of Descent is 800 fpm, how many miles before the beacon should descent begin?

A) 15.0 B) 27.1

C) 11.1 D) 30.2

17. Minimum planned take-off fuel is 160 kg (30% total reserve fuel is included). Assume the groundspeed on this trip is constant. When the aeroplane has done half the distance the remaining fuel is 70 kg. Is diversion to a nearby alternate necessary?

A) Diversion to a nearby alternate is necessary, because the remaining fuel is not sufficient

B) Diversion to a nearby alternate is necessary, unless the captain decides to continue on his own responsibility

C) Diversion to a nearby alternate is not necessary, because it is allowed to calculate without reserve fuel

D) Diversion to a nearby alternate is not necessary, because the reserve fuel has not been used completely

18. At a fuel check you have 60 US gallons (USG) of useable fuel remaining. Alternate fuel required is 12 USG. The flight time remaining is 1 hour 35 mins. What is the highest consumption rate acceptable?

A) 37.9 USG/HrB) 21.3 USG/Hr

C) 30.3 USG/HrD) 33.0 USG/Hr

19. Given:
Ground Speed: 150 kts
Wind component: -30 kts
Distance NGM: 86

Calculate NAM and TAS:

A) 69 NAM; 180 ktsB) 103 NAM; 180 kts

C) 103 NAM; 120 ktsD)69 NAM; 120 kts

20. Given:
Wind Component: -30 kts
Distance NAM: 89
Time: 42.5 minutes

Calculate NGM:

A) 110 NGM B) 68 NGM

C) 89 NGM D) 76 NGM

21. Given:
Wind Component: -10 kts
Ground Speed: 125 kts
Distance NAM: 46
Time: 21 minutes

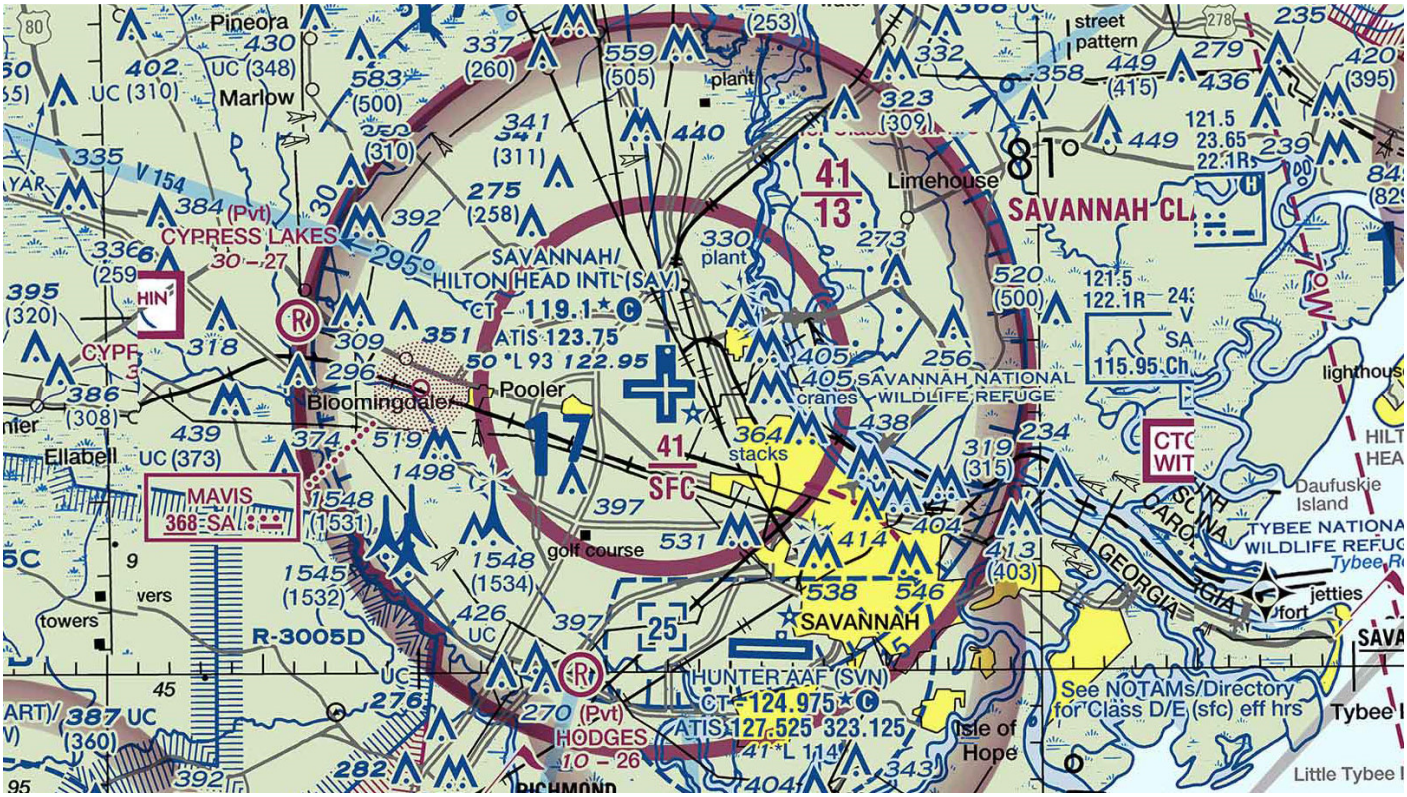
Calculate TAS and NGM:

A) 135 kts; 49 NGM B) 125 kts; 43 NGM

C) 135 kts; 43 NGM D) 125 kts; 49 NGM

22. (Refer to the figure below)
What is the height of the lighted obstacle approximately 6 nautical miles southwest of Savannah International?

A) 1548 AMSL B) 1498 AMSL C) 1533 AGL D) 273 AGL



23. During a flight at night a position has to be reported to ATC. The aeroplane is at a distance of 750 NM from the groundstation and at flight level 350. The frequency to be used is:

A) 1136 kHz B) 123.9 MHz

C) 5649 kHzD) 17286 kHz

24. Where would you find information regarding Customs and Health facilities?

a. ATCC broadcasts b. NOTAMs

c. NAV/RAD supplememnts d. AIPs

25. Turbojet a/c, flying to an isolated airfield, with no destination alternative. On top of taxi, trip and contingency fuel, what fuel is required?

a. Greater of 45 min + 15% of trip or 2 hours b. 30 min holding @ 450 m AMSL

c. 30 min holding @ 450 m AAL d. 2 hours at normal cruise consumption

26. What is Decision Point Procedure?

It is a procedure to reduce the amount of fuel carried on a flight by:

a. reducing contingency fuel from 10% to 5% of trip fuel

b. reducing contingency fuel to only that required from Decision Point to Destination

c. reducing trip fuel to only that required from Decision Aerodrome to Destination

d. reducing trip distance

27. When calculating the fuel required to carry out a given flight, one must take into account:

1. the wind
2. foreseeable airborne delays
3. other weather forecasts
4. any foreseeable conditions which may delay landing

The combination which provides the correct statement is:

a 1,3 b. 2,4 c. 1,2,3,4 d. 1,2,3

28. A flight is planned from L to M, distance 850 NM. Wind component out is 35 kt (TWC), TAS 450 kt. Mean fuel flow out is 2500 kg/h, mean fuel flow inbound is 1900 kg/h and the fuel available is 6000 kg.

The time and distance to PSR is :

a. 1 h 30 min, 660 NM
b. 1 h 30 min, 616 NM
c. 1 h 16 min, 606 NM
d. 1 h 16 min, 616 NM

29. Distance between airports = 340 NM
True track = 320
W/V = 160/40
TAS = 110
Distance to PET is:
a 121 NM
b. 219 NM
c. 112 NM
d. 228 NM

30. Flying from A to B, 270 NM, true track 030, wind velocity 120/35, TAS 125 kt. What are the distance and time to the point of equal time?
a. 141 NM, 65 min
b. 141 NM, 68 min
c. 135 NM, 68 min
d. 150 NM, 65 min

31. An airway is marked 5000 2900a. The notation 5000 is the :
A base of the airway (AGL) B minimum enroute altitude (MEA)
C maximum authorised altitude (MAA) D minimum holding altitude (MHA)

32. Which of the following statements is relevant for forming route portions in integrated range flight planning?
AA small change of temperature (2 °C) can divide a segment.
B The distance from take-off up to the top of climb has to be known.
C No segment shall be more than 30 minutes of flight time.
D Each reporting point requires a new segment.

33. Given :
X = Distance A to point of equal time (PET) between A and B
E = Endurance
D = Distance A to B
O = Groundspeed 'on'
H = Groundspeed 'back'
The formula for calculating the distance X to point of equal time (PET) is:
A

$$X = \frac{E \times O \times H}{O + H}$$

B

$$X = \frac{D \times O \times H}{O + H}$$

C

$$X = \frac{D \times H}{O + H}$$

D

$$X = \frac{D \times O}{O + H}$$

34. Find the time to the Point of Safe Return (PSR). Given: Maximum useable fuel 15000 kg, Minimum reserve fuel 3500 kg, TAS out 425 kt, Head wind component out 30 kt, TAS return 430 kt, Tailwind component return 20 kt, Average fuel flow 2150 kg/h
A 2 h 43 min B 2 h 51 min C 3 h 43 min D 2 h 59 min

35. From which of the following would you expect to find details of the Search and Rescue organisation and procedures (SAR) ?
A AIP (Air Information Publication) B ATCC broadcasts
C NOTAM D SIGMET

36. Mark the correct statement: If a decision point procedure is applied for flight planning,
A the trip fuel to the destination aerodrome is to be calculated via the decision point.
B the trip fuel to the destination aerodrome is to be calculated via the suitable enroute alternate.
C a destination alternate is not required.
D the fuel calculation is based on a contingency fuel from departure aerodrome to the decision point

37. The still air distance in the climb is 189 Nautical Air Miles (NAM) and time 30 minutes. What ground distance would be covered in a 30 kt head wind?
A 188 NM B 193 NM C 174 NM D 203 NM

38. Following in-flight depressurisation, a turbine powered aeroplane 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 30 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 operating manual
D at least equivalent to 45 minutes flying time

39. To carry out a VFR flight to an off-shore platform, the minimum fuel quantity on board is:
A that defined for VFR flights over land increased by 5 %
B that defined for VFR flights over land increased by 10 %
C identical to that defined for VFR flights over land
D at least equal to that defined for IFR flights

40. A public transport aeroplane with reciprocating engines, is flying from NAIROBI to LAGOS. The final reserve corresponds to:
A 2 hours at cruise consumptionB 1 hour at holding speed
C 30 minutes at holding speed D 45 minutes at holding speed

41. For flight planning purposes the landing mass at alternate is taken as:
A Landing Mass at destination plus Alternate Fuel.
B Zero Fuel Mass plus Final Reserve Fuel and Alternate Fuel.
C Zero Fuel Mass plus Final Reserve Fuel and Contingency Fuel.
D Zero Fuel Mass plus Final Reserve Fuel.

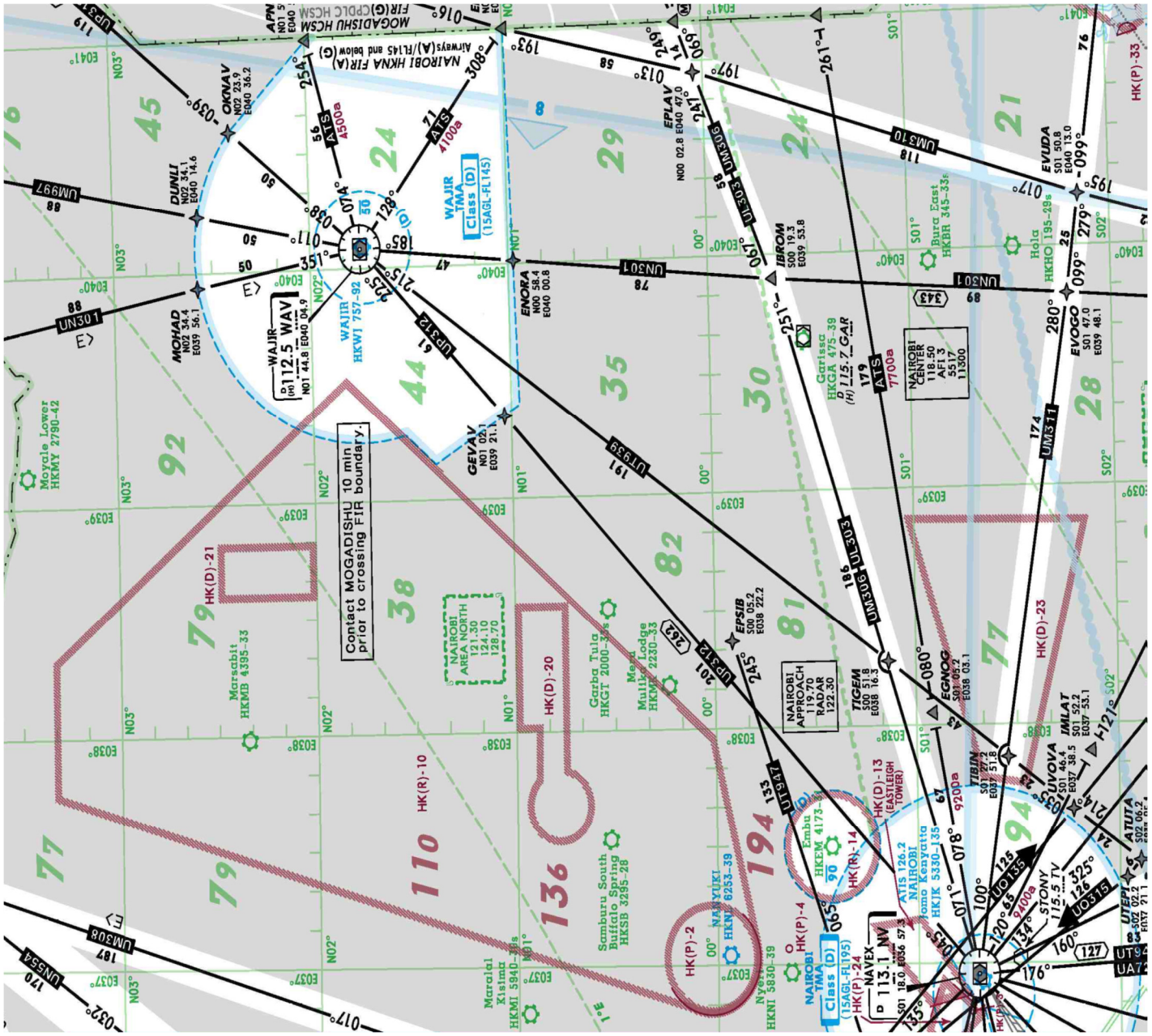
42. An airway is marked 3500T 2100 a. This indicates that:
A the airway is a low level link route 2100 ft - 3500 ft MSL
B the minimum obstruction clearance altitude (MOCA) is 3500 ft
C the minimum enroute altitude (MEA) is 3500 ft
D the airway base is 3500 ft MSL

43. Which of the following statements is (are) correct with regard to the advantages of computer flight plans ?
1. The computer can file the ATC flight plan.
2. Wind data used by the computer is always more up-todate than that available to the pilot.
A) Neither statement B) Statement 1 only
C) Statement 2 only D) Both statements

44. Which of the following statements is (are) correct with regard to the operation of flight planning computers ?
1. The computer can file the ATC flight plan.
2. In the event of inflight re-routing the computer produces a new plan.
A) Statement 2 only B) Both statements
C) Neither statement D) Statement 1 only

45) An airway is marked 5000 2900a. The notation 5000 is the :
A) base of the airway (AGL) B) minimum enroute altitude (MEA)
C) maximumauthorised altitude (MAA) D) minimum holding altitude (MHA)

PART B 20 MARKS



1. From the chart above
    a. Give any three danger airspacesdepicted (3marks)
    b. What is the elevation of Marsabit airstrip (1 marks)
    c. Name the radio navigation aid on the airway UP312 and state its frequency (2 marks)
    d. State three VFR airfields that can be seen on the chart (3 marks)
2. The AIP is divided into three parts. Name the three parts.(3 marks)
3. State and explain four components of reserve fuel (8marks)