



EAST AFRICAN SCHOOL OF AVIATION EXAMINATION

FINAL EXAM

IATA/SAFETY SECTION

SUBJECT: FLIGHT PALNNING

Stream: Flight Dispatch No.21

Duration: 2 Hrs

DATE: 19/09/2016

TIME: 8.30 – 10.30 AM

INSTRUCTIONS TO CANDIDATE:

1. This paper consists of **SEVEN(7)** Printed pages.
2. This paper consists of **TWO SECTIONS**
3. Answer the questions as per the instructions given
4. Examination rules and regulations shall apply

PART 1 (50 MARKS)

1. (a) Calculate the longest and the shortest distance between L (5148N 12315E) and P(2005S 01610) in nautical miles and in kilometers given the earth radius as 6374km **(9mks)**
 (b) List down 5 mandatory documents that should be carried on board an aircraft intended to undertake an international flight. **(5mks)**

2. (a) The total distance from A to B is 2000nm, the aircraft true airspeed (TAS) is 250 kts, the wind component from departure to destination is 40 kts headwind and the wind component back to departure is 50 kts tailwind, if the actual time of departure is 0530Z, calculate the distance to the PET (point of equal time) and the estimated time of arrive at PET. **(4mks)**
 (b) An aircraft has a normal cruise TAS of 180kts, the distance from A to B IS 1400nm the wind component outbound is 30 kts tailwind and the wind component on return is 20kts headwind. Calculate the distance to CP (critical point) when it is known that the aircraft performance on one engine is degraded by 25%. **(3mks)**
 (c) An aircraft has a total fuel load of 8800kgs, the average fuel flow is 450kgs /hr, TAS is 350 kts ,wind component out is 50kts tail wind and wind component on return is 50kts headwind, what is the distance to the point of no return (PNR) if reserves of 500kgs are kept? **(3mks)**

3. (a) A jet aircraft has a taxi fuel of 420 kgs, alternate fuel 1200kgs, cruise fuel flow 5000kgs/hr. ,contingency is 5% of trip fuel, hold fuel flow 3500kgs/hr. and the trip time is 3hrs 50 min, what is the required ramp fuel? **(4mks)**
 (b) A piston engine aircraft has a taxi fuel of 550lbs, cruise fuel flow rate of 8,000 lbs/hr, hold fuel flow rate of 3000kgs/hr. and has alternate fuel of 3500kgs the flight time is 2hrs 45 min, assuming fuel uplift normal, en-route diversions available and contingency fuel not used en-route, what will be your fuel on arrival at alternate? **(4mks)**
 (c) Use the following preplanning details for flight from Jomo Kenyatta international airport to Dubai to calculate the take off mass.
 MTOM: 62,800kgs, MZFM: 51,250kgs, MLW: 54,900kgs.
 Trip fuel: 1800kgs (not inclusive of contingency), alternate fuel: 1,400kgs
 D.O.M:34,000kgs, Final reserve: 1,225kgs, Catering: 750kgs
 Traffic load: 13,000kgs, MTOM: 63,050kgs **(4mks)**

4. Give the following details determine the TAS, NGM, specific fuel consumption (S.F.C), Specific air range (S.A.R).
 Aircraft mass at A: 55,400 kgs
 Aircraft mass at B: 48,700kgs
 Cruise at : mach 0.78/FL350 (**Fig4.5.3.3**)
 I.S.A deviation= +20°C
 Wind component =30kts tailwind. **(6mks)**
5. An aircraft is to fly from airport A to B a distance of 400nm at Mach 0.74 at FL290(**Fig 4.5.3.2**)
 Aircraft mass at A: 57,600kgs
 I.S.A deviation: -25°C
 Wind component: 50 kts Headwind

 What is the true air speed (TAS) and the fuel required? **(4mks)**
6. What is the shortest distance and the longest distance in nautical miles between Tokyo (45375N 13535E) and Rio de Janeiro (3220S 04425W). **(4mks)**

PART 2 (20 Marks)

1. Find the distance in nautical miles between point A(30°N 45°E) and B(30° 60°W).
 a. 3600nm
 b. 779nm
 c. 5456nm
 d. 900nm
2. The navigation plan reads
 Trip fuel 100kg
 Flight time 1hr 35min
 Taxi fuel 3kgs
 Block fuel 181kg
 How should endurance be shown on the flight plan?
 a. 0204
 b. 0240
 c. 0249
 d. 0252
3. The still air distance in climb is 189 nautical air mile and time 30 minutes, what ground distance would be covered in 30kts head wind?
 a. 189 nm

- b. b.203nm
 - c. c.174nm
 - d. 193 nm
4. Given:
Dry operating mass:46,500kgs,Traffic load:8400kgs,Trip fuel:2600kgs,Final reserve :1200kgs.Alternate fuel:1345kgs,Contingency:5% of trip fuel
Which of the following is correct?
- a. Est landing mass at destination 56,100kgs
 - b. Est landing mass at destination 55,030kgs
 - c. Est take off mass 60,175kgs
 - d. Est take off mass 60,045kgs
5. You are flying at FL330,M0.84,OAT -48°C,Headwind 52kts,The time is 1338 UTC, the ATC clears you to be at 30°W(570nm away) at 1500 UTC, To what Mmo do you have to adhere ?
- a. 0.72
 - b. 0.76
 - c. 0.80
 - d. 0.84
6. An aircraft at 7500ft is cleared to descend to be level at 1000ft; 6nm before reaching a beacon, if ground speed is 156kts and the rate of descent is 800fpm, how many miles before the beacon should descent begin?
- a. 27.1nm
 - b. 15nm
 - c. 30.4nm
 - d. 20.5nm
7. In the ATS flight plan item 15(cruising speed)when not expressed as Mach number, cruising is expressed as:
- a. IAS
 - b. CAS
 - c. TAS
 - d. GS
8. The following fuel consumption figures are give for a Jet aircraft:
Standard taxi fuel: 600kg
Average cruise consumption: 10,000kgs/hr
Holding fuel consumption at 1500ft: 8000kgs/hr
Flight time from departure to destination: 6hrs

Fuel for diversion to alternate: 10,200kgs

What is the minimum ramp fuel load?

- a. 77,200kgs
 - b. 77,800kgs
 - c. 74,800kgs
 - d. 79,800kgs
9. If your destination airport has no I.C.A.O indicators, what do you write in the appropriate box of your flight plan?
- a. AAAA
 - b. XXXX
 - c. ///
 - d. ZZZZ
10. The required time for final reserve fuel for turbo jet aircraft is?
- a. Variable with wind velocity
 - b. 30 min
 - c. 45 min
 - d. 60min
11. Given:
- | | |
|------------------------|--------|
| Distance A-B | 2050NM |
| Mean ground speed on | 440kts |
| Mean ground speed back | 540kts |
- What is the distance to the point of equal time between A and B?
- a. 920nm
 - b. 1153nm
 - c. 1130nm
 - d. 1025nm
12. The maximum permissible take off mass of an aircraft for the 'L' wake turbulence category on a flight plan is?
- a. 7000kgs
 - b. 2700kgs
 - c. 5700kgs
 - d. 10,000kgs
13. A sector distance is 450nm long the TAS is 460 kts, the wind component is 50 kts tailwind. What is the still air distance?
- a. 511 nautical air miles
 - b. 406 nautical air miles

- c. 499 nautical air miles
 - d. 414 nautical air miles
14. In the ATS flight plan, for a non –scheduled flight which of the following letters should be entered in item 8(Type of flight)
- a. N
 - b. N/S
 - c. S
 - d. X
15. In the appropriate box of a flight plan form corresponding to the estimated time of departure, the time indicated is that at which the aircraft intends to?
- a. Start up
 - b. Pass the departure beacon
 - c. Go off blocks
 - d. Take off
16. You required to uplift 40 us gallons of AVGAS with SG of 0.72
How many liters' and kilograms is this?
- a. 109 litres 151 kgs
 - b. 182 litres 131 kgs
 - c. 182 litres 289kgs
 - d. 151litres 109 kgs
17. A public transport aircraft with reciprocating engines is flying from Wilson airport to Entebbe. The final reserve fuel corresponds to?
- a. 2 hours at cruise consumption
 - b. 1 hour at holding speed
 - c. 30 minutes at holding speed
 - d. 45 minutes at holding speed
18. Given
- 15,000kgs total fuel
 - Reserve fuel 1,500kg
 - TAS 440kt
 - Wind component 45kt head outbound
 - Average fuel flow 2150kg/hr
 - What is the distance to the point of safe return?
- a. 1520 nm

- b. 1368 nm
- c. 1702 nm
- d. 1250 nm

19. 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?

20.

- a. 85lb
- b. 95lb
- c. 55lb
- d. 75lb

21. Given:

Distance A-B	2050NM
Mean ground speed on	440kts
Mean round speed back	540kts

What is the distance to the point of equal time between A and B?

- a. 920nm
- b. 1153nm
- c. 1130nm
- d. 1025nm