EAST AFRICAN SCHOOL OF AVIATION

FLIGHT PLANNING
FINAL EXAMINATION
FLD EWAC

PART1(40MKS)

1. A jet aircraft has a taxi fuel of 260 kgs, alternate fuel of 4,600kgs, contingency is 5% of trip fuel, cruise fuel flow of 6,000kg/hr and a hold fuel flow of 1,200kgs/hr, flight time is 2hr 45 minutes, what is the required ramp fuel?. **(5mks)**

2. A piston aircraft has a taxi fuel of 85 lbs and a cruise flow of 3,500lbs/hr, hold fuel flow of 1,800 lbs /hr, flight time 3hr 40 minutes, alternate 2040lbs,assuming minimum fuel uplift, normal en-route diversions available and contingency fuel not used en-route, what will be your fuel on arrival at the destination after a 25minutes hold? **(5mks)**

3. The total distance from A-B is 4500nm the aircraft true airspeed is 400kts,the wind component from departure to destination is 50 kts Tailwind and wind component back to departure is 35kt tailwind, if the actual time of departure is 0445Z, calculate the distance to PET(point of equal time)and the estimated time of arrival at point of equal time(PET) **(5MKS)**

4. An aircraft at 15,500ft is cleared to level at 1,000ft, 25nm before reaching a beacon, if the true air speed during the descent is 350 kts and a wind component of 50 kts head wind and the rate of descent is 450 fpm, how many miles before the beacon should descent begin? **(5mks)**

5. Aircraft mass at Airport A is 66,100kgs
   Aircraft mass at Airport B is 57,600kgs
   Cruise at L.R.C@FL330

OAT:-26°c
Wind component: 50kt tailwind
Calculate the TAS, Ground distance and specific fuel consumption (**6mks)**
(Fig4.5.3.1)

6. An Aircraft is to fly from A-B a distance of 3,200ngm using long range cruise(LRC) at FL330
   Aircraft mass at "A" 55,200kg
   OAT:-36°C
   W/C: 25kt tailwind
   What is the true airspeed and the fuel required? **(5mks)**
   (Fig 4.5.3.1)

7. What is the shortest and longest distance between Rome (4155N01110E) and Honolulu (2117N 16850W)? **(4MKS)**

8. Given a break release weight :57,000kg
   Airport elevation: 3,000ft
   Cleared cruise pressure altitude: 29,000ft
   Wind: 30kts tailwind
   ISA +5
   Determine the following:
   a. Sector time
   b. Fuel burned in climb
   c. Nautical ground miles
   d. Average true air speed(TAS)
   e. Air distance flown (5mks)

Fig (4.5.1

PART 2(30MKS)

1. With respect to aircraft loading in the flight planning phase which of the following statement is always correct?

   LM=landing mass
   TOM=take off mass
   MTOM=maximum take off mass
   ZFM=zero fuel mass
   MZFM=maximum zero fuel mass
   DOM=dry operating mass

   a. MTOM= ZFM+ Maximum full tank fuel load
   b. Reserve fuel=TOM-trip fuel
   c. MZFM=traffic load +DOM
   d. LM=TOM-trip fuel

2. A revenue flight is to be made by a jet transport ,the following are structural limits
   Maximum ramp mass: 69,9000kgs
   Maximum take off mass: 69,300kgs
   Maximum landing mass; 58,900kgs
   Maximum zero fuel mass: 52,740kgs
   The performance limited take off mass is 67,450kgs and the performance limited landing mass is 55,470kgs,
   Dry operating mass: 34,900kgs
   Trip fuel: 6,200kgs
   Taxi fuel: 250kgs
   Contingency and final reserve fuel: 1,300kgs
   Alternate fuel: 1,100kgs
   The maximum traffic load that can be carried is:
   a. 13,950kgs
   b. 18,170kgs
   c. 17,840kgs
   d. 24,800kgs
3. 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

4. The optimum altitude is:
    a. The pressure altitude at which the speed for high buffet as TAS is a maximum
    b. Pressure altitude up to which a cabin altitude of 8,000ft can be maintained
    c. The pressure altitude at which the best specific range can be achieved
    d. Pressure altitude at which fuel flow is a maximum

5. How many feet you have to climb to reach FL75?given :fl75.departure aerodrome elevation 1500ft;QNH=1023hpa,temperature=ISA,1hpa=30ft
    a. 6600ft
    b. 6300ft
    c. 7800ft
    d. 6000ft
6. When an ATC flight plan is submitted for a flight outside a designated ATS route points included in item 15(route) should not normally be at intervals of more than:
    a. 20 minutes flying time or 150km
    b. 30 minutes flying time or 370km
    c. 15 minutes flying time or 150km
    d. 1hr flying time or 500km
7. 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
8. Given the following:
   Distance from departure to destination: 435nm
   GS out: 110kts
   GS home: 130kts
   What is the distance of PET from the departure point?
    a. 368nm
    b. 199nm
    c. 236nm
    d. 218nm

9. Given :
   Distance from departure to destination: 500nm
   Endurance: 4hrs
   TAS: 140Kts
   Wind component out: 10 kts tailwind

Wind component on return: 20 kts headwind

What is the distance and time of PSR from departure point?

a. 279nm,111min
b. 221nm,89min
c. 139nm,60min
d. 232nm,107min

10. Given :

Dry operating mass: 5,320

Zero fuel mass: 6,790kgs

Trip fuel: 770kgs

Take off fuel: 1,310kgs

The traffic load is:

a. 1610kgs
b. 2940kgs
c. 3080kgs
d. 1470kgs

11. During an IFR flight in a beach bonanza the fuel indicators shows that the remaining amount of fuel is 100 lbs after 38 min, the total amount of fuel at departure was 160 lbs for the alternate fuel 30 lbs is necessary. The planned fuel for taxi is 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?

a. 63 minutes
b. 4 minutes
c. 12 minutes
d. 44 minutes

12. In the ATS flight plan item 15, it is necessary to enter any point at which a change of cruising speed take place, for this purpose a change of speed is defined as;

a. 30 kts or 0.05 mach or more
b. 370 km apart or 0.05 mach or more
c. 5% TAS or 0.01 mach or more
d. 10% TAS or 0.01 mach or more

13. An aircraft plans to depart Dubai at 1100 UTC and arrive at Cairo (HECA) at 1215 UTC in the ATS flight plan item 16(destination EET) should be entered with;

a. HECA 1315
b. HECA 1215
c. HECA 1415
d. HECA 0115

14. A sector distance is 540 NM Long, the TAS is 500 kts; the wind component is 45 kts headwind, what is the still air distance?

a. 593 NAM

b. 545 NAM
c. 495 NAM
d. 540 NAM

15. The quantity of fuel which is calculated to be necessary for a jet aeroplane to fly IFR from departure aerodrome to destination aerodrome is 5352 kgs, Fuel consumption in holding mode is 6000kg/hr, alternate fuel is 4380 kgs and contingency should be 5% of trip fuel. What is the minimum required quantity of fuel which should be on board at take off?
    a. 13,370 kgs
    b. 14,500 kgs
    c. 13,220 kgs
    d. 13,000 kgs

16. What will be the influence on performance if aerodrome pressure altitude is increased?
    a. It will increase the take off distance available
    b. It will increase the take off distance
    c. it will decrease the take off distance
    d. It will increase friction
17. In order to get alternate fuel and time the twin jet aeroplane operations manual graph shall be entered with:
    a. Still air distance, wind component, zero fuel mass
    b. Flight time, wind component, landing mass at alternate
    c. Distance (Nm), wind component, zero fuel mass
    d. Distance (Nm), wind component, landing mass at alternate

18. During an IFR flight TAS and time appears to deviate from the data in the flight plan. the minimum deviation that should be reported to ATC in order to conform to PANS-RAC are:
    a. TAS 5kts and time 5minutes
    b. TAS 3% and time 3minutes
    c. TAS 5% and time 3minutes
    d. TAS 10kts and time 2minutes

19. In an ATS flight plan item 15(route) in terms of latitude and longitude, a significant point at 44°12´ North and 8° 19´west should be entered as:
    a. 44°12´N 08°19´W
    b. N4412 W0819
    c. 4412N 00819W
    d. 04412N 819W
20. In an ATC flight plan, an aircraft indicate as “L” LIGHT.
    a. Has a certified landing mass greater than 136,000kgs
    b. Requires a short runway length

c. Is the lowest wake turbulence category
d. Has a maximum certified take off mass of 7000kgs

21. Jet aircraft, taxi fuel is 100kg.trip fuel is 5,325 kg. Hold fuel is 6000kg/hr, alternate fuel is 4,380kg, and contingency is 5% of trip fuel, what is the minimum required take of fuel?
    a. 13,220kg
    b. 14,500kg
    c. 12,975kg
    d. 13,370kg

22. After flying for 16minutes at100kts TAS witha20kt tailwind, you have to return to the airfield of departure, you will arrive after?
    a. 10 min 40 sec
    b. 20 min
    c. 24 min
    d. 16 min

23. Turbo-jet aircraft, flying to isolated airfield, with no destination alternate. on top of taxi, trip and contingency fuel what fuel is required?
    a. Greater of 45 min+15%of trip or 2hrs
    b. 30 min holding @450 m above mean sea level
    c. 30 min holding@450 m AAL
    d. 2 hours at normal cruise consumption

24. The quantity of fuel which is calculated to be necessary for jet aircraft to fly I.F.R from departure to destination aerodrome is 5,325kgs, fuel consumption in holding is 6000kgs /hr, alternate fuel is 4380kgs, contingency should be 5%of trip fuel, what is minimum required quantity of fuel which should be on board at take off?
    a. 13,220kgs
    b. 14,500kgs
    c. 13000kgs
    d. 13,370kgs
25. 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.203nm
    c.174nm
    d. 193 nm
26. Turbo jet aircraft, taxi fuel 600kgs, fuel flow in cruise10000ks/hr
    Fuel flow hold 800kg/hr, alternate fuel 10,200kg, flight time 6hours,visibility at destination 2000m, what is the minimum ramp fuel

a. 80,500kgs
b. 79,200kgs
c. 77,800kgs
d. 76,100kgs

27. 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

28. 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

29. 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

30. 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