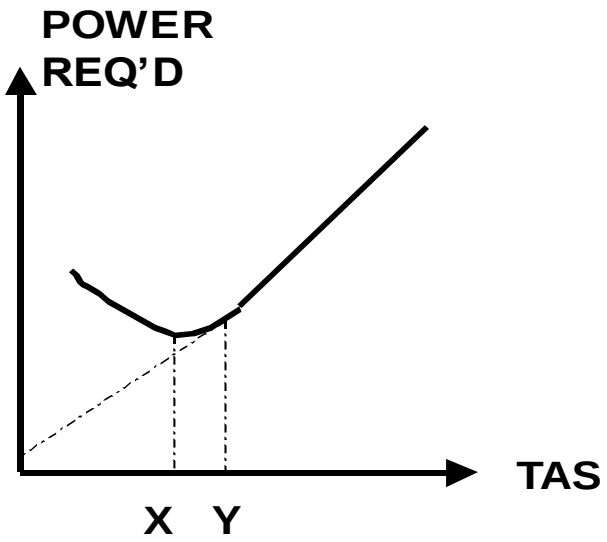
Range and Endurance

1 An aircraft that is operating to achieve maximum endurance is:

a) flying at the speed for minimum thrust
b) flying at 4° angle of attack
c) flying at zero degrees angle of attack
d) flying at the speed for minimum power

2 Refer to the Power Required Curve.
Which item of aeroplane performance will occur at speed X



a) best rate of climb
b) maximum glide range
c) minimum total drag
d) maximum endurance

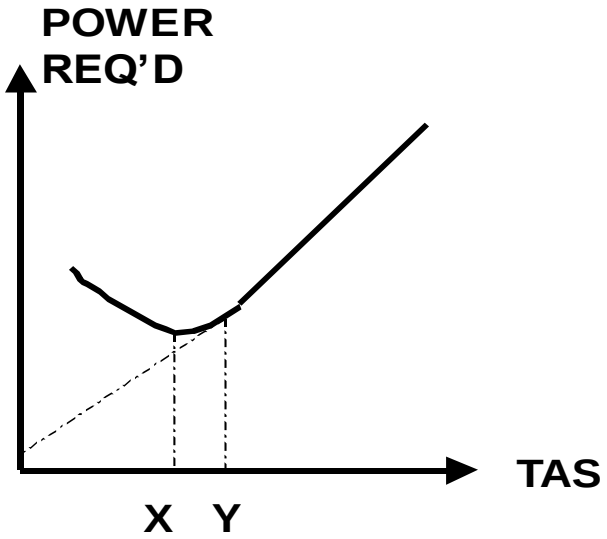
3 An aircraft that is flying at a speed where any reduction in speed requires an increase in power (region of reversed command)

a) is flying at the speed for best range
b) is flying at its best endurance speed
c) is flying at best L/D speed
d) is at the stalling speed

4 The region of reversed command is the speed range where an aircraft

a) will experience aileron reversal
b) needs more power or thrust to fly slower
c) cannot be controlled
d) will lose height when more power is applied

5 Refer to the Power Required Curve.
Which item of aeroplane performance will occur at speed Y



a. best air nautical miles per gallon
b. maximum glide range
c. minimum total drag
d. minimum litres per hour

6 Two identical aircraft are cruising in formation at identical weights. One aircraft is loaded close to its aft C of G limit, and the other loaded close to its forward limit. Which aircraft will have best range

a) the aircraft with the aft C of G
b) the aircraft with the forward C of G
c) C of G position has no relevance upon the range
d) range will be the same as the aircraft have identical weight

7 When flying into a headwind, the max range speed for an aircraft, with reference to the still air range speed, will be

a) lower
b) higher
c) the same as it does not change with a change of wind speed
d) dependant upon power setting

8 If the flaps are lowered the maximum endurance is:

a) increased because the aircraft can fly slower and requires less power
b) decreased because more power is required
c) unaffected provided the minimum power speed is maintained
d) increased if the speed is equal to the new minimum drag speed

9 As an aircraft gross weight decreases during cruise, which of the following is correct?

a) the available speed range increases, and the available operating altitude increases
b) the available speed range decreases, and the available operating altitude decreases
c) the available speed range increases, and the available operating altitude decreases
d) the available speed range decreases, and the available operating altitude increases

10 If the weight of an aeroplane is reduced , its cruising range may be increasesd by:

a) reducing speed and reducing power;
b) increasing speed and increasing power;
c) reducing speed and increasing power;
d) increasing speed and reducing power.

11 The range of an aircraft will be optimised as the weight of the aeroplane reduces by

a) Maintaining the same airspeed and reducing power
b) maintain higher best range airspeed by increasing power
c) do nothing as the best range speed does not vary with a change in weight
d) flying at at a lower airspeed using a lower power setting

12 Endurance is affected by altitude because

a) a leaner mixture is required at height so fuel flow decreases and endurance increases
b) the air is less dense so drag is less
c) the higher TAS required increases the power required so endurance decreases
d) Altitude has no effect on endurance

13 An aircraft that is turbocharged is flying at its critical alltitude at its best endurance speed . Endurance will

a) decrease
b) increase
c) not change
d) only change if drag changes

14 What performance parameter will occur when a propeller driven aeroplane is flown at its maximum L/D ratio

a) maximum endurance
b) best angle of climb
c) maximum range and maximum gliding distance
d) maximum coefficient of lift

15 The range of an aircraft will be extended by

a) Maintaining the same airspeed and reducing power
b) maintain higher best range airspeed by increasing power
c) do nothing as the best range speed does not vary with a change in weight
d) reducing the weight of the aircraft

16 The speed for maximum range is:

a) increased with a forward centre of gravity and range is reduced
b) increased with a forward centre of gravity and range is increased
c) decreased with a forward centre of gravity and range is reduced
d) decreased with a forward centre of gravity and range is increased

17 The speed for maximum range is:

a) increased with a forward centre of gravity and range is reduced
b) increased with an aft centre of gravity and range is increased
c) decreased with an aft centre of gravity and range is reduced
d) decreased with a forward centre of gravity and range is increased

18 If the aspect ratio is increased the maximum range:

a) is reduced and occurs at a lower speed
b) is reduced and occurs at a higher speed
c) is increased and occurs at a lower speed
d) is increased and occurs at a higher speed

19 When flying for endurance an aircraft must be flown at:

a) minimum drag speed
b) full throttle height
c) minimum power speed
d) 4º angle of attack

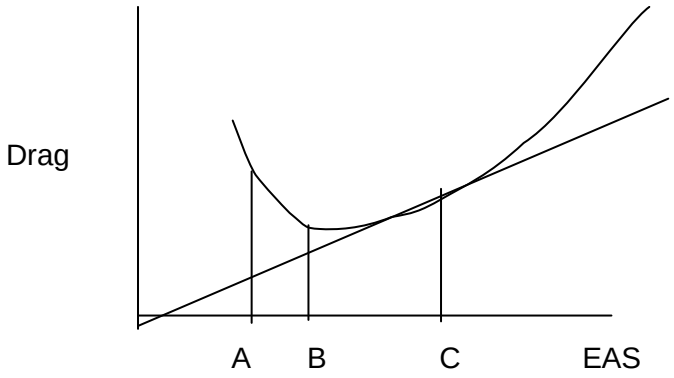
20 An aircraft will achieve maximum endurance:

a) in a tailwind and the fuel flow should be at the lowest value required to sustain level flight
b) when the fuel flow is at its lowest value required to sustain level flight
c) when the fuel flow is at its lowest value required to sustain level flight and provided speed is adjusted to allow for wind effect
d) when the fuel flow is at the value to achieve the greatest air nautical miles

21 For a jet aircraft the best endurance speed will be:

a) the best speed/drag ratio
b) minimum power speed
c) minimum drag speed
d) the best drag/speed ratio

22 Best range and best endurance for a jet aircraft are:



a) B A
b) C B
c) B C
d) C A

Answers

1.d 2.d 3.b 4.b 5.a 6.a 7.c 8.b 9.a 10.a 11.d 12.c 13.a 14.c 15.d 16.c 17.b 18.c 19.c 20.b 21.c 22.b