TEST YOUR KNOWLEDGE - COMMERCIAL LICENCE – AIRCRAFT TECHNICAL

1. If the angle of attack and other factors remain constant and the airspeed is doubled, the lift produced at a higher speed will be

   a) twice that at the lower speed
   b) three times more than that at the lower speed
   c) four times more than that at the lower speed

2. A wing is designed to produce lift resulting from relatively

   a) high air pressure below and above the wing surface
   b) low pressure below and high pressure above the wing surface
   c) high pressure below and low pressure above the wing surface

3. Lift on a wing is most properly defined as the

   a) differential pressure acting perpendicular to the chord of the wing
   b) force produced perpendicular to the relative airflow
   c) reduced pressure resulting from a smooth flow of air over a curved surface

4. On a wing, the lift force acts perpendicular to and the drag force acts parallel to the

   a) chordline
   b) longitudinal axis
   c) flightpath

5. During flight at zero angle of attack the pressure along the upper surface of the wing would be

   a) less than atmospheric pressure
   b) equal to atmospheric pressure
   c) greater than atmospheric pressure

6. Landing speed (TAS) for a particular weight and configuration of an aircraft

   a) will increase as relative humidity is decreased
   b) will increase as altitude is increased
   c) will remain constant regardless of altitude

7. If airspeed decreases during a level turn, the action to maintain altitude is

   a) to decrease the angle of attack or increase the angle of bank
   b) to increase the angle of attack and the angle of bank
   c) to increase the angle of attack or decrease the angle of bank

8. An aircraft turns when banked because the

   a) horizontal component of lift exceeds the vertical component of lift
   b) horizontal component of lift forces the aircraft to turn
   c) resultant lift acts outward and upward from the centre of the turn

9. When the load factor is kept constant during a level coordinated turn, it is true to say that

a) an increase in airspeed would result in the same turn radius
b) an increase in airspeed results in a decrease in turn radius
c) an increase in airspeed results in an increase in turn radius

10. If the rate of turn is varied while holding the angle of bank constant in a level turn, the load factor would

a) remain constant
b) vary depending upon speed
c) vary depending upon weight

Answers

1.	C	2.	C	3.	B	4.	C	5.	A
6.	B	7.	C	8.	B	9.	C	10.	A

TEST YOUR KNOWLEDGE!!

1. The characteristics of unstable air are

	VISIBILITY	PRECIPITATION	DOLDRUMS
a)	poor	steady	stratus
b)	good	showers	cumulus
c)	good	steady	stratus

2. Rising air becomes colder because the

a) pressure decreases with height and the air expands
b) surrounding air is colder at higher levels
c) water vapour in the air becomes less at increased heights

3. Runway visual range will only be measured at an aerodrome if the meteorological visibility is

a) less than 10 km
b) 5 km or less
c) 1.5 km or less

4. When a cold front moves over Cape Town, the wind will

a) change from fresh north-westerly to strong south westerly
b) change from fresh north westerly to strong south easterly
c) will remain strong westerly

5. To fly for maximum endurance the aircraft should fly at

a) the speed produced by the lowest power setting
b) the speed produced by the best lift/drag ratio
c) the speed produced by the highest power setting available

6. Vref is

a) 1.1 Vso
b) 1.3 Vso
c) 1.5 Vso

7. The speed Vref is

a) a flap cross reference speed
b) a landing reference speed
c) a take-off reference speed

8. When a pitot tube is clogged, the instrument which would be affected is the

a) VSI
b) Altimeter
c) ASI

9. flight is made from an area of high pressure into an area of lower pressure without the altimeter setting being adjusted. If a constant indicated altitude is maintained, the altimeter would indicate

a) the actual altitude above sea level
b) higher than the actual altitude above sea level
c) lower than the actual altitude above sea level

10. If a standard rate turn is maintained the time required to turn clockwise from a heading of 090° to a heading of 180° is

a) 30 seconds
b) 1 minute
c) 1.5 minutes

11. When turning from East to South in the Southern Hemisphere you should

a) Roll out on about 200°
b) Roll out on 175°
c) Roll out on 160°

12. While flying to a VOR, the CDI indicates ¼ scale to the right of centre. If it remains in the same position for several minutes you are

a) Flying away from the radial
b) maintaining the same distance from the radial
c) flying closer to the radial

Answers

1.	B	2.	A	3.	C	4.	A	5.	A
6.	B	7.	B	8.	C	9.	B	10.	A
11.	C	12.	C						

TEST YOUR KNOWLEDGE – COMMERCIAL EXAM QUESTIONS – INSTRUMENTS & ELECTRONICS

1. The reported altimeter setting of a given station is the

   a) actual barometric pressure measured at the station
   b) actual barometric pressure measured at sea level
   c) station barometric pressure corrected to mean sea level pressure

2. An altimeter is set to 1010.9 hpa and the correct altimeter is 1016.1 hpa. If under these conditions a landing is made at an airport where the airfield elevation is 772 ft, the altimeter would indicate approximately

   a) 931 ft
   b) 613 ft
   c) 772 ft

3. En route at F270, the altimeter is set correctly. On descent, the pilot fails to reset to the local altimeter setting of 1026.1 hpa. If the field elevation is 1 300 ft and the altimeter is operating properly, the indication after landing is

   a) 1 687 ft
   b) 913 ft
   c) 387 ft

4. En route at F250 the altimeter is set correctly. On descent the pilot fails to reset it to the local altimeter setting of 1037.8 hpa. If the field elevation is 650 ft and the altimeter is operating properly, the indication after landing is

   a) - 88 ft
   b) 738 ft
   c) 1 388 ft

5. Flying into a colder air mass and while maintaining a constant pressure altitude and CAS, the effect will be a

   a) lower TAS and a lower true altitude
   b) higher TAS and a lower true altitude
   c) lower TAS and a higher true altitude

6. If a flight is made from an area of high pressure into an area of low pressure without adjusting the altimeter setting, the actual altitude of the aircraft would

   a) be the same level as indicated
   b) be lower than indicated
   c) higher than indicated

7. A flight is made from an area of high pressure into an area of lower pressure without the altimeter setting being adjusted. If a constant indicated altitude is maintained, the altimeter would indicate

a) the actual altitude above sea level
b) higher than the actual altitude above sea level
c) lower than the actual altitude above sea level

8. True altitude will be lower than indicated altitude for an altimeter setting of 1013.2 hpa even with an accurate altimeter

a) in warmer than standard air temperature
b) in colder than standard air temperature
c) under higher than standard pressure at standard air temperature

9. True altitude is

a) actual height above sea level corrected for all errors
b) altitude above the surface
c) altitude reference to the standard datum plane

10. If an altimeter indicates 3 500 ft amsl with an altimeter setting of 1004.7 hpa the approximate pressure altitude is

a) 3 745 ft b) 3 500 ft c) 3 255 ft

ANSWERS

1.	**C**	**2.**	**B**	**3.**	**B**	**4.**	**A**	**5.**	**A**
6.	**B**	**7.**	**B**	**8.**	**B**	**9.**	**A**	**10.A**	

TEST YOUR KNOWLEDGE - COMMERCIAL LICENCE – HUMAN PERFORMANCE
(Typical exam questions)

1. Rapid or extra deep breathing can cause:

   a. Hyperventilation b. arrhythmia c. hypoxia

2. Hypoxia is the result of:

   a. bubbles of gas forming near joints or in muscles
   b. an oxygen deficiency
   c. an abnormal decrease in inspired air

3. Motion sickness is caused by:

   a. an abnormal increase of blood pressure when experiencing “G”
   b. the reaction of the balance mechanism in the middle ear to motion
   c. an abnormal decrease of blood pressure when experiencing “G.

4. Motion sickness may be caused by:

   a. a discrepancy between perceived and sensed visual stimuli
   b. stress on the eyeball in manoeuvres
   c. oxygen deficiency

5. When spatial disorientation occurs, the best remedy is:

   a. concentrate on flight instruments
   b. rely on a sense of balance
   c. rely on the “seat-of-the-pants” feeling

6. The term “somato-sensory perception” means

   a. a sense of balance
   b. mental stimuli
   c. “seat-of the pants” feeling

7. When the aircraft is decelerated in straight and level flight, a pilot will perceive this as a/an:

   a. Climb b. descent c. acceleration

8. When a pilot is disorientated he should rely on his:

   a. sense of balance (from the inner ear)
   b. muscles, and proprioceptors (position sensors in the muscles and tendons)
   c. eyes

9. Alcohol in the blood stream affects judgement and decision-making abilities:

   a. in amounts greater than 26 ml of spirits

b. at any time
c. depending on food consumed

10. One unit of alcohol (260 ml beer) will be metabolised after

a. 30 minutes
b. 1 hour
c. 12 hours

Answers

1.	**A**	**2.**	**B**	**3.**	**B**	**4.**	**A**	**5.**	**A**
6.	**C**	**7.**	**B**	**8.**	**C**	**9.**	**B**	**10.**	**A**

TEST YOUR KNOWLEDGE

1. Changing the angle of attack of a wing, enables control of the

   a) lift, gross weight and drag
   b) lift, airspeed and drag
   c) airspeed, weight and drag

2. The angle of attack of a wing directly controls the

   a) amount of airflow above and below the wing
   b) point at which the CG is located
   c) distribution of high and low pressure acting on the wing

3 Changes in the centre of pressure of a wing affect the

   a) aerodynamic balance and controllability
   b) CG location
   c) lift/drag ratio

4. When the angle of attack of an asymmetrical airfoil is increased, the centre of pressure will

   a) move forward
   b) move aft
   c) move erratically

5. Rotation about the lateral axis is known as

   a) pitching and is controlled with the elevator
   b) rolling and is controlled with the ailerons
   c) yawing and is controlled with the ailerons

6. To descend at the same airspeed as used in straight and level flight, power must be reduced or drag increased because the

   a) component of weight acting forward along the flightpath increases as the descent angle increases
   b) lifting action of the wing decreases as the angle of attack decreases
   c) component of weight acting forward along the flightpath decreases as the rate of descent increases

7. To generate the same amount of lift as altitude is increased, an aircraft must be flown at

   a) a lower true airspeed for any given angle of attack
   b) a lower true airspeed for a greater angle of attack
   c) a higher true airspeed for any given angle of attack

8. During the transition from straight and level flight to a climb, the angle of attack is

a) increased but lift remains the same
b) increased but lift is decreased
c) increased but lift is momentarily increased

9. Regarding a changing angle of attack, it is true to say that

a) a decrease in angle of attack will increase impact pressure below the wing and decrease drag
b) an increase in angle of attack will decrease impact pressure below the wing and increase drag
c) an increase in angle of attack will increase impact pressure below the wing and increase drag

10. Dynamic longitudinal instability in an aircraft can be identified by

a) the need to apply continuous forward pressure on the elevators
b) the need to apply continuous back pressure on the elevators
c) pitch oscillations becoming progressively steeper

Answers

1B	**2C**	**3A**	**4A**	**5A**
6A	**7C**	**8C**	**9C**	**10C**

TEST YOUR KNOWLEDGE
TYPICAL EXAM QUESTIONS – RADIO AIDS

1. With reference to basic radio theory, the amplitude of a radio wave is

   a) one complete change of direction
   b) the peak value of the current in either direction
   c) the number of cycles on one second

2. The frequency of a radio wave is

   a) the distance travelled during the transmission of one cycle
   b) one complete change of direction of current
   c) the number of cycles in one second

3. The wavelength of a radio wave transmission is

   a) the number of cycles in one second
   b) the distance travelled during the transmission of one cycle
   c) one complete change of direction of current

4. Polarisation is the term used to describe the plane of oscillation of the

   a) electrical field of an electromagnetic wave
   b) the magnetic field of an electromagnetic wave
   c) the electrical and magnetic field of an electromagnetic wave

5. Radio waves travel at the speed of light which is taken to be constant at

   a) 3 x 105 cm/sec
   b) 3 x 108 m/sec
   c) 3 x 1010 km/sec

6. The relationship between frequency, wavelength and propagation is expressed as

   a) c = x f b) f = c x c) = c x f

7. The frequency corresponding to a wavelength of 750 metres is

   a) 400 Hz b) 400 MHz c) 400 kHz

8. The frequency which corresponds to a wavelength of 12 cm is

   a) 2 500 kHz b) 2 500 MHz c) 2 500 Hz

9. The frequency which corresponds to a wavelength of 1 500 metres is

   a) 200 kHz b) 200 MHz c) 2 000 Hz

10. If the wavelength is 3 cm, the frequency is

    a) 1 000 MH b) 10 000 MHz c) 10 000 gHz

11. The number of wavelengths for frequency 150 MHz which are equivalent to 52 feet is

a) 26 b) 80 c) 8

12. If the transmission frequency is 75 MHz, the wavelength is

a) 4 cm b) 4 metres c) 4 km

ANSWERS

1.	B	2.	C	3.	B	4.	A	5.	B	6.	A
7.	C	8.	B	9.	A	10.	B	11.	C	12.	B

TEST YOUR KNOWLEDGE - FLIGHT PLANNING

1. In order to determine pressure altitude from elevation for a QNH which is higher than standard the altitude correction should be

   a) subtracted
   b) divided by 30ft/Hpa
   c) added

2. V1 decision speed when greater than Vmcg is

   a) to be avoided because the aircraft cannot be kept straight after engine failure
   b) normal
   c) to be reduced to Vmcg

3. To say than Vx is greater than Vy

   a) is a true statement
   b) is untrue
   c) is true for jet aircraft

4. In order to obtain True airspeed, the Rectified airspeed must be corrected for

   a) position, temperature and compressibility
   b) temperature, pressure and compressibility
   c) pressure, temperature and position

5. Vlo (the landing gear operating limitation speed) is normally lower than Vle (landing gear extended limitation speed). This is because

   a) the landing gear is in a weaker configuration in transit than when locked down
   b) the wheels which are almost horizontal whilst in transit produce lift which could damage the gear linkages
   c) the gear doors have a speed limitation which is lower than the gear structure itself

6. To fly for maximum endurance the aircraft should fly at

   a) the speed produced by the lowest power setting
   b) the speed produced by the best lift/drag ratio
   c) the speed produced by the highest power setting available

7. Vref is

   a) 1.1 Vso
   b) 1.3 Vso
   c) 1.5 Vso

8. In determining the accelerate-stop distance required for take-off

a) clearway may be used in the calculation
b) the wind is a factor
c) the V2 chosen must be less than V2min

9. For take-off the relationship between accelerate-stop and accelerate-go distance means that

a) the most limiting of the two applies
b) they must both be equal
c) accelerate-stop distance always limits the take off

10. Accelerate-go distance calculated always assumes that

a) clearway is used in the calculation
b) engine failure occurs
c) propeller reversing will be used if the take-off is rejected

ANSWERS

1A	**2B**	**3B**	**4B**	**5C**	**6A**
7B	**8B**	**9A**	**10B**		

TEST YOUR KNOWLEDGE – COMMERCIAL EXAM QUESTIONS – LAW

1. An example of a category of aircraft is

   a) Single engined aircraft
   b) Single engined land aircraft
   c) Gliders

2. Maintenance of competency (instrument approach) requires two actual approaches in IMC or two actual approaches to practice an approach, or one approach in simulator and one actual or simulated approach in an aircraft

   a) Within a 12 month period
   b) Within three months prior to carrying out an instrument approach in IMC
   c) Within a 6 month period

3. For the issue of a CPL, the applicant must have completed, inter alia

   a) 30 hours of cross country time as PIC
   b) 20 hours of cross country time as PIC
   c) 25 hours of cross country time as PIC

4. An applicant for a CPL must have completed inter alia, 200 hours of flight time, which shall include

   a) 100 hours as PIC
   b) 150 hours as PIC
   c) 50 hours as PIC

5. For a renewal of a CPL with instrument rating, the applicant must show that he has completed

   a) 10 hours of flight time in the previous 6 months
   b) 3 hours of flight time as PIC in the previous 6 months
   c) 12 hours of flight time in the previous 6 months and 24 hours in the previous 12 months

6. To renew a CPL, the license holder must show

   a) 3 hours of flight time in the previous 6 months
   b) 10 hours in the previous 12 months if renewal of instrument rating is sought
   c) 24 hours in the previous 12 months and complete a flight test

7. For the renewal of a CPL without an instrument rating, the applicant must take a flight test on

   a) Every renewal
   b) Every third renewal
   c) On the first and every third renewal thereafter

8. Load sheets are required for every aircraft of more than 1 600 kg operated in

a) Passenger carrying flights
b) Air Transportation
c) Commercial Air Transportation.

9. Within the RSA, documents to be carried include the certificate of release to service, certificate of airworthiness, flight crew licenses

a) In Commercial air transportation
b) Only when carrying passengers for reward.
c) On all flights.

10. The minimum height over a crowd of people is

a) 1 000 ft
b) 3 000 ft
c) Sufficient to permit a forced landing without danger to persons or property

11. The PIC is

a) the owner of the aircraft
b) the pilot in the left hand front seat
c) the pilot responsible for the flight, on board the aircraft

12. On a charter flight, with a destination alternate in a turbo-propelled aircraft, the fuel requirements are, inter alia sufficient fuel to fly to destination, then

a) To the alternate, and thereafter for 45 minutes
b) To the alternate, and thereafter for 30 minutes
c) To execute an approach and missed approach, then to the alternate where 30 minutes at holding speed at 1 500 ft under standard temperature can be maintained, then an approach and landing

Answers

1.	**C**	**2.**	**B**	**3.**	**B**	**4.**	**A**	**5.**	**A**
6.	**A**	**7.**	**C**	**8.**	**C**	**9.**	**C**	**10.**	**A**
11.	**C**	**12.**	**C**						

TEST YOU KNOWLEDGE - METEOROLOGY

1. The conditions most favorable for the formation of radiation fog are

   a) warm, moist air over low, flat land areas on clear, calm nights
   b) warm, moist air moving over a cold surface
   c) cold air moving over a warm surface

2. Weather information indicates a strong wind perpendicular to a mountain range. Other information to confirm the existence of mountain waves in the area will be

   a) stations down-wind of the mountain range reporting Ac Lenticular clouds
   b) stations up-wind of the mountain range reporting Cu clouds
   c) stations on both sides of the mountain range reporting no clouds but good visibility

3. The surface winds flow across the isobars at an angle rather than parallel to the isobars because of

   a) surface friction
   b) Coriolis force
   c) the greater atmospheric pressure at the surface

4. The most frequent type of ground temperature inversions over large land masses are produced by

   a) terrestrial radiation on a clear relatively still night
   b) the advection of colder air under warm air, or the advection of warm air over cold air
   c) widespread sinking of air within a thick layer aloft resulting in heating by compression

5. In a particular flight in the Southern Hemisphere the winds at 1 000 ft AGL are northeasterly while the surface winds are easterly. The difference in wind direction is primarily because of

   a) a pressure gradient increasing with altitude
   b) a stronger Coriolis force at the surface
   c) friction between the wind and the surface

6. The characteristics of unstable air are

   a) turbulence and good surface visibility
   b) turbulence and poor surface visibility
   c) smooth conditions and good surface visibility

7. Absolute instability exists in the atmosphere when

   a) the ELR is greater than the DALR
   b) the ELR is less than the SALR
   c) the ELR lies between the DALR and the SALR

8. The dewpoint temperature is

a) the temperature at which dew will always form
b) the temperature to which air would have to be cooled at a constant pressure in order to reach saturation
c) the spread between actual temperature and the wet bulb temperature

9. In an occluding frontal system the air ahead of the warm front is colder than the air in the cold air mass overtaking the warm air mass. The occluded front will be a

a) cold front occlusion
b) warm front occlusion
c) stationary front

10. When crossing a cold front in the southern hemisphere either from the cold to the warm or from the warm to the cold side, the wind-shift will be such as to require an alteration in heading to

a) the left
b) the right
c) South

Answers

1.	**A**	**2.**	**A**	**3.**	**A**	**4.**	**A**	**5.**	**C**
6.	**A**	**7.**	**A**	**8.**	**B**	**9.**	**B**	**10.**	**A**

TEST YOUR KNOWLEDGE
COMMERCIAL LEVEL TYPICAL EXAM QUESTIONS – INSTRUMENTS & ELECTRONICS

1. Given: Pressure altitude 8 000 ft, QNH altitude 7 500 ft, OAT +30°C, terrain elevation 5 700 ft. The approximate altitude above ground is

   a) 2 300 ft b) 2 650 ft c) 3 150 ft

2. Given: Pressure altitude 11 000 ft, QNH altitude 9 500 ft, OAT -15°C, terrain elevation 8 300 ft. the approximate altitude above ground is

   a) 900 ft b) 1 200 ft c) 2 700 ft

3. During a stabilized climbing turn at a constant rate of turn, the instruments which indicate the correct pitch and bank are the

   a) vertical speed indicator and turn and slip indicator
   b) altimeter and turn and slip indicator
   c) attitude indicator and turn and slip indicator

4. The instruments, as well as the attitude indicator, which are pitch instruments are

   a) altimeter and airspeed indicator only
   b) altimeter and vertical speed indicator only
   c) altimeter, airspeed indicator and vertical speed indicator

5. The instruments which are grouped as pitch instruments are attitude indicator

   a) ASI and manifold pressure or RPM indicator
   b) Altimeter and manifold pressure gauge
   c) Altimeter, ASI and vertical speed indicator

6. The instrument which provides the most pertinent information (primary) for pitch control in straight and level flight is the

   a) attitude indicator
   b) altimeter
   c) vertical speed indicator

7. A practical test which should be made on electric gyro instruments prior to engine start is to

   a) check that the attitude of the miniature aircraft is wings level before selecting electrical power
   b) turn on the electrical power and listen for any unusual or irregular mechanical noise
   c) reset the heading indicator to be sure setting knobs are operative

8. If the pitot tube and outside static vent or ports were clogged, the instrument or instruments which would be affected are the

a) altimeter, vertical speed indicator and ASI which would provide inaccurate readings
b) airspeed indicator and altimeter only
c) airspeed indicator which would indicate excessively high airspeeds

9. If both the ram air input and drain hole of the pitot system are blocked, the airspeed indicator which can be expected is

a) no variation of indicated airspeed in level flight even if large power changes are made
b) a decrease of indicated airspeed during a climb
c) zero indicated airspeed until blockage is removed

10. If the ASI ram air input and drain hole are blocked a pilot can expect that

a) the airspeed indicator will react as an altimeter
b) the airspeed indicator will show a decrease in altitude
c) no airspeed indicator change will occur during climb or descents

ANSWERS

1B	**2A**	**3C**	**4C**	**5C**	**6A**
7B	**8A**	**9A**	**10A**		

TEST YOUR KNOWLEDGE - COMMERCIAL LEVEL INSTRUMENTS & ELECTRONICS

1. If the ram air input to the pitot head of the pitot system becomes blocked (drain hole open), the indicated airspeed will generally

   a) remain unchanged
   b) increase as altitude is increased
   c) drop to zero

2. The location of the static vent which would provide the best measurement of static pressure under variable flight conditions is one installed

   a) in the cockpit where it is not influenced by variable angle of attack
   b) on one side of the aircraft and covered by a fire screen
   c) on each side of the aircraft where the system will compensate for variation or aircraft attitude

3. The effect on the instrument indications when using the alternate source of static pressure (which is vented inside an unpressurised aircraft) is that

   a) the altimeter may indicate higher than the actual altitude being flown
   b) the ASI may indicate a slower than the actual airspeed
   c) the vertical velocity indicator may indicate a continuous descent

4. If the static pressure tubes are broken inside a pressurized cabin during a high-altitude flight, the altimeter would probably indicate

   a) higher than actual flight altitude
   b) a fluctuating altitude
   c) lower than actual flight altitude

5. If while in level flight, it becomes necessary to use an alternate source of static pressure vented inside the aircraft, the variations in instrument indications which the pilot should expect are

   a) the altimeter will read higher than normal, airspeed will not change and the vertical speed indicator will momentarily show a descent
   b) the altimeter will read higher than normal, airspeed greater than normal and the vertical speed indicator will momentarily show a climb
   c) the altimeter will read lower than normal, airspeed greater than normal and the vertical speed indicator will momentarily show a climb and then a descent

6. When a pitot tube is clogged, the instrument which would be affected is the

   a) VSI b) altimeter c) ASI

7. The pitot system provides impact pressure only for the

   a) airspeed indicator, vertical speed indicator and altimeter
   b) altimeter and vertical speed indicator

c) airspeed indicator

8. Pitot static system errors are generally the greatest at

a) maneuvering speed
b) high airspeed
c) low airspeed

9. As an aircraft is rolled out of a left 180° turn to straight and level flight on the attitude indicator, the aircraft will be in a slight

a) turn to the right and climbing slightly
b) turn to the left and descending slightly
c) skid to the right and climbing slightly

10. The approximate point in a normal co-ordinated turn when the turn error in a vacuum driven attitude indicator is at maximum is

a) 90° of turn b) 180° of turn c) 360° of turn

11. Errors in both pitch and bank indication on an attitude indicator are usually at a maximum as the aircraft rolls out of a

a) 90° turn b) 180° turn c) 270° turn

12. If a suction gauge indicates that the pressure is lower than the minimum limit, the air operated instruments which would be affected are

a) pressure altimeter b) heading indicator c) VSI

ANSWERS

1C	**2C**	**3A**	**4C**	**5B**	**6C**
7C	**8B**	**9A**	**10B**	**11.B**	**12.B**

TEST YOUR KNOWLEDGE
COMMERCIAL LEVEL TYPICAL EXAM QUESTIONS – AIRCRAFT TECHNICAL AND GENERAL

1. Flight manoeuvres are generally divided into four flight fundamentals

   a) aircraft power, pitch, bank and trim
   b) take off, normal flight, descent and stalls
   c) straight and level flight, turns, climbs and descents

2. The four flight fundamentals involved in manoeuvring an aircraft are

   a) aircraft power, pitch, bank and trim
   b) straight and level flight, turns, climbs and descents
   c) take off, slow flight, fast flight and stalls

3. The most important function of a rudder during coordinated flight is that

   a) it prevents skids
   b) properly applied, it helps to overcome adverse yaw
   c) applying rudder overcomes the asymmetrical thrust of the propeller as a turn is initiated

4. To produce the desired effect, trim tabs must be adjusted

   a) in the same direction as the primary control surfaces they affect
   b) in the opposite direction to the primary control surfaces they affect
   c) depending upon the design of the trim tab controls

5. The ratio between the total airload imposed on the wing and the gross weight of an aircraft in flight is known as the

   a) load factor
   b) power loading
   c) aspect ratio

6. Load factor is the actual load supported by the wings of an aircraft at any given moment

   a) divided by the total weight of the aircraft
   b) multiplied by the total weight of the aircraft
   c) subtracted from the total weight of the aircraft

7. If a load factor of 3 is placed on an aircraft with a gross weight of 3 000 lbs, the total load on the aircraft structure would be

   a) 3 000 lbs
   b) 6 000 lbs
   c) 9 000 lbs

8. For a given angle of bank, the load factor imposed on both the aircraft and pilot in a coordinated constant altitude turn

a) is constant
b) is directly related to the gross aircraft weight
c) increases very slowly beyond 45° of bank

9. The load factor during a level coordinated turn in smooth air depends on

a) density altitude
b) rate of turn
c) angle of bank

10. If the angle of bank were held constant and airspeed varied, the load factor would

a) increase when speed increases
b) decrease when speed decreases
c) remain constant

ANSWERS :

1C	**2B**	**3B**	**4B**	**5A**
6A	**7C**	**8A**	**9C**	**10C**

TEST YOUR KNOWLEDGE
TYPICAL COMMERCIAL EXAM QUESTIONS – RADIO AIDS

1. Skip distance is the distance between

   a) the transmitter and the first point of sky wave touchdown
   b) successive sky wave touchdown points
   c) the end of the ground wave and the first point of touchdown

2. Fading of low frequency and medium frequency at night may be caused by

   a) poor receiver sensitivity and ionospheric attenuation
   b) simultaneous reception of sky and surface waves
   c) reception of space waves and atmospheric attenuation

3. When using HF communications at night the best frequency is one which is

   a) half the day frequency
   b) twice the day frequency
   c) the same as the frequency for day operation

4. An aircraft at F100 should be able to communicate with a VHF ground station at 100 ft amsl at an approximate maximum range of

   a) 25 nm
   b) 112.5 nm
   c) 137.5 nm

5. The ionosphere is split into three distinct layers during day time which are

   a) D layer, Appleton layer, F layer
   b) D layer, Kennelley Heaviside layer, Appleton layer
   c) E layer, Kennelley Heaviside layer, D layer

6. The aircraft aerial/s used to determine the direction of an NDB beacon is/are

   a) loop and sense aerials
   b) sense aerial
   c) loop aerial

7. When determining the direction of an NDB station, the 180° ambiguity is resolved by using a

   a) loop aerial
   b) sense aerial
   c) sense aerial and then a loop aerial

8. NDB bearings displayed on an ADF are relative bearings with reference to

   a) magnetic North
   b) aircraft heading
   c) aircraft track

9. The cardiod polor diagram resulting from the resolution of the 180° ambiguity has

   a) two maxima and non nulls
   b) two nulls and one maximum, giving the direction of the station
   c) one null giving the direction of the station

10. The aerials used when and ADF operates on “Automatic Direction Finding” are

   a) loop aerial only
   b) sense aerial only
   c) loop and sense aerials together

ANSWERS

1A	**2B**	**3A**	**4C**	**5B**	**6A**
7B	**8B**	**9C**	**10C**		

TEST YOUR KNOWLEDGE - COMMERCIAL LEVEL EXAM QUESTIONS: ATG

1. Fuel tank vents must be open

   a) to allow proper air pressure in the tanks to maintain a steady fuel flow
   b) to allow fuel fumes to escape, eliminating the change of the tanks exploding
   c) to allow excess fuel to drain overboard when head expands the fuel

2. Potential hazards from static electricity when refuelling can be eliminated by

   a) connecting a ground wire between the aircraft, fuel truck, fuel nozzle and ground
   b) straining the fuel through a chamois
   c) ensuring that battery and ignition switches are turned off

3. Completely filling the fuel tanks after the last flight of the day prevents fuel contamination by eliminating the airspace so that

   a) rust or corrosive scale cannot form in the tanks
   b) condensation of moist air cannot occur within the tanks
   c) development of micro-organisms in the fuel is prevented

4. One advantage of fuel injection systems over carburettor systems is

   a) better fuel distribution to the cylinders
   b) easier hot-engine starting
   c) easier in-flight restarting

5. One advantage of fuel injection systems over carburettor systems is

   a) elimination of vapour locks during ground operations
   b) a reduction in the probability of evaporative icing
   c) easier starting of a hot engine

6. A disadvantage of fuel injection systems compared with carburettor systems is

   a) difficulty in starting a hot engine
   b) uneven fuel distribution to the cylinders
   c) poor control of the fuel/air mixture

7. When the mixture control is leaned

   a) the volume of air entering the carburettor is reduced
   b) the amount of fuel entering the combustion chamber is increased
   c) the amount of fuel entering the combustion chamber is reduced

8. Spark plugs in an aircraft engine are fouled

   a) when excessive heat in the combustion chamber of a cylinder causes oil to form on the centre electrode of a spark plug fouling the plug
   b) when operating with an excessively rich mixture

c) primarily by operating at excessively high cylinder head temperatures

9. The uncontrolled firing of the fuel/air charge in advance of normal spark ignition is known as

a) combustion
b) pre-ignition
c) detonation

10. The probable reason an engine continues to run after the ignition switch has been turned off is

a) faulty magneto timing
b) a broken magneto ground wire
c) a cracked intake manifold

ANSWERS :

1A	**2A**	**3B**	**4A**	**5B**
6A	**7C**	**8B**	**9B**	**10B**

COMMERCIAL LEVEL - METEOROLOGY

1. Winds are strongest

   a) in a col
   b) where the isobars are far apart
   c) when isobars are close together

2. A wind which occurs at night is

   a) an anabatic wind
   b) a katabatic wind
   c) a sea breeze

3. A cross in the middle of the station circle on a synoptic chart indicates

   a) that the sky is obscured
   b) that there is no cloud
   c) that there is 9 oktas of cloud

4. Saturated air which is forced to rise will cool at a rate of

   a) 1.98°/1 000 ft b) 3°C/1 000 ft c) 1.5°C/1 000 ft

5. Standing with your back to the wind in the Southern hemisphere, the low pressure is

   a) to your right b) to your left c) to your front

6. Cloud and rain are usually associated with

   a) low pressure areas and rising air
   b) a col
   c) high pressure areas and descending air

7. An area formed by two anti-cyclones which force other pressure systems apart is

   a) a col b) a ridge c) a trough

8. The fog type common along the West Coast of South Africa is

   a) advection fog
   b) radiation fog
   c) actually stratus cloud

9. In South Africa, the wind circulation around an anticyclone is

   a) clockwise
   b) anti-clockwise
   c) the cause of an occlusion

10. In the month of December the ITCZ will be

a) in the northern hemisphere
b) passing the Equator
c) in the southern hemisphere

11. A wind which occurs during the day is

a) a land breeze
b) a katabatic wind
c) a sea breeze

12. Radiation fog is most likely to occur when

a) warm air moves under cold air
b) when sinking air from aloft is heated by compression
c) when terrestrial radiation is maximum on a clear night with light winds

Answers

1.	**C**	**2.**	**B**	**3.**	**A**	**4.**	**C**	**5.**	**A**
6.	**A**	**7.**	**A**	**8.**	**A**	**9.**	**B**	**10.**	**C**
11.	**C**	**12.**	**C**						

TEST YOU KNOWLEDGE - COMM. LEVEL – NAVIGATION QUESTIONS

1. A kilometre is

   a) 1/10 000 part of the distance from the North to the South pole
   b) 1/10 000 part of the distance from the Greenwich meridian to the Greenwich anti-meridian
   c) neither of the above

2. The convergency between 173°W and 173°E is 6°in the Southern Hemisphere. The great circle track from a position on the 173°E meridian to a position on the 173°W meridian is 090°T. The rhumb line track in the other direction is

   a) 270° b) 267° c) 263°

3. Flying over the N48 parallel, the distance between two fixes which are taken 25 minutes apart, is 17.9 cm on a Mercator chart. The scale of the chart is 1 : 3 000 000 at N15. The groundspeed is

   a) 200.9 kts b) 583.8 kts c) 482 kts

4. If the maximum crosswind component for an aircraft is 15 kts on the active runway 18 at Rome (Fiumicino) and the wind is 225/20, then

   a) the maximum crosswind component limit is exceeded
   b) the crosswind component exceeds the headwind component
   c) the maximum crosswind component limit is not exceeded

5. The distance from NAMON to DORFA is 130 nm, track 080°T. Heading 086°T is set from NAMON to compensate for wind. 45 nm from NAMON, a fix is obtained 6 nm left of track. The new track to DORFA from the fix is

   a) 098°T b) 084°T c) 088°T

6. The LMT of sunrise will be the same for

   a) all places with common latitude
   b) all places with common longitude
   c) neither of the above

7. On Lamberts charts in the Southern hemisphere a rhumb line track of 293° is

   a) concave to the Equator
   b) a straight line
   c) convex to the Equator

8. Day and night occur as a result of

   a) the elliptical orbit of the earth around the sun
   b) the rotation of the earth around it's own axis
   c) the inclination of the rotational axis of the earth of +/- 23°

9. When overhead Port Elizabeth at 1145z at 168 KTAS, ATC requests that an inbound Baron should be intercepted. The Baron TAS is 150 mph and is 80 nm out from PEV. The interception will occur at a time and range from PEV of

   a) 1202z/44 nm b) 1201z/45 nm c) 1159z/43 nm

10. An Airbus A340 flies from London (N50 34 W000 45) to New York (N42 14 W082 15) in 6:24 and arrives at 1600 Standard Time on 4th January. If the Airbus departs London at 1503 LMT, the standard time factor at New York is

a) 6 hours b) 6:30 c) 5:30

ANSWERS

1.	**C**	**2.**	**B**	**3.**	**C.**	**4.**	**C**	**5.**	**B**	**6.**	**A.**
7.	**C**	**8.**	**B**	**9.**	**B**	**10.**	**C**				