

# Practice Flying Scholarship Exam 2004

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## Instructions:

1. Glider applicants are to answer the first 40 questions only. If you wish to answer the final 10 questions, you may do so, but they will not be counted in your mark. Power applicants must answer all 50 questions.
  2. There is no penalty for wrong answers, so make sure you mark an answer for each question.
  3. Write all answers on the answer sheet provided. Do not make any marks on the question booklet.
  4. You have up to 2 hours to complete the exam.
  5. Read each question and its four answers carefully before making your selection.
  6. HAVE FUN!!! Remember, this exam is mainly for your benefit. It will let you know what you need to study for the big one!
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## Questions

1. Angle of attack is defined as:
  - a. the angle between the chord line and the horizontal axis;
  - b. the angle between the chord line and the relative airflow;
  - c. the angle between the relative airflow and the longitudinal axis;
  - d. the angle between the horizon and the vertical flight vector.
2. A principal factor influencing longitudinal stability is:
  - a. position of the centre of gravity;
  - b. dihedral;
  - c. fin and rudder surface area;
  - d. trim tab surface area.
3. Which of the following flight instruments requires both static and dynamic pressure to operate properly?
  - a. airspeed indicator;
  - b. altimeter;
  - c. vertical speed indicator;
  - d. turn and slip indicator.
4. The main error inherent in the vertical speed indicator during transition to level flight from either a climb or a descent is called:
  - a. density error;
  - b. position error;
  - c. lag error;
  - d. temperature error.
5. The main members of a truss-type fuselage are called:
  - a. formers;
  - b. stringers;
  - c. longerons;
  - d. struts.

6. Movement of an airplane around the longitudinal axis is controlled primarily by the:
- aileron
  - elevator;
  - rudder;
  - fin.
7. This question deals with wing construction. Three of the following statements are true and one is false. Identify the false statement.
- Ribs are cambered to form an airfoil section;
  - Spars are intended to stiffen the wing to reduce torsion;
  - Spars are structural members running from the leading edge to the trailing edge of the wing;
  - Ribs provide the framework to which the wing covering is fastened.
8. This question deals with airfoils. Three of the following statements are true and one is false. Identify the false statement.
- An airfoil is any surface designed to react with the air through which it moves to obtain lift;
  - Usually the upper surface of an airfoil has a greater camber than the lower surface;
  - An airfoil with a curved shape is most suitable for producing lift;
  - Lift acts 90 degrees to the chord line of an airfoil.
9. During the take-off roll, the following phenomenon will reduce the effect of induced drag:
- washout effect;
  - anhedral effect;
  - ground effect;
  - vector effect;
10. As the angle of attack of an airfoil increases, the separation point:
- moves forward;
  - moves backward;
  - remains stationary;
  - moves toward the wing tip.
11. In straight and level flight at 6000 feet above sea level, an aircraft stalls at 35 knots indicated airspeed. In straight and level flight at 1000 feet above sea level where the wind velocity has decreased by 10 knots, the same aircraft will stall at:
- 25 knots indicated airspeed;
  - 35 knots indicated airspeed;
  - 45 knots indicated airspeed;
  - none of the above.
12. When the flaps of an aircraft are fully deflected, the following occurs:
- lift is increased;
  - drag is increased;
  - the stalling speed is decreased;
  - all of the above.
13. Directional stability is stability around the:
- vertical axis;
  - lateral axis;
  - longitudinal axis;
  - centre of gravity.

14. The four forces acting on an airplane are:
- thrust, weight, mass, and lift;
  - thrust, lift, drag, and weight;
  - thrust, drag, power, and lift;
  - thrust, pressure, lift, and drag.
15. Wing tip vortices:
- present a hazard close to the ground;
  - are slightly below and behind the aircraft;
  - may be encountered as long as 5 minutes after passage of an aircraft;
  - all of the above.
16. The best rate of climb speed of an aircraft is the speed at which:
- the fuel consumption is the least per hour;
  - it will gain the most altitude in the distance covered;
  - it will gain the most altitude in the least time;
  - it goes 10% faster than the best gliding speed.
17. While banking for a turn, the downward aileron causes increased lift on the high wing. Providing you do not use rudder, you can expect:
- increased drag causing the nose to yaw to the inside of the turn;
  - increased drag causing the nose to yaw toward the outside of the turn;
  - decreased drag causing the nose to yaw to the inside of the turn;
  - no adverse effects.
18. This question deals with relative airflow. Three of the following statements are true and one is false. Identify the false statement.
- Relative airflow is created by the motion of an airplane through the air;
  - Direction and speed of the wind have no effect on relative airflow for an airplane in flight;
  - On the take-off roll, an airplane is subject to only the relative airflow created by its motion along the ground;
  - Relative airflow is always parallel with and opposite to the flight path of the aircraft.
19. During flight, the apparent precession of a spinning gyro is caused by:
- manufacturing tolerances;
  - the location of the magnetic north pole;
  - the rotation of the earth;
  - frictional or mechanical forces.
20. The dihedral angle is:
- the angle between the wing and the fuselage;
  - the critical stalling angle;
  - the angle between the wing and the horizontal;
  - the same as the pitch angle.
21. The vertical movement of air which has been warmed by the earth is known as:
- convection;
  - deflection;
  - advection;
  - inflection.
22. In the northern hemisphere, air flows anti-clockwise around:
- a warm front;
  - a cold front;
  - an area of low pressure;
  - an area of high pressure.



23. When an air mass is heated and no new water vapour is added, the relative humidity:
- decreases;
  - increases;
  - decreases then increases;
  - increases then decreases;
24. Unstable air, lifting action, and moisture content are conditions favourable to the creation of:
- inversions;
  - stratus clouds;
  - cirrus clouds;
  - cumuluous clouds.
25. By understanding the relationship between the surface temperature, the dew point temperature, and the lapse rate, a pilot can estimate:
- the probability of precipitation;
  - the pressure tendency;
  - the height of the cloud base;
  - the thickness of the cloud layer.
26. A front is:
- a large air mass;
  - a line of thunderstorms;
  - a broad band of stratus clouds;
  - a narrow transition zone between two air masses.
27. Orographic lift is caused by:
- air moving up sloping terrain;
  - air being heated by the surface of the earth;
  - the occlusion of air masses;
  - cold air moving over warm water.
28. The rate of change of pressure over a given distance and measured at right angles to the isobars is known as:
- Mean Sea Level Pressure;
  - the pressure gradient;
  - aspect ration;
  - convergence.
29. The most improvement in visibility can be expected after:
- a cold front passes;
  - a warm front passes;
  - sunrise;
  - none of the above.
30. Fog which forms on clear nights with light winds is called:
- advection fog;
  - radiation fog;
  - clear fog;
  - induction fog.
31. Lines drawn on a chart or map joining points of equal elevation above sea level are called:
- isogonals;
  - contours;
  - agonals;
  - reliefs.