

يتكون هذا الاختبار من ( 100 ) سؤال موضوعي من نوع الاختيار من متعدد، الإجابة عنها إجبارية. ظلل بقلم الرصاص بشكل غامق الدائرة التي تشير إلى الإجابة الصحيحة في المكان المخصص لذلك في نموذج الإجابة المرفق.

مبادئ الطيران

1. **The equation for calculating lift over an airfoil is:**
  - a-  $L = CL \times \frac{1}{2} \rho \times S.$
  - b-  $L = CL \times \rho V^2 \times S.$
  - c-  $L = CL \times \frac{1}{2} \rho V^2.$
  - d-  $L = CL \times \frac{1}{2} \rho V^2 \times S.$
2. **The point where the effective lift is concentrated is known as the centre of:**
  - a- Gravity.
  - b- Pressure.
  - c- Thrust.
  - d- Drag.
3. **The angle between the chord line and the relative wind is known as the:**
  - a- Angle of friction.
  - b- Angle of attack.
  - c- Angle of incidence.
  - d- Bank angle.
4. **When the lift of an airfoil increases, the drag will?**
  - a- Decrease.
  - b- Increase while the lift is changing but will return to its original value.
  - c- Not change.
  - d- also increase.
5. **When an aircraft increases its speed from 100 knots to 200 knots, its parasite drag will increase?**
  - a- 2 times.
  - b- 4 times.
  - c- 6 times.
  - d- 8 times.
6. **The chord of a wing is measured from:**
  - a- Wingtip to wingtip.
  - b- Wing root to wing root.
  - c- Wing root to the wingtip.
  - d- Leading edge to trailing edge.
7. **Which of the following describes the changes to airflow over the upper surface of a wing?**
  - a- Velocity increases, pressure decreases.
  - b- Velocity increases, pressure increases.
  - c- Both velocity and pressure decrease.
  - d- Both velocity and pressure increase.
8. **What physical factors are involved in the aspect ratio of airplane wings?**
  - a- Thickness and chord.
  - b- Thickness and span.
  - c- Span and chord.
  - d- Dihedral and angle of attack.
9. **As the angle of attack of an airfoil increases, the center of pressure will**
  - a- Move toward the trailing edge
  - b- Remain stationary because both lift and drag components increase proportionally to increased angle of attack.
  - c- Remain stationary because of no change in the incidence angle.
  - d- Move toward the leading edge.

- 10. If the control stick of an aircraft with properly rigged flight controls is moved rearward and to the left, the right aileron will move**
- a- Down and the elevator will move down.
  - b- Up and the elevator will move down.
  - c- Up and the elevator will move up.
  - d- Down and the elevator will move up.
- 11. With which system is differential control associated?**
- a- Trim.
  - b- Aileron.
  - c- Elevator.
  - d- Rudder.
- 12. All types of trailing edge flaps:**
- a- Decrease  $CL(max)$  and increase  $CD$ .
  - b- Increase  $CL(max)$  and decrease  $CD$ .
  - c- Increase both  $CL(max)$  and  $CD$ .
  - d- Decrease both  $CL(max)$  and  $CD$ .
- 13. What type of flap system increases the wing area and changes the wing camber?**
- a- Fowler flaps.
  - b- Slotted flaps.
  - c- Split flaps.
  - d- Plain flaps.
- 14. The purpose of wing slats is to**
- a- Reduce stalling speed.
  - b- Decrease drag.
  - c- Increase speed on takeoff.
  - d- Increase wing loading.
- 15. An airplane which has good longitudinal stability should have a minimum tendency to:**
- a- Roll.
  - b- Pitch.
  - c- Yaw.
  - d- Adverse yaw.
- 16. An aircraft is designed with its CG located in front its CP:**
- a- To have pitching up tendency.
  - b- To have pitching down tendency.
  - c- To increase lateral stability.
  - d- To increase longitudinal stability.
- 17. An airplane is controlled directionally about its vertical axis by:**
- a- The elevator(s).
  - b- The ailerons.
  - c- A combination of two of the above.
  - d- The rudder.
- 18. The elevators of a conventional airplane are used to provide rotation about the:**
- a- Longitudinal axis.
  - b- Lateral axis.
  - c- Vertical axis.
  - d- Normal axis.



- 26. The two-stroke cycle reciprocating engine completes its cycle in:**
- a- One revolution of the crankshaft, and five events
  - b- Two revolutions of the crankshaft, and five events
  - c- One revolution of the crankshaft, and two events
  - d- Two revolutions of the crankshaft, and four events
- 27. The events take place at the same time but at different locations in:**
- a- Bryton cycle
  - b- Carnot cycle
  - c- Otto cycle
  - d- Brenil cycle
- 28. The Propeller must be ..... to eliminate the drag created by windmilling of the propeller when the engine fails Turned to:**
- a- A reverse angle
  - b- A low blade angle
  - c- A feather angle
  - d- A high blade angle
- 29. The power event of the reciprocating engine occurs at constant:**
- a- Atmospheric pressure
  - b- Temperature
  - c- Pressure
  - d- Volume
- 30. What is the purpose of the stator blades in the compressor section of a turbine?**
- a- Prevent compressor surge
  - b- Increase velocity of the airflow
  - c- Control the direction of the airflow
  - d- Decrease pressure of the airflow
- 31. In what section of a gas turbine engine is the pressure of the gas, the highest?**
- a- In the diffuser
  - b- In the compressor
  - c- In the combustor
  - d- In the turbine
- 32. What should be done if a turbine engine catches fire during starting?**
- a- Turn off the fuel and continue cranking
  - b- Disengage starter immediately
  - c- Continue starting attempt to blow out fire
  - d- Advance the emergency power lever to ideal position
- 33. A fuel/air mixture ratio of 9:1 is:**
- a- One part fuel to 9 parts air
  - b- One part air to 9 parts fuel
  - c- Too rich to burn
  - d- A lean mixture
- 34. When starting a turbo jet engine, the starter should be disengaged when the:**
- a- Engine lights are OFF
  - b- Engine reaches idle RPM
  - c- Engine reaches full RPM
  - d- Ignition & fuel systems are activated
- 35. What regulates the speed of a turbo-supercharger?**
- a- Turbine
  - b- Compressor
  - c- Waste gate
  - d- Throttle

**36. Rocket engine is considered as:**

- a- A non-air-breathing engine                      b- An air-breathing engine  
c- A jet engine    d- A piston engine

**37. A modern turbojet engine produces its thrust from acceleration the flow of:**

- a- Electrons    b- Hydraulic  
c- Fuel    d- Hot gases

**38. A gas turbine engine that delivers power through a shaft to operate something other than a propeller is referred to as:**

- a- A turboshaft engine                              b- A turboprop engine  
c- A turbofan engine                              d- None of the above

**39. The purpose of the propeller is to Convert:**

- a- Mechanical energy into potential energy.  
b- Engine horsepower into useful work  
c- Heat energy into mechanical energy  
d- The rotary power of the engine into thrust

**40. The propeller governor is defined as:**

- a- The RPM sensing device used to control engine RPM at constant speed  
b- The device used to control vibration  
c- The device used to control forces on propeller  
d- The RPM indicator

## أساسيات الملاحة والاتصال

**41. If the signal makes 8 cycles in 4 m sec. The frequency is:**

- a- 8 KHz    b- 2 KHz  
c- 4 KHz    d- 0.5 KHz

**42. The wave that travel in straight lines and do not bounce off the ionosphere is called.**

- a- Space wave                                      b- Sky wave  
c- Ground wave                                      d- A&B are true

**43. The radio waves at frequency below the HF band are called.**

- a- Space wave                                      b- Ground wave  
c- Sky wave    d- A&B are true

**44. HF communication frequency is in the range**

- a- 108 - 118 MHz                              b- 23 - 30 kHz  
c- 3-30 MHz    d- 30-300 MHz

**45. An amplifier supplies 3 watts of output with an input of 30 milliwatts, what is the gain in dB?**

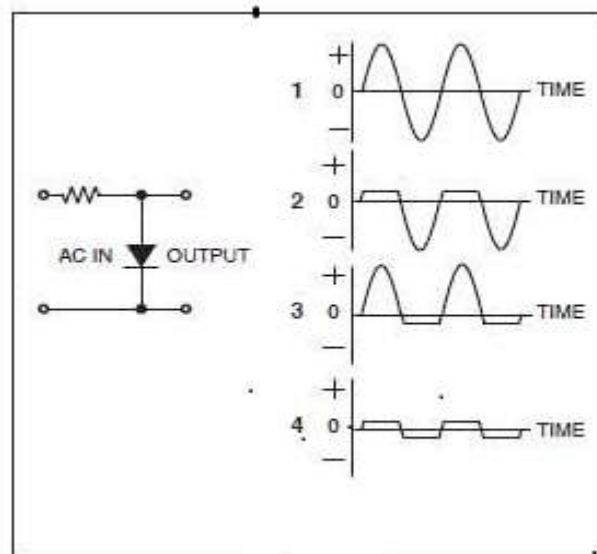
- a- 10    b- 20  
c- 30    d- 0



57. A fully integrated autopilot controls the aircraft around how many axes?  
 a- Four  
 b- Two  
 c- Three  
 d- One
58. The elevator channel of an autopilot controls the aircraft about which axis of rotation?  
 a- Roll.  
 b- Longitudinal.  
 c- Vertical, or yaw axis  
 d- Lateral, or pitch axis
59. Most radio aerial masts are:  
 a- Bonded  
 b- Insulated from the fuselage  
 c- Not bonded  
 d- Painted and greased
60. The coaxial cable must be supported to prevent damage every:  
 a- 1 feet  
 b- 4 feet  
 c- 3 feet  
 d- 2feet

### الأجهزة والدارات الالكترونية 1

61. A silicon diode measures a high value of resistance with the meter leads in both positions. The trouble, if any, the diode is:  
 a- Open  
 b- Shorted to ground  
 c- Internally shorted  
 d- Ok
62. A reverse-biased diode has the \_\_\_\_\_ connected to the positive side of the source, and the \_\_\_\_\_ connected towards the negative side of the source.  
 a- Cathode, anode  
 b- Cathode, base  
 c- Base, anode  
 d- Anode, cathode
63. In an NPN transistor, the majority carriers in the base are:  
 a- Free electrons  
 b- Holes  
 c- Neither  
 d- Both
64. The ripple frequency of a bridge rectifier is:  
 a- The same as the input frequency  
 b- Double the input frequency  
 c- Four times the input frequency  
 d- Cannot be determined
65. With a pure AC signal input to the circuit shown in Figure below, what output wave form would you expect to see on an oscilloscope display?



- a- 1  
 b- 2  
 c- 3  
 d- 4





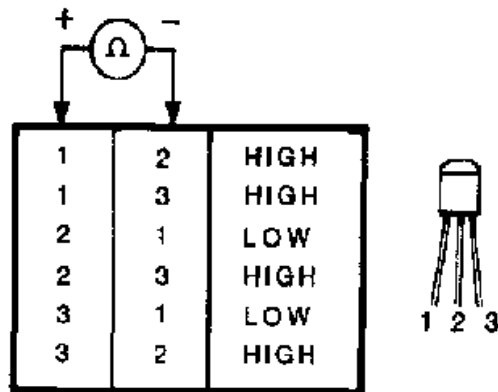
73. In a transistor, collector current is controlled by:

- a- Collector voltage  
b- Collector resistance  
c- Base current  
d- All of the above

74. Saturation and cutoff are operating conditions that are very useful when operating the transistor:

- a- As a linear amplifier  
b- As a switch  
c- As a current amplifier  
d- None of the above

75. The information in the chart below indicates that the transistor is a/an:

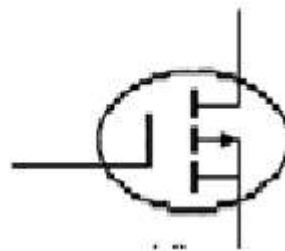


- a- NPN type and that lead 1 is the base lead.  
b- PNP type and lead 1 is the base lead.  
c- NPN type and lead 2 is the base lead.  
d- PNP type and lead 2 is the base lead.

76. A thyristor can be used as:

- a- A resistor  
b- An amplifier  
c- A switch  
d- A power source

77. Refer to Figure below. This symbol identifies:



- a- a P-channel E MOSFET  
b- an N-channel D MOSFET  
c- a P-channel D MOSFET  
d- an N-channel E MOSFET



**83. Tachometers are used to measure engine:**

- a- Thrust
- b- Temperature
- c- Pressure
- d- Speed

**84. Directional gyro is used to indicate the:**

- a- Roll angle
- b- Descent angle
- c- Climb angle
- d- Yawing angle

**85. A radar altimeter indicates:**

- a- Airspeed at certain altitude.
- b- Altitude above sea level.
- c- Flight level (pressure) altitude.
- d- Altitude above ground level.

**86. A drip gauge may be used to measure:**

- a- Fuel pump diaphragm leakage.
- b- The amount of fuel in the tank.
- c- System leakage with the system shut down.
- d- Hydraulic level in the reservoir.

**87. The green arc on an aircraft temperature gauge indicates:**

- a- A low, unsafe temperature range.
- b- The desirable temperature range.
- c- The instrument is not calibrated.
- d- The instrument is still cool.

**88. Magnetic compass bowls are filled with a liquid to:**

- a- Dampen the oscillation of the float.
- b- Retard precession of the float.
- c- Reduce deviation errors.
- d- To ease the movement of the indicator.

**89. One advantage of electrical and electronic fuel quantity indicating systems is that:**

- a- Several fuel tank levels can be read on one indicator.
- b- Only one transmitter and one indicator are needed regardless of the number of tanks.
- c- The indicators are calibrated in gallons; therefore, no conversion is necessary.
- d- None of the above.

**90. An aircraft instrument panel is electrically bonded to the aircraft structure to:**

- a- Aid in the panel installation.
- b- Provide current return paths.
- c- Act as a restraint strap.
- d- Insure best readings.



