

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. |

19. Lateral stability is stability about the:

- | | |
|------------------|-----------------------|
| a- Lateral axis. | b- Vertical axis. |
| c- Normal axis. | d- Longitudinal axis. |

20. The purpose of aircraft wing dihedral is to increase:

- | | |
|---------------------------|----------------------------------|
| a- Lateral stability. | b- Longitudinal stability. |
| c- Directional stability. | d- Lift coefficient of the wing. |

محركات الطائرات

21. The operation of pilot valve in the governor of a constant speed propeller is controlled by :

- a- Blade counterweights
- b- Booster pump oil pressure
- c- Engine oil pressure
- d- Centrifugal force acting on the flyweights

22. What is the principal advantage of using propeller reduction gears To enable?

- a- The propeller RPM to be increased without an accompanying increase in engine RPM.
- b- The engine RPM to be increased with an accompanying increase in power and allow the propeller to remain at a lower, more efficient RPM
- c- The engine RPM to be increased with an accompanying increase in propeller RPM
- d- The propeller RPM to be the same as the engine RPM

23. The factors that increases the wear in a reciprocating engine are:

- a- Operating too long between oil changes
- b- Operating with too rich mixture
- c- Cylinder head temperature has been in excess of that allowed by the manufacturer
- d- All Answers are correct

24. One of the followings is an advantage of the V-engine over the In-line engine is:

- a- Less noisy
- b- Lower fuel consumption
- c- Shorter and lighter crankshaft is to be used
- d- Easier to be manufactured

25. Internal combustion engine is an example of:

- a- External combustion engine
- b- Gas turbine engine
- c- Reciprocating engine
- d- Steam compression engine

- 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 |

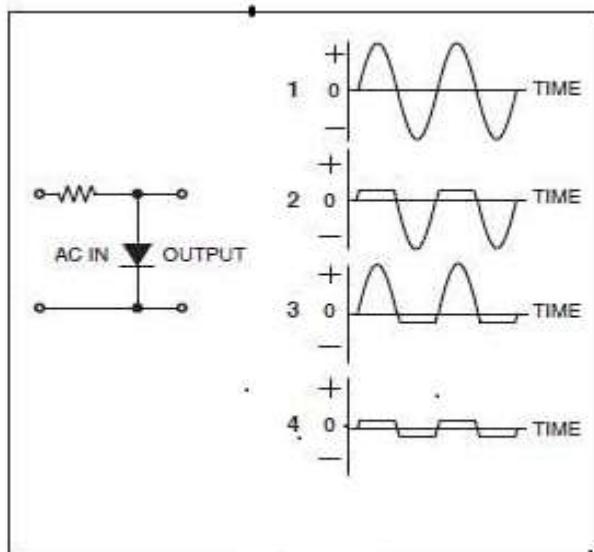
45. An amplifier supplies 3 watts of output with an input of 30 milliwatts, what is the gain in dB?

- | | |
|-------|-------|
| 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 والdccارات الالكترونية

- 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

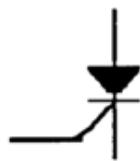
66. The average value of the half-wave rectified output voltage is approximately _____ of V_p .

- | | |
|----------|----------|
| a- 31.8% | b- 63.6% |
| c- 70.7% | d- 100% |

67. When the source voltage increases in a Zener regulator, which of these currents remains approximately constant?

- | | |
|-------------------|------------------|
| a- Series current | b- Zener current |
| c- Load current | d- Total current |

68. Refer to Figure below. The symbol is for:

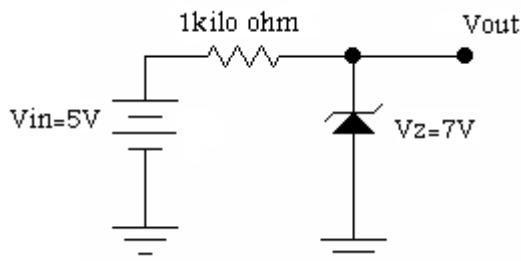


- | | |
|------------|-----------|
| a- a triac | b- a UJT |
| c- a diac | d- an SCR |

69. The capacitance of a varactor diode:

- a- Remains constant as the bias voltage varies
- b- Decreases as the reverse bias voltage increases
- c- Increases as the reverse bias voltage increases
- d- Is usually 1000 μF or more

70. The output voltage for the circuit below is:

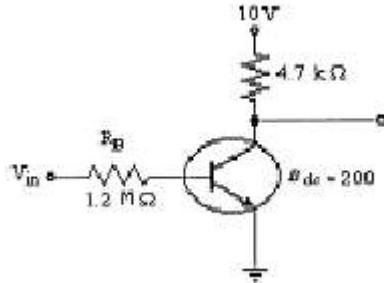


- | | |
|-------|---------------|
| a- 5V | b- 2V |
| c- 7V | d- Zero volts |

71. In a transistor, the relation of the three transistor currents is:

- | | |
|----------------------|-----------------------|
| a- $I_c = I_E + P_C$ | b- $I_c = I_B - 2I_E$ |
| c- $I_E = I_c + I_B$ | d- $I_C = I_E + I_B$ |

72. Refer to the figure below. The value of I_c at cut off is:



- | | |
|-------------|---------------|
| a- 10.56 mA | b- 2.13 mA |
| c- 0.68 mA | d- equal zero |

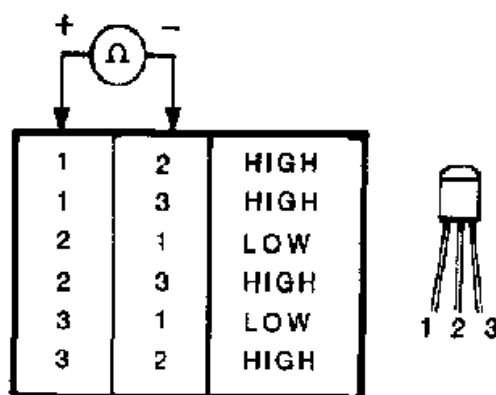
73. In a transistor, collector current is controlled by:

- | | |
|----------------------|-------------------------|
| 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:

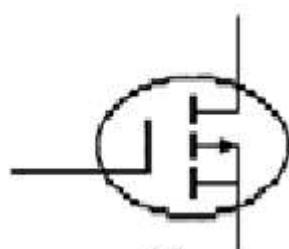


- a- NPN type and that lead 1 is the base lead.
- b- PNP type and lead 1 is the base lead.
- c- NPN type and lead 2 is the base lead.
- d- PNP type and lead 2 is the base lead.

76. A thyristor can be used as:

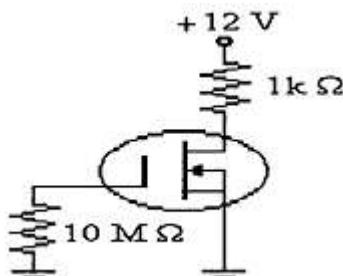
- | | |
|---------------|-------------------|
| a- A resistor | b- An amplifier |
| c- A switch | d- A power source |

77. Refer to Figure below. This symbol identifies:



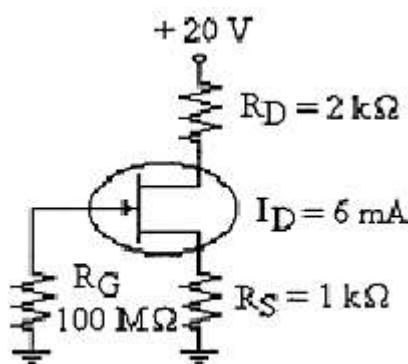
- a- a P-channel E MOSFET
- b- an N-channel D MOSFET
- c- a P-channel D MOSFET
- d- an N-channel E MOSFET

78. Refer to Figure below. If $I_D = 4 \text{ mA}$, the value of V_{DS} IS:



- a- 12 V b- 8 V
c- 4 V d- 0 V

79. Refer to Figure below. The value of the voltage drop across R_D is:



- a- 20 V b- 12 V
c- 6 V d- 3 V

80. The gate-source junction of a JFET is:

- a- Normally not biased
b- Normally forward biased
c- Normally reverse biased
d- A low resistance path for dc current when reverse biased

الآلات الدقيقة في الطائرات

81. Which instruments are connected to an aircraft's pitot static system?

1. Vertical speed indicator.
2. Cabin altimeter.
3. Altimeter.
4. Cabin rate-of-change indicator.
5. Airspeed indicator.

- a- 1, 3, and 5. b- 1, 2, and 4.
c- 1, 2, 3, 4, and 5. d- C. 2, 3, 5.

82. One of following systems uses horizontal beam:

- a- ADF b- VOR
c- Localizer d- Glide slope

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.

- 91. Fuel flow transmitters are designed to transmit data:**
- a- Electrically.
 - b- Utilizing fluid power.
 - c- Mechanically.
 - d- Hydraulically.
- 92. What does a reciprocating engine manifold pressure gauge indicate when the engine is not operating?**
- a- Zero pressure.
 - b- The existing atmospheric pressure.
 - c- The differential between the manifold pressure and the atmospheric pressure.
 - d- absolute pressure.
- 93. Bourdon tube is an instrument may be used to indicate**
1. pressure.
 2. temperature.
 3. position.
- a- 1
 - b- 2
 - c- 1+3
 - d- 1+2
- 94. What is used as a temperature sensing element in an electrically heated windshield?**
- a- Thermocouple.
 - b- Thermistor.
 - c- Thermometer.
 - d- Thyrestor.
- 95. A turn coordinator instrument indicates**
- a- Both roll and yaw.
 - b- The need for corrections in pitch and bank.
 - c- The longitudinal attitude of the aircraft during climb and descent.
 - d- Roll, pitch and bank.
- 96. Data transmitted between components in an EFIS are converted into**
- a- Carrier wave signals.
 - b- Analog signals.
 - c- Digital signals.
 - d- Electrical signals.
- 97. The lubber line on a directional gyro is used to**
- a- Align the instrument glass in the case.
 - b- Represent the wings of the aircraft.
 - c- Represent the nose of the aircraft.
 - d- Represent the tail of the aircraft.
- 98. The red radial lines on the face of an engine oil pressure gauge indicates**
- a- Minimum engine safe RPM operating range.
 - b- Minimum precautionary safe operating range.
 - c- Minimum and/ or maximum safe operating limits.
 - d- The level of oil in the reservoir.

99. Where may a person look for the information necessary to determine the required markings on an engine instrument?

1. Engine manufacturer's specifications.
 2. Aircraft flight manual.
 3. Instrument manufacturer's specifications.
 4. Aircraft maintenance manual.

100. If a static pressure system check reveals excessive leakage, the leak(s) may be located by:

- a- Pressurizing the system and adding leak detection dye.
 - b- Removing and visually inspecting the line segments.
 - c- Isolating portions of the line and testing each portion systematically, starting at the instrument connections.
 - d- Ultra sonic waves.

انتهت الأسئلة