

- 1) Bernoulli's equation for subsonic flow states that
- 1) if the area of tube decreases, the static pressure in decreases.
 - 2) if the area of tube decreases, the static pressure increases.
 - 3) if the area of tube increases, the static pressure increases.
 - 4) if the velocity of an airstream within a tube is increased, static pressure decreases.
- 2) For a cambered airfoil, the center of pressure (CP)
- 1) moves backward as AOA increases
 - 2) moves to the rear of the wing at high AOA
 - 3) moves forward as AOA increases
 - 4) moves forward as AOA decreases
- 3) An airplane flying at CL_{MAX} will have
- 1) equal amounts of parasite and induced drag
 - 2) more parasite drag than induced drag
 - 3) more induced drag than parasite drag
 - 4) Not enough information is given to evaluate the drag
- 4) To obtain maximum range a jet airplane must be flown at
- 1) Not enough information is given to evaluate the maximum Range
 - 2) A speed less than that for $(L/D)_{MAX}$
 - 3) A speed equal to that for $(L/D)_{MAX}$
 - 4) A speed greater than that for $(L/D)_{MAX}$
- 5) The primary stress in rotor blades in flight is
- 1) Tension
 - 2) bending
 - 3) Torsion
 - 4) shear
- 6) For Jet Aircraft, take off distance at altitude is greater than at sea level because
- 1) The thrust available is high and the EAS for take off is greater
 - 2) The thrust available is high and the TAS for take off is higher
 - 3) The thrust available is less and the EAS for take off is greater
 - 4) The thrust available is less and the TAS for take off is higher

7) Induced Drag is

- 1) more important to low aspect ratio airplanes than to high aspect ratio airplanes
- 2) increases when the airplane enters ground effect
- 3) increases if the airplane has wing lets
- 4) reduced when the airplane exit ground effect

8) Maximum rate of climb for a propeller airplane occurs

- | | |
|---------------------------|---------------------|
| 1) At $(P_A - P_R)_{MAX}$ | 2) At $(L/D)_{MAX}$ |
| 3) At $P_{R_{Min}}$ | 4) At CL_{MAX} |

9) Directional stability is a

- | | |
|--|--|
| 1) Stability about the longitudinal axis | 2) Stability about the horizontal axis |
| 3) Stability about the lateral axis | 4) Stability about the vertical axis |

10) A damped oscillation is one that

- 1) shows negative static stability and positive dynamic stability
- 2) shows negativestatic stability and positive dynamic stability
- 3) shows positive static stability and negativdynamic stability
- 4) shows positive static stability and positive dynamic stability

11) The pilot of a propeller airplane is flying at the speed for best range under no-wind condition a headwind is encountered. to obtain best range the pilot now must.

- | | |
|--|--|
| 1) Slow down by more than the wind speed. | 2) Speed down by the amount of the wind speed. |
| 3) Speed up by the amount of the wind speed. | 4) Speed up by less than the wind speed. |

12) As weight (w_2) increases the takoff distance increases.

- | | |
|---|---------------------------|
| 1) inversely as the square of w_2/w_1 | 2) Directly as w_2/w_1 |
| 3) Directly as the square of w_2/w_1 | 4) inversely as w_2/w_1 |

13 At $(L/D)_{MAX}$ an airplane will

- 1) be at maximum glide angle
- 2) be achieving minimum glide distance.
- 3) Have a glide ratio equal to the numerical value of $(L/D)_{MAX}$
- 4) Have a glide ratio up to the numerical value of $(L/D)_{MAX}$

14 If the weight of an airplane, w_2 , is increased above the design gross weight, w_1 , the limit load factor

- 1) Increases by the weight ratio, w_2/w_1
- 2) Remains the same
- 3) Decreases by the weight ratio, w_2/w_1
- 4) Not enough information is given to evaluate the limit load factor

15 Dutch roll is interaction between

- | | |
|---|--|
| 1) Lateral stability and longitudinal stability | 2) Lateral stability and Directional stability |
| 3) Longitudinal stability and Directional stability | 4) Lateral, Directional and longitudinal stability |

عنوان درس: آلات دقیق هواپیما (اختیاری)

16 The true Air speed and Would be the same if the airplane were flying in perfectly still air?

- | | |
|--------------------|-------------------------|
| 1) total air speed | 2) calibrated air speed |
| 3) ground speed | 4) indicated air speed |

17 As altitude increases, the speed of sound will

- | | |
|--------------------|-------------|
| 1) not be changed | 2) increase |
| 3) remain constant | 4) decrease |

18 The rate of climb indicator uses

- | | |
|------------------------------|-------------------------|
| 1) pitot and static pressure | 2) static pressure only |
| 3) vacuum and pitot pressure | 4) pitot pressure |

19 What is the purpose of the directional gyro indicator?

- | | |
|---|---|
| 1) indicates the rate of climb in feet per minute | 2) indicates the attitude of air craft |
| 3) indicates the rate turning of the air craft | 4) indicates the heading of the air craft |

20 The attitude gyro or gyro horizon works on which gyroscopic properties?

- | | |
|------------------------|---------------|
| 1) apparent precession | 2) precession |
| 3) centrifugal force | 4) Rigidity |

21 During a turn if centrifugal force overcomes gravity the aircraft is said to be (in a turn banked)

- | | |
|---|-------------|
| 1) Turning too slow for the angle of bank | 2) Slipping |
| 3) Making a coordinate turn | 4) Skidding |

22 An accelerometer indicates normal gravity (+1 G) when the A/C is

- | | |
|--|--------------------------------------|
| 1) climbing and diving | 2) in straight and level flight only |
| 3) parked on the flight line or in straight level flight | 4) parked on the flight line only |

23 The compass swing accomplished to compensate for indicator

- | | |
|--------------------|-------------------|
| 1) deviation error | 2) friction error |
| 3) variation error | 4) drift error |

24 The fuel flow indicator shows the rate of fuel flow consumption of each engine in

- | | |
|---------------------------|----------------------|
| 1) gallon per hour | 2) pound per second |
| 3) pound per hour (P.P.H) | 4) gallon per second |

25 The maximum altitude loss permitted during an unpressurized A/C instrument static pressure system integrity check is

- | | |
|-------------------------|--------------------------|
| 1) 75 feet in 2 minutes | 2) 50 feet in 1 minute |
| 3) 100 feet in 1 minute | 4) 150 feet in 2 minutes |

26 On an air speed indicator , a white Arc on the instrument face is used to indicate the :

- | | |
|---------------------------|--------------------------------|
| 1) flap operation range | 2) caution Range |
| 3) Normal operating Range | 4) permissible operation range |

27 The magnetic compass indicates direction with respect to:

- | | |
|----------------------------|---|
| 1) the magnetic north pole | 2) the true north pole |
| 3) Geographic north pole | 4) altogether true & magnetic north are correct |

28 The necessary suction for operation of turn and bank indicator in the vacuum system is:

- | | |
|-------------|-------------|
| 1) 4 in.Hg | 2) 1 in .Hg |
| 3) 2 in .Hg | 4) 6 in.Hg |

29 The power requirement for the resistance thermometer medicating system is:

- | | |
|--------------|--------------|
| 1) 12volt DC | 2) 28volt DC |
| 3) 26volt AC | 4) 28volt AC |

30 In jet engine fuel pressure gage indicates the pressure of fuel being applied to ?

- | | |
|-----------------------|--------------------|
| 1) the fuel regulator | 2) the fuel pump |
| 3) the fuel filter | 4) the fuel nozzle |

عنوان درس: سیستم های ناوبری (اختیاری)

31 What is the position of on aircraft conducting an ILS approach , if horizontal needle is below the center line and vertical needle is left of the center line?

- | | |
|--|--|
| 1) air craft is above glide path and left of the track | 2) air craft is below glide path and left of center line |
| 3) air craft is above glide path and right of track | 4) air craft is below glide path and right of track |

32 What is the ground speed of an aircraft , if its DME reading changes from 20NM to 30NM in 2 minutes?

- | | |
|-------------|-------------|
| 1) 300Knots | 2) 500Knots |
| 3) 600Knots | 4) 900Knots |

33 Which signal should an air craft conducting an ILS approach receive , when flying left side of the runway centerline?

- | | |
|------------------------------------|----------|
| 1) 90HZ | 2) 150HZ |
| 3) 90and 150HZ with equal strength | 4) 30HZ |

34 Which marker beacon is normally used for approach control or holding purposes?

- | | |
|--------------------|----------------------|
| 1) bone shaped | 2) elliptical shaped |
| 3) station locator | 4) Z marker |

35 Which of the following NDBs is used at major aerodromes ?

- | | |
|--------------------------------------|----------------------------------|
| 1) Medium powered units of 500watts | 2) Low powered units of 100watts |
| 3) high powered units of 5 kilowatts | 4) NDBs with less than 25watts |

36 What is the use of NDB in conjunction with an ILS?

- | | |
|---|--------------------------------------|
| 1) used as non- precision approach aid | 2) used as precision approach aid |
| 3) used as a locator or compass locator | 4) used to transmit localizer course |

37 Where only one locator is used as a supplement to the ILS , preference should be given to :

- | | |
|----------------------|-----------------------|
| 1) inner marker site | 2) middle marker site |
| 3) outer marker site | 4) localizer site |

38 If the CDI needle on the VOR navigation indicator is deviated to the left , it means :

- | | |
|--|--|
| 1) aircraft is flying FROM the station | 2) aircraft is on the left side of selected course |
| 3) aircraft is flying TO the station | 4) selected course is on the left side of aircraft |

39 What dose CDI indicate to the pilot?

- 1) amount of deviations from runway center line
- 2) deviations of less than 10degrees from selected course
- 3) amount of deviations from extended runway center line
- 4) deviations in excess of 10 degrees from selected course

40) How should flying of a track be achieved
By use of VOR?

- | | |
|---------------------------------|---------------------------------------|
| 1) by flying of FROM indication | 2) by keeping the CDI needle centered |
| 3) by flying of TO indication | 4) by flying of OFF indication |

41) Which one of the followings is correct , if the aircraft is exactly above the DME station at height of 36000 feet?(1 NM= 600feet).

- | | |
|-------------------------------------|------------------------|
| 1) ground and slant ranges are Zero | 2) slant range is Zero |
| 3) ground range is 6 NM | 4) slant range is 6 NM |

42) DME is channelized in accordance with:

- | | |
|---|--|
| 1) the frequency of airborne interrogator | 2) the frequency of transponder |
| 3) the frequency of associated VOR | 4) 63MHZ spacing between adjacent channels |

43) Which one is the correct DME reading , if elapsed time between transmission and reception is 419 microseconds ? radar mile = 12.3microseconds

- | | |
|---------|---------|
| 1) 30NM | 2) 20NM |
| 3) 40NM | 4) 50NM |

44) In which direction both phases of the VOR (reference and variable) are exactly aligned?

- | | |
|---------------------|-------------------------------|
| 1) at manetic north | 2) at each 90degree direction |
| 3) at true north | 4) at grid north |

45) What is the width of localizer front course sector (width of the ILS track)?

- | | |
|--------------------------|--------------------------|
| 1) 35degrees either side | 2) 10degrees either side |
| 3) 25degrees either side | 4) 3 degrees either side |

46 Strain :

- 1) is the force that produces twisting
- 2) is an internal force of a substance which opposes or resists deformation
- 3) is the force that tends to pull apart
- 4) is the deformation of a material or substance

47 Bending stress:

- 1) is the stress that produces twisting
- 2) is a combination of compression and tension
- 3) is the stress that tends to squeeze aircraft parts
- 4) is the force that can cause corrosion

48 Water line in location numbering systems:

- 1) is a width measurement to the inboard edge of the aileron
- 2) is the measurement of height in inches
- 3) located in behind the nose of the aircraft
- 4) is the center line as zero station for structure

49 Buttock lines is called too:

- 1) butt line
- 2) Aileron station
- 3) water line
- 4) Vertical center line

50 Fuselage stations:

- 1) is the measurement of height in inches
- 2) is a width measurement to the inboard edge of the aileron
- 3) is called too nacelle station
- 4) are numbered in inches from a reference or zero point known as the reference datum

51 The wings of some aircraft are of cantilever design:

- 1) the ribs are the principal structural members of this wing
- 2) they are built so that , wing strut is needed
- 3) the stringers are the principal structural members of this wing
- 4) they are built so that , no external bracing is needed.

52 Wing station o(zero) is located :

- | | |
|---------------------------------------|------------------------------|
| 1) at the flap station | 2) at the Aileron station |
| 3) at the center line if the fuselage | 4) at the powerplant station |

53 The principal structural members of the wing are :

- | | |
|---------------|---------------|
| 1) stiffeners | 2) false ribs |
| 3) stringers | 4) Spars |

54 The primary group of flight control surfaces consists of :

- | | |
|---|--|
| 1) Ailerons , Elevators , Rudders | 2) Flaps , Spoilers , trim tabs |
| 3) Trim tabs , Ailerons , Rudders , Elevators | 4) Leading edge devices , Rudders , Flaps , Ailerons |

55 The auxiliary group of control surfaces consists of :

- 1) Elevators , Ailerons , trim tabs , Balance tab
- 2) Ailerons , Rudders , Elevator , speed brake
- 3) trim tabs , balance tabs , servo tabs , flaps , spoilers , leading edge devices
- 4) Rudders , Elevators , Ailerons , leading edge devices , flaps

56 Turn buckles :

- 1) is used to open valves thereby directing hydraulic fluid to actuators
- 2) is a device used in cable control system to adjust cable tension
- 3) is used on some large aircraft for all long , straight
- 4) is used to guide cables between structural members of the aircraft

57 Three types of control systems commonly used are :

- 1) split fairlead , the cable , conventional control systems
- 2) the cable , push- pull , the torque tube system
- 3) the torque tube system , split fairlead , the cable
- 4) push- pull , split fairlead , the torque tube system

58 Two general types of fuselage construction are :

- | | |
|--------------------------------------|--|
| 1) Truss type , Monocoque type | 2) beams type , rigid framework type |
| 3) rigid framework type , truss type | 4) Monocoque type , semimonocoque type |

59 The longerons are supplemented by other longitudinal members , called :

- | | |
|---------------|---------------|
| 1) Stringers | 2) Spars |
| 3) Stiffeners | 4) Bulk heads |

60 The skid control system performs four functions :

- 1) touchdown protection , locked wheel , wheel rotational speed , safty control.
- 2) normal skid control , locked wheel , touchdown protection , skid valves control
- 3) normal skid control , locked wheel , touchdown protection , fail safe protection
- 4) locked wheel , normal skid control , skid valves control , hydraulic pressure control

عنوان درس نیستیم های هواپیما (اختیاری)

61 Which of the following is a advantage of hydraulic system?

- 1) Maximum maintenance requirements and Light weight
- 2) Heavy weight and minimum maintenance requirements
- 3) Maximum maintenance requirements and Heavy weight
- 4) Light weight and minimum maintenance requirements

62 The component in the hydraulic system that is used to direct the flow of fluid is :

- | | |
|---------------------|----------------------------|
| 1) The check valve | 2) The selector valve |
| 3) The relief valve | 4) The orifice check valve |

63 A hydraulic motor converts fluid pressure to

- | | |
|-------------------|--------------------|
| 1) angular motion | 2) Linear motion |
| 3) rotary motion | 4) vertical motion |

64 The Hydraulic component that automatically directs fluid from either the normal source or an emergency source to an actuating cylinder is called a :

- | | |
|----------------------|--------------------|
| 1) by- pass valve | 2) shuttle valve |
| 3) cross- flow valve | 4) time- lag valve |

65 The cabin pressure control setting has a direct influence upon the

- | | |
|---------------------------|---|
| 1) out flow valve opening | 2) cabin supercharger compression ratio |
| 3) turbo compressor speed | 4) pneumatic system pressure |

66 Relief valves are used in pneumatic systems

- | | |
|------------------------------------|-----------------------------------|
| 1) to control emergency air brakes | 2) To reduce the rate of airflow |
| 3) as damage- preventing units | 4) for one direction flow control |

67 Which section of a turbojet engine provides air for the pressurization and air- conditioning system of a jet aircraft?

- | | |
|---------------|---------------|
| 1) compressor | 2) Intake |
| 3) Exhaust | 4) Combustion |

68 When the cabin pressure regulator is operating in the differential mode, reference pressure is vented to the atmosphere by the :

- | | |
|--------------------------------|----------------------------|
| 1) Differential metering valve | 2) dump valve |
| 3) Relief valve | 4) isobaric metering valve |

69 Which of the following fire detection system measure the temperature rise compared to a reference temperature?

- | | |
|--------------------------------|---------------------------|
| 1) Thermocouple | 2) Thermal switch |
| 3) Lindberg continuous element | 4) Fenwal continuous loop |

70 Which of the following is NOT a type of oil filter used an aircraft?

- | | |
|------------|-------------|
| 1) Bourdon | 2) Air-maze |
| 3) Cuno | 4) Screen |

71 A rise oil temperature and a drop in oil pressure may be caused by :

- | | |
|--|---|
| 1) the tempature regulator sticking shut | 2) foreign material under the relief valve |
| 3) the pressure relief valve sticking shut | 4) improper starting procedure engine not warmed up |

72 From the following , identify the factor that the least effect an the oil consumption of a specific engine :

- | | |
|-----------------------------|--------------------------|
| 1) Engine RPM | 2) Mechanical efficcency |
| 3) Lubricant characteristic | 4) Engin temperature |

73 What tupe of oil system is usually found on turbojet Engines?

- | | |
|-----------------------------------|----------------------------------|
| 1) wet sump , spray , and splash | 2) Dry sump, dip , and splash |
| 3) Dry sump, pressure , and spray | 4) wet sump , dip , and pressure |

74 Which type of pump is commonly used a fuel pump on reciprocating engines?

- | | |
|-------------|---------|
| 1) Impeller | 2) Gear |
| 3) Webble | 4) Vane |

75 What is eharacteristic of a centrifugal- type boost pump?

- | | |
|--|---------------------------------|
| 1) requires a relief valve | 2) has positive displacement |
| 3) separates air and vapor from the fuel | 4) operates at very slow speeds |

عنوان درس موتور جت هواپیما (اختیاری)

76 What are the main sections of a turbojet engine?

- | | |
|---|--|
| 1) compressor , combustion , and diffuser | 2) compressor , combustion , and turbine |
| 3) Inlet , combustion , and turbin | 4) fan , combustion , and exhaust |

77 The two types of centrifugal compressors are :

- | | |
|-------------------------------|----------------------------------|
| 1) single stage and two stage | 2) single entry and double entry |
| 3) radial and roots | 4) Impeller and diffuser |

- 78** What is the purpose of the stator blades in the compressor section of a turbine engine?
- 1) stabilize pressure
 - 2) control direction of the airflow
 - 3) prevent compressor surge
 - 4) Increase velocity of the air flow
- 79** What is the purpose of the diffuser section in a turbine engine?
- 1) Increase pressure and reduce velocity
 - 2) convert pressure to velocity
 - 3) Reduce pressure and Increase velocity
 - 4) speed up the air flow in the turbine section
- 80** What turbine engine section provides for proper mixing of the fuel and air?
- 1) combustion section
 - 2) compressor section
 - 3) turbine section
 - 4) Accessory section
- 81** When aircraft turbine blades are subject to excessive temperature, what types of failures would you expect?
- 1) Bending and torsion
 - 2) compression and torsion
 - 3) stress rupture
 - 4) torsion and tension
- 82** Which of the following is NOT a factor in the operation of an automatic fuel control unit used on a turbojet engine?
- 1) throttle position
 - 2) compressor inlet air density
 - 3) compressor rpm
 - 4) Mixture control position
- 83** What is the possible cause when a turbojet engine indicates no change in power setting parameters, but oil temperature is high?
- 1) unusual scavenge pump oil flow
 - 2) Gear box seal leakage
 - 3) High oil sump pressure
 - 4) Engine main bearing distress
- 84** Which of the following is used to monitor the mechanical integrity of the turbines, as well as to check engine operating conditions of a turbojet Engine?
- 1) Engine oil pressure
 - 2) Exhaust gas temperature
 - 3) Engine oil temperature
 - 4) Engine pressure ratio

85 A turboprop powerplant propeller :

- 1) control the speed of the engine in the betarange
- 2) accounts for 15 to 25 percent of the total thrust output
- 3) accounts for 75 to 85 percent of the total thrust output
- 4) is governed at the same speed as the turbine

86 Which of the following engine variables is the most critical during turbine engine operation ?

- | | |
|-------------------------|-------------------------------------|
| 1) compressor | 2) Turbine inlet temperature |
| 3) Burner- can pressure | 4) compressor inlet air temperature |

87 Where is water injected into a turbojet engine for cooling purpose s?

- | | |
|-------------------------------------|--|
| 1) compressor air inlet or diffuser | 2) Burner can |
| 3) Fuel control | 4) second- stage compressor or turbine |

88 An advantage of the axial – flow compressor is its

- | | |
|-------------------------|------------------------------------|
| 1) High peak efficiency | 2) High frontal area |
| 3) low weight | 4) low starting power requirements |

89 Which of the following is the ultimate limiting factor of turbojet engine operation?

- | | |
|-----------------------------|--------------------------------------|
| 1) Burner – can pressure | 2) compressor outlet air temperature |
| 3) turbin inlet temperature | 4) compressor inlet air temperature |

90 An advantage of the centrifugal- flow compressor is its high:

- | | |
|--------------------|----------------------------|
| 1) peak efficiency | 2) frontal area |
| 3) ram efficiency | 4) pressure rise per stage |

پاسخ				شماره سؤال
گزینه ۴	گزینه ۳	گزینه ۲	گزینه ۱	
●				۴۶
		●		۴۷
		●		۴۸
			●	۴۹
●				۵۰
●				۵۱
	●			۵۲
●				۵۳
			●	۵۴
	●			۵۵
		●		۵۶
		●		۵۷
			●	۵۸
			●	۵۹
	●			۶۰
●				۶۱
		●		۶۲
	●			۶۳
		●		۶۴
			●	۶۵
	●			۶۶
			●	۶۷
			●	۶۸
			●	۶۹
			●	۷۰
		●		۷۱
		●		۷۲
	●			۷۳
●				۷۴
	●			۷۵
		●		۷۶
		●		۷۷
		●		۷۸
			●	۷۹
			●	۸۰
	●			۸۱
●				۸۲
●				۸۳
		●		۸۴
	●			۸۵
		●		۸۶
			●	۸۷
			●	۸۸
	●			۸۹
●				۹۰

پاسخ				شماره سؤال
گزینه ۴	گزینه ۳	گزینه ۲	گزینه ۱	
●				۱
	●			۲
	●			۳
●				۴
			●	۵
●				۶
			●	۷
			●	۸
●				۹
●				۱۰
●				۱۱
	●			۱۲
	●			۱۳
	●			۱۴
		●		۱۵
●				۱۶
●				۱۷
		●		۱۸
●				۱۹
●				۲۰
●				۲۱
	●			۲۲
			●	۲۳
	●			۲۴
			●	۲۵
			●	۲۶
			●	۲۷
	●			۲۸
		●		۲۹
●				۳۰
	●			۳۱
			●	۳۲
			●	۳۳
			●	۳۴
			●	۳۵
	●			۳۶
	●			۳۷
●				۳۸
		●		۳۹
		●		۴۰
●				۴۱
			●	۴۲
			●	۴۳
			●	۴۴
●				۴۵