

Nepal Engineering Council Registration Examination
Model Question for Aerospace/Aeronautical Engineering (AAAE)

(100*1 = 100)

1. Which is not the common type of fit in hole and shaft?
 - a) Clearance fit
 - b) Transference fit
 - c) Transition fit
 - d) Interference fit
2. Steel containing 0.15% - 0.45% carbon is called
 - a) Mild steel
 - b) Dead mild steel
 - c) Medium carbon steel
 - d) High carbon steel
3. Wrought iron contains of iron
 - a) 0.0999%
 - b) 0.999%
 - c) 9.99%
 - d) 99.9%
4. The C.G.S. unit of charge is
 - a) Coulomb
 - b) Erg
 - c) Franklin
 - d) Biot
5. The temperature of heat produced by the electric arc is of the order of
 - a) 6 °C – 7 °C
 - b) 60 °C – 70 °C
 - c) 600 °C – 700 °C
 - d) 6000 °C– 7000 °C
6. The type of organization preferred for a steel industry is
 - a) Line and staff
 - b) Functional
 - c) Line, staff and functional
 - d) Line
7. The measurement of a thermodynamic property ‘temperature’ is based on thermodynamic law
 - a) Zeroth law
 - b) First law
 - c) Second law

- d) Kelvin-plank law
8. Steady state flow application device is
- a) Filling-in of gas cylinder
 - b) Throttling valve
 - c) Filling-out of gas cylinder
 - d) Compressor
9. Entropy of water at 0°C is assumed to be
- a) 1
 - b) 0
 - c) -1
 - d) 10
10. Otto cycle is also known as
- a) Constant pressure cycle
 - b) Constant temperature cycle
 - c) Constant volume cycle
 - d) Constant enthalpy cycle
11. The inlet valve of a four-stroke cycle petrol engine remains open for
- a) 30°
 - b) 130°
 - c) 230°
 - d) 300°
12. A refrigerant with the highest critical pressure is
- a) R-11
 - b) R-12
 - c) R-22
 - d) Ammonia
13. Water pressure at any point is measured with the unit
- a) Bar
 - b) Newton
 - c) Cusecs
 - d) kg
14. The upper surface of weir over which water flows is known as
- a) Crest
 - b) Nappe
 - c) Sill
 - d) Weir-top
15. Bernoulli's theorem deals with the conservation of
- a) Mass

- b) Force
 - c) Momentum
 - d) Energy
16. Which of the following pipe bends will introduce maximum head loss
- a) 30° bend
 - b) U bend
 - c) 45° bend
 - d) 90° bend
17. Most commonly used hydro turbine in Nepal is
- a) Pelton
 - b) Francis
 - c) Kaplan
 - d) Turgo-impulse
18. One horse power of pump is equal to
- a) 75 watt
 - b) 102 watt
 - c) 550 watt
 - d) 746 watt
19. The total momentum of a system of masses (*i.e.* moving bodies) in any direction remains constant, unless acted upon by an external force in that direction. This statement is called
- a) Newton's first law of motion
 - b) Newton's second law of motion
 - c) Principle of conservation of energy
 - d) Principle of conservation of momentum
20. Hook's law holds good up to
- a) Elastic limit
 - b) Yield point
 - c) Plastic limit
 - d) Breaking point
21. The unit of moment of inertia of an area is
- a) kg m^2
 - b) m^4
 - c) kg/m^2
 - d) kg/m^4
22. In a reciprocating steam engine, which of the following forms a kinematic link?
- a) Cylinder and piston
 - b) Piston rod and connecting rod
 - c) Crankshaft and flywheel

- d) Flywheel and engine frame
23. In simple harmonic motion (S.H.M.), the ratio of acceleration and displacement is proportional to
- a) ω
 - b) ω^2
 - c) $1/\omega^2$
 - d) $\sqrt{\omega}$
24. The distribution of torsion shear stress is uniform in section.
- a) Parallel
 - b) Rectangular
 - c) Trapezoidal
 - d) Circular
25. The separation of the boundary layer takes place when the pressure gradient is
- a. Negative
 - b. Constant
 - c. Zero
 - d. Positive
26. With increase in air-foil thickness, the critical Mach number for an air-foil is likely to
- a. Increase
 - b. Decrease
 - c. Remain unchanged
 - d. Be undefined
27. Landing gears fold away during the flight to reduce.....
- a. Altitude
 - b. Thrust
 - c. Drag
 - d. Airspeed
28. What is the condition for Kutta and Joukowski theorem?
- a. Pressure and lift
 - b. Pressure and drag
 - c. Drag and lift
 - d. Lift and moment
29. Location of aerodynamic center for low speed airfoil is
- a. At half of chord
 - b. At quarter chord point
 - c. At quarter chord from leading edge
 - d. There is no such place

30. What is the shape of the shock wave formed over a cone in a supersonic flow?
- Normal shock
 - Conical shock
 - Straight shock
 - Triangular shock
31. Which of the following is a low-cost pavement de-icing mixture?
- Carbon mixture
 - Aluminum mixture
 - Urea mixture
 - Quartz mixture
32. The potable water quantity indicator is located
- Forward of the aft passenger entrance door
 - Above the fwd passenger entrance door
 - Above the aft service door
 - Below the aft service door
33. Which of the following is not the type of fuel tank?
- Flap
 - Integral bladder
 - Bladder
 - Discrete
34. Which is the most expensive maintenance check of all?
- A-check
 - B-check
 - C-check
 - D-check
35. Who is responsible to review the airworthiness certificate, maintenance records and other required paperwork to verify that the aircraft is worthy?
- Pilot
 - Copilot
 - Purser
 - Aircraft Maintenance engineer
36. Which of the following international association is the one that represent an authority for aviation?
- CAAN
 - ICAO
 - ICAN
 - DOCA

37. Why does the landing gear retract into the wings and/or fuselage during flight?
- To decrease drag
 - To increase airspeed
 - To decrease airspeed
 - To generate more thrust
38. What is lateral torsional buckling?
- buckling of beam loaded in plane of its weak axis and buckling about its stronger axis accompanied by twisting
 - buckling of beam loaded in plane of its strong axis and buckling about its weaker axis accompanied by twisting
 - buckling of beam loaded in plane of its strong axis and buckling about its weaker axis and not accompanied by twisting
 - buckling of beam loaded in plane of its weak axis and buckling about its stronger axis and not accompanied by twisting
39. What was added to a pure monocoque structure to support larger, more powerful aircraft?
- Skin
 - Formers
 - Frames
 - Longerons
40. The dive speed in v-n diagram represents
- maximum dynamic pressure
 - maximum manifold pressure of supercharger
 - hydraulic actuator speed limit
 - rate of climb
41. The safe life of an aircraft is predicted on which of the following?
- The number of flying hours elapsed
 - The number of landings
 - The number of pressurization cycles elapsed
 - All of the above
42. Stabilizing tail is also known as
- Rudder
 - Empennage
 - Aileron
 - Wingtip
43. Which of the following materials is used in making aircraft windows?
- Thick glass
 - Plexiglass

- c. Graphite
 - d. Plane glass
44. Which law is related to slip plane and slip direction?
- a. Schmid's law
 - b. Bragg's law
 - c. Fick's law
 - d. Such a law doesn't exist
45. Which of the following is a high temperature alloy resistant to?
- a. Tensile compression
 - b. Tensile elongation
 - c. Fatigue
 - d. Creep
46. In a sensitive altimeter, the sea-level reference pressure can be adjusted with a knob.
- a. Setting
 - b. Calibrating
 - c. Adjusting
 - d. Pressure
47. GPS user solution depends on which of the following?
- a. Satellite vehicle
 - b. Absolute Positioning
 - c. Space vehicle
 - d. Relative positioning
48. Which of the following cannot be measured in primary radar?
- a. Position of the aircraft
 - b. Height of the aircraft
 - c. Speed of the aircraft
 - d. Direction of the aircraft
49. How many types of gas turbine engines are manufactured?
- a. 1
 - b. 2
 - c. 4
 - d. 10
50. Which of the following is part of a turbine engine?
- a. Compressor
 - b. Flap
 - c. Aileron
 - d. Elevator

51. Flaps are used to the lift.
- Increase
 - Maintain
 - Nullify
 - Decrease
52. The tail section is also referred to as.....
- Cockpit
 - Rudder
 - Empennage
 - Undercarriage
53. The requirements of an Aircraft will fall in.....phase.
- Surface requirement
 - Preliminary design
 - Detail design
 - Conceptual design
54. What is the speed at which the takeoff is aborted when there is an engine failure?
- Stall speed
 - Decision speed
 - Takeoff speed
 - Rotational speed
55. Standard dimensions (mm x mm) of A3 drawing sheet is
- 11.69×16.54
 - 29.7×42
 - 297×420
 - 420×280
56. Which of the following methods of charging depreciation of an asset has increased amount of depreciation as the age of asset increases
- Sum-of-year digit
 - Sinking fund
 - Diminishing balance
 - Straight line
57. The process of optimizing the project's limited resources without extending the project duration is known as
- Project crashing
 - Resource levelling
 - Resource smoothing
 - Networking

58. The process of composing/raising the required fund from different sources such as equity, preferred stock, bond and debenture is known as
- Capital structure planning
 - Project financing
 - Capital budgeting decision
 - Deducing earning per share
59. In which of the following society, people used to seek their existence on growing plants for their cattle and domestic animals
- Pastoral society
 - Tribal society
 - Horticultural society
 - Agricultural society
60. According to Nepal Engineering Council Act, 2055 (Revised, 2079), all engineering academic institutions shall be..... in the Council.
- Affiliated
 - United
 - Recognized
 - Associated
61. Sectional views are used in machine drawing to
- Reduce size of drawing
 - Show inner details clearly
 - Avoid dimensioning
 - Make the drawing decorative
62. The **Rockwell Hardness Test** measures hardness based on
- Diameter of indentation
 - Surface roughness
 - Stress–strain relation
 - Depth of penetration
63. Pearlite is a mixture of
- Ferrite + Austenite
 - Ferrite + Graphite
 - Ferrite + Cementite
 - Austenite + Cementite
64. The operation of enlarging an existing hole to a precise size is called
- Drilling
 - Reaming
 - Tapering
 - Knurling

65. A system is said to be in thermodynamic equilibrium if it is in
- Thermal equilibrium only
 - Mechanical equilibrium only
 - Chemical equilibrium only
 - Thermal, mechanical, and chemical equilibrium simultaneously
66. Enthalpy (H) of a system is defined as
- $H = U + PV$
 - $H = U - PV$
 - $H = Q - W$
 - $H = mcT$
67. The device in a refrigerator where the refrigerant absorbs heat is called
- Condenser
 - Compressor
 - Evaporator
 - Expansion valve
68. The basic Rankine cycle consists of how many processes?
- 2
 - 4
 - 8
 - 16
69. For a Non-Newtonian fluid, the relation between shear stress and shear rate is
- Linear
 - Non-linear
 - Always constant
 - Independent
70. The flow of a fluid is said to be laminar if
- The fluid particles move in random directions
 - The fluid particles move in smooth, orderly layers
 - The Reynolds number is very high
 - There are strong eddies in the flow
71. The continuity equation is based on the principle of
- Conservation of energy
 - Conservation of momentum
 - Conservation of mass
 - Conservation of velocity
72. Which of the following is an **impulse turbine**?
- Francis turbine
 - Kaplan turbine
 - Pelton wheel
 - Propeller turbine

73. Which law is used for determining equilibrium of concurrent forces?
- a) Law of conservation of energy
 - b) Lami's theorem
 - c) Newton's third law
 - d) Hooke's law
74. If a material has Poisson's ratio = 0, it means
- a) No lateral strain occurs
 - b) No longitudinal strain occurs
 - c) Stress is zero
 - d) Material is incompressible
75. The gyroscopic couple is directly proportional to
- a) Mass only
 - b) Radius of gyration only
 - c) Buoyancy force
 - d) Angular velocity of spin and angular velocity of precession
76. In a deformable body, shear stress acts
- a) Perpendicular to the plane
 - b) Tangential to the plane
 - c) Normal to the axis of load
 - d) Radially outward
77. The primary purpose of an airfoil shape in a wing is to
- a) Reduce drag only
 - b) Generate lift
 - c) Increase weight
 - d) Reduce thrust
78. Which type of propulsion system is used in spacecraft and missiles?
- a) Piston engine
 - b) Turboprop engine
 - c) Rocket propulsion
 - d) Turbofan engine
79. The ratio of lift to drag (L/D ratio) is a measure of
- a) Aircraft weight
 - b) Aerodynamic efficiency
 - c) Wing loading
 - d) Stability margin

80. Prandtl–Meyer expansion waves occur when a supersonic flow
- a) Is compressed around a convex corner
 - b) Expands around a convex corner
 - c) Expands around a concave corner
 - d) Slows down to subsonic speed
81. The aim of a smoke detection system in an aircraft is to
- a) Extinguish fire automatically
 - b) Warn crew of the presence of smoke or fire
 - c) Reduce cabin pressure
 - d) Cool the cargo compartment
82. In aircraft landing gear, “anti-skid system” is used to
- a) Prevent tire overheating during taxi
 - b) Prevent wheel locking during braking
 - c) Reduce aerodynamic drag
 - d) Improve suspension damping
83. Which type of maintenance is performed at **scheduled intervals** to ensure aircraft airworthiness?
- a) Unscheduled maintenance
 - b) Preventive maintenance
 - c) Corrective maintenance
 - d) Breakdown maintenance
84. Which authority is responsible for regulating civil aviation in Nepal?
- a) Ministry of Physical Infrastructure and Transport
 - b) Nepal Airlines Corporation
 - c) Civil Aviation Authority of Nepal
 - d) International Civil Aviation Organization
85. The airframe of an aircraft mainly consists of
- a) Engine and propeller
 - b) Avionics and instruments
 - c) Fuselage, wings, empennage, and landing gear
 - d) Engine only
86. In airframe structures, the primary load-carrying members along the fuselage are
- a) Ribs
 - b) Flaps
 - c) Ailerons
 - d) Stringers and longerons
87. In spacecraft design, the main criterion is
- a) Aerodynamic lift
 - b) Wing loading
 - c) Ability to survive launch loads, vacuum, and thermal extremes
 - d) Passenger seating comfort

88. Safety factors in aircraft structure account for
- a) Only in-flight loads
 - b) Both in-flight and on-ground loads
 - c) Only engine vibration
 - d) Only cabin pressurization
89. Titanium alloys are preferred in supersonic aircraft mainly because of their
- a) High density and corrosion resistance
 - b) High melting point and strength at elevated temperature
 - c) Low cost and availability
 - d) Magnetic and electric properties
90. Fick's First Law relates diffusion flux to
- a) Concentration gradient
 - b) Temperature gradient
 - c) Pressure and enthalpy difference
 - d) Volume and entropy change
91. Which of the following is a key advantage of using non-ferrous alloys in aircraft and aerospace applications?
- a) Low melting point
 - b) High density
 - c) High strength-to-weight ratio
 - d) Low corrosion resistance
92. The Distance Measuring Equipment (DME) operates by measuring
- a) Time delay between transmitted and received signals
 - b) Frequency difference between two signals
 - c) Phase difference of ground and aircraft signals
 - d) Aircraft altitude above ground
93. The main function of the compressor in a jet engine is to
- a) Increase air volume and temperature
 - b) Increase air pressure before combustion
 - c) Reduce exhaust velocity and increase exhaust pressure
 - d) Reduce fuel supply to the combustion chamber
94. The major challenge in aircraft combustion chamber design is to
- a) Maximize air flow and minimize exhaust flow
 - b) Maximize fuel flow and minimize exhaust flow
 - c) Maintain complete combustion
 - d) Maintain cooling
95. Ground effect in aircraft performance refers to
- a) Increased induced drag near the ground
 - b) Reduced induced drag near the ground
 - c) Increased lift and reduced thrust

- d) Reduced lift and increased drag
96. Dutch roll in aircraft is a coupled oscillation involving
- a) Yaw and pitch
 - b) Heave and pitch
 - c) Pitch and roll
 - d) Roll and yaw
97. The discounted payback period method differs from the simple payback period in that it
- a) Considers the time value of money
 - b) Ignores the time value of money
 - c) Always gives a shorter payback period
 - d) Does not consider cash inflows
98. The critical path in a project network is the
- a) Path with the maximum slack time
 - b) Path with the minimum duration
 - c) Longest path that determines project duration
 - d) Shortest path in the network
99. Continuing Professional Development (CPD) in Nepal is required mainly to
- a) Increase the project cost
 - b) Maintain and update engineering knowledge and skills
 - c) Replace formal university education
 - d) Avoid project delays
100. The Nepal Engineering Council (NEC) license exam primarily evaluates
- a) Technical knowledge, ethics, and professional practice
 - b) General aptitude and reasoning
 - c) Only project management skills
 - d) Only practical knowledge