C–7808	Sub. Code
	91313

B.Sc. DEGREE EXAMINATION, APRIL 2026

First Semester

Aircraft Maintenance Science

BASIC AERODYNAMICS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which instrument is used to measure atmospheric pressure?

   (a) Hygrometer (b) Barometer

   (c) Anemometer (d) Thermometer

2. What is the temperature at sea land in the International standard atmosphere?

   (a) 273K (b) 15°C

   (c) 20°C (d) 10°C

3. What is the term used for the curve of the aerofoil's upper and lower surfaces?

   (a) Camber (b) Chord

   (c) Leading edge (d) Span

4. Which aerodynamic phenomenon causes a loss of lift and a sudden increase in drag?

   (a) Turbulence (b) Downwash

   (c) Vertex shedding (d) Stall

5. What happens to an aircraft's nose when the elevator is deflected upward?

(a) The nose pitches down

(b) The nose pitches up

(c) The aircraft enters a flat spin

(d) The aircraft rolls to the left

6. During a climb, what force primarily opposes the thrust?

(a) Drag (b) Lift

(c) Weight (d) None of the above

7. Which type of stability ensures that the aircraft resists displacement from its original flight path?

(a) Static stability

(b) Dynamic stability

(c) Longitudinal stability

(d) Lateral stability

8. Which part of the aircraft primarily influences dutch roll stability?

(a) The flaps

(b) The Ailerons

(c) The vertical stabilizer and rudder

(d) The horizontal stabilizer

9. Which device is often used to control the adverse effects of shock waves on aircraft surfaces?

(a) Spoilers (b) Winglets

(c) Vertex generators (d) Flaps

10. The critical mach number is typically higher for which type of aircraft?

(a) Subsonic aircraft

(b) Commercial airlines flying at cruise altitudes

(c) Transonic aircraft

(d) Supersonic aircraft

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b)

11. (a) Explain the terms (i) Absolute humidity (ii) Relative humidity.

Or

(b) Define the International Standard Atmosphere (ISA) and explain its significance in aviation.

12. (a) Describe about profile drag and induced drag.

Or

(b) Write short notes about slots, slats and flaps.

13. (a) Explain - Yaw control in aircraft.

Or

(b) Explain the fundamental principles behind the climbing of aircraft.

14. (a) Explain the types of static stability.

Or

(b) Describe about spiral stability.

15. (a) Explain the classification of Mach number.

Or

(b) Discuss about the behaviour of aeroplane at shock stalls.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b)

16. (a) Explain the relationship between temperature and altitude with neat graph.

Or

(b) Calculate the pressure ratio at 7 km and 0 km

17. (a) Describe the terms shown below :

(i) Boundary layer

(ii) Laminar and Turbulent flow

Or

(b) Discuss the effect of aspect ratio of a wing on aircraft performance.

18. (a) How pitch control is done in an aircraft? Explain.

Or

(b) Explain in detail about turning and gliding.

19. (a) Explain in detail about longitudinal stability.

Or

(b) Explain the criteria for directional stability.

20. (a) Derive an expression for speed of sound?

Or

(b) Discuss the challenges and aerodynamic phenomena associated with transonic speeds in aircraft.

———————

C–7809

Sub. Code
91315

B.Sc. DEGREE EXAMINATION, APRIL 2026

First Semester

Aircraft Maintenance Science

MATHEMATICS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. The eigen values of the martrix $A = \begin{bmatrix} 2 & 3 \\ 4 & 1 \end{bmatrix}$ are

   (a) 5, 2 (b) –2, 5

   (c) –5, –2 (d) 2, –5

2. Every square matrix and its _____ have the same eigen values

   (a) Inverse

   (b) Transpose

   (c) Symmetric matrix

   (d) Skew-Symmetric matrix

3. If direction ratio of two lines are $(5, -12, 13)$ and $(-3, 4, 5)$ then the angle between them is

(a) $\cos^{-1}\left(\frac{1}{65}\right)$ (b) $\cos^{-1}\left(\frac{2}{65}\right)$

(c) $\cos^{-1}\left(\frac{3}{65}\right)$ (d) $\frac{\pi}{2}$

4. If two spheres of radii r_1 and r_2 cut orthogonally, then the radius of the common circle is

(a) $r_1 . r_2$ (b) $\sqrt{r_1^2 + r_2^2}$

(c) $r_1\ r_2 - \sqrt{r_1^2 + r_2^2}$ (d) $\frac{r_1\ r_2}{\sqrt{r_1^2 + r_2^2}}$

5. The curvature of a circle of a radius " r " is

(a) r (b) $\frac{1}{r}$

(c) $\frac{1}{r^2}$ (d) r^2

6. The locus of centre of curvature is called

(a) Involute (b) Evolute

(c) Envelop (d) Radius of curvature

7. The necessary and sufficient condition for Taylor's theorem is that

(a) f is continuous

(b) *f should exist*

(c) f has higher derivatives

(d) f is not differentiable

8. If $x = r\cos\theta,\ y = r\sin\theta$ then the value of $\frac{\partial(x, y)}{\partial(r, \theta)}$ is equal to

(a) θ (b) $\frac{1}{\theta}$

(c) r (d) $\frac{1}{r}$

9. The term commonly used for activity slack time is

(a) Free float (b) Independent float

(c) Total float (d) All of the above

10. The comparison of the activity timings in a PERT cost model is called

(a) Network (b) Activity

(c) Time (d) Crashing

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Find the Eigenvalues and Eigen vectors of the matrix $\begin{bmatrix} 1 & 1 \\ 3 & -1 \end{bmatrix}$.

Or

(b) If 2, 3 are the Eigen values of $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ x & 0 & 2 \end{bmatrix}$ then find the value of "x ".

12. (a) Show that the lines $\frac{x-4}{2}=\frac{y-5}{3}=\frac{z-6}{4}$ and $\frac{x-2}{3}=\frac{y-3}{4}=\frac{z-4}{5}$ are coplanar and find the equation of the plane in which they lie.

Or

(b) Prove that the two spheres

$x^2+y^2=z^2-2x+4y-4z=0$ and

$x^2+y^2+z^2+10x+2z+10=0$ touch each other and find the point of contact.

13. (a) Find the centre of curvature of $y=x^2$ at the origin.

Or

(b) Find the envelope of the family of straight lines $x\cos\alpha+y\sin\alpha=a\sec\alpha$, where α is the parameter.

14. (a) Expand $f(x, y)=e^x\cos y$ in Taylor series at the origin upto second degree terms.

Or

(b) If $x=uv,\ y=\frac{u}{v}$ prove : $\frac{\partial(x, y)}{\partial(u,v)}.\frac{\partial(u,v)}{\partial(x,y)}=1$.

15. (a) Discuss various types of floats with an example.

Or

(b) Explain the three time estimates in the PERT calculation.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Find the eigenvalues and eigen vectors of the matrix $A=\begin{bmatrix}1 & 1 & 3\\ 1 & 5 & 1\\ 3 & 1 & 1\end{bmatrix}$.

Or

(b) Verify that the matrix $A=\begin{bmatrix}2 & -1 & 2\\ -1 & 2 & -1\\ 1 & -1 & 2\end{bmatrix}$ satisfies its characteristic equation and hence find A^4.

17. (a) Find the angle between the lines

$\frac{x-6}{2}=\frac{y-2}{1}=\frac{z+4}{-1}$ and $x+5y-2z=6$, $6x-4y+5z=2$. Also find the equations of the line passing through the origin and perpendicular to the given lines.

Or

(b) Find the equation of the sphere having its centre on the plane $4x-5y-z=3$ and passing through the circle $x^2+y^2+z^2-2x-3y+4z+8=0$; $x-2y+z=8$.

18. (a) Find the evolutes of $y^2=4ax$ considering it as the envelope of its normals.

Or

(b) Find the envelope of the straight line $\frac{x}{a}+\frac{y}{b}=1$ where a and b are connected by the relation $ab=c^2$, C is a constant.

19. (a) Prove $u = x + y + z$, $v = xy + yz + zx$, $w = x^2 + y^2 + z^2$ are functionally dependent. Find the relationship between them.

Or

(b) A rectangular box open at the top, is to have a volume of 32cc. Find the dimensions of the box, that requires the least material for its construction.

20. (a) Write about the rules for constructing a project network.

Or

(b) Explain in detail about cost considerations in PERT and CPM.

———————

C–7810

Sub. Code
91323

B.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Aircraft Maintenance Science

WORKSHOP PRACTICES

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. The "No Smoking" zone in an aircraft fuel servicing area should extend to at least

   (a) 5 m (b) 10 m

   (c) 15 m (d) 25 m

2. In aircraft engines, which fire suppression system is commonly used?

   (a) Water mist

   (b) Foam

   (c) Halon-based fire extinguishing system

   (d) Dry sand

3. Power tools in aircraft maintenance are preferred when

   (a) Noise is required

   (b) Speed and efficiency are needed

   (c) High heat is needed

   (d) Accuracy is not critical

4. Tool calibration is essential to

(a) Extend tool life

(b) Ensure measurement accuracy

(c) Reduce tool weight

(d) Prevent tool theft

5. An optical flat is primarily used with

(a) Vernier caliper

(b) Depth gauge

(c) Monochromatic light

(d) Feeler gauge

6. Which instrument measures angular dimensions with high precision?

(a) Dial indicator (b) Vernier caliper

(c) Micrometer (d) Vernier bevel protractor

7. Which fit is designed to prevent any relative movement between parts?

(a) Clearance fit (b) Interference fit

(c) Transition fit (d) Loose fit

8. Limits for bow are measured using

(a) Vernier caliper

(b) Dial indicator on a flat surface

(c) Feeler gauge

(d) Slip gauge

9. The main purpose of tempering is to

(a) Increase brittleness

(b) Soften steel completely

(c) Reduce brittleness while maintaining hardness

(d) Increase corrosion resistance

10. The Rockwell hardness test measures

(a) Grain size

(b) Resistance to indentation

(c) Ductility

(d) Elastic limit

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are the three main requirements for a fire to occur? Explain with examples.

Or

(b) Explain the types of fire extinguishers and the class of fire each one is used for.

12. (a) What is the function of the spring-loaded ball in a Zerk fitting?

Or

(b) Define the terms dimension, allowance, and tolerance with examples.

13. (a) Explain the graduations on a micrometre scale.

Or

(b) Explain the parts and function of a Vernier Bevel Protractor.

14. (a) Why is the correct drill size important when drilling holes in aircraft structures?

Or

(b) Explain the four key dimensions mentioned in wear tables.

15. (a) What are the physical properties of steel?

Or

(b) Describe the steps involved in the case carburizing process.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the safety precautions to be followed while working with compressed gases.

Or

(b) Describe the dangers of working with electricity in aircraft maintenance and the safety measures to prevent accidents.

17. (a) List and explain different types of punches used in aircraft workshops.

Or

(b) Explain the responsibilities of an engineer in the care and maintenance of hand tools.

18. (a) What are the advantages and limitations of Vernier Calipers?

Or

(b) What are slip gauges? List the common uses of slip gauges.

19. (a) Explain the consequences of too much or too little clearance in rotating engine parts.

Or

(b) How does a bilateral tolerance differ from a unilateral tolerance?

20. (a) What are annealing and quenching? Explain the process, purpose, and differences between them.

Or

(b) Explain briefly about the various hardness testing methods.

———————

C–7811

Sub. Code
91325

B.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Aircraft Maintenance Science

ELECTRONIC FUNDAMENTALS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. The threshold voltage of a silicon diode is approximately
   (a) 0.3 V (b) 0.5 V
   (c) 0.7 V (d) 1.0 V

2. Which diode type is used in power supply rectification?
   (a) Rectifier diode (b) Varactor diode
   (c) Schottky diode (d) Tunnel diode

3. The common collector configuration is also known as
   (a) Emitter follower (b) Voltage follower
   (c) Current follower (d) Base follower

4. The emitter in a transistor is generally
   (a) Lightly doped (b) Moderately doped
   (c) Heavily doped (d) Not doped

5. Which logic gate acts as an inverter?

(a) NAND (b) NOT

(c) OR (d) AND

6. Which type of gate is an EX-NOR also called?

(a) Comparator gate (b) Universal gate

(c) Majority gate (d) Equivalence gate

7. In multilayer PCBs, the layers are separated by

(a) Solder mask (b) Insulating material

(c) Conductive paste (d) Aluminium sheets

8. Which layer in PCB provides component mounting?

(a) Substrate layer (b) Copper layer

(c) Silkscreen layer (d) Power layer

9. In a synchro transmitter, the rotor is excited by

(a) AC voltage (b) DC voltage

(c) Pulses (d) Mechanical energy only

10. The number of output leads in an LVDT is generally

(a) 2 (b) 3

(c) 4 (d) 5

Part B

$(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) State two differences between silicon and germanium diodes.

Or

(b) How is functional testing of a diode carried out using a multimeter?

12. (a) Explain the function of the arrow in a transistor symbol.

Or

(b) State the typical phase relationship between input and output in CE mode.

13. (a) Write the Boolean expression for a NAND gate and explain.

Or

(b) Write the truth table for a NOR gate and explain its working.

14. (a) Explain double-layer PCB construction and its advantages.

Or

(b) Write short notes on the FR4 base material used in PCBs.

15. (a) Write a short note on follow-up systems.

Or

(b) Explain analogue transducer with one example.

Part C $(5 \times 8 = 40)$

Answer **all** questions, choosing either (a) or (b).

16. (a) Describe the properties of diodes in series and parallel connections with examples.

Or

(b) Describe the principle, construction, and applications of LEDs.

17. (a) Describe the characteristics of a transistor in CB configuration with input and output curves.

Or

(b) Derive the relationship between α and β for a transistor.

18. (a) Explain the working of an OR gate with Boolean expression, truth table, and logic symbol.

Or

(b) With neat diagrams, explain inverting and non-inverting operational amplifier configurations.

19. (a) Explain the structure and working of a Printed Circuit Board with a neat diagram.

Or

(b) Discuss various materials used in PCB manufacturing and their properties.

20. (a) Explain with block diagrams the difference between open-loop and closed-loop control systems.

Or

(b) Describe the working principle, construction, and applications of an LVDT with a neat diagram.

———————

C–7812

Sub. Code
91333

B.Sc. DEGREE EXAMINATION, APRIL 2026.

Third Semester

Aircraft Maintenance Science

AIRCRAFT MATERIALS AND HARDWARE

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Heat treatment always improves
   (a) Electrical Properties
   (b) Construction Properties
   (c) Mechanical Properties
   (d) None of these

2. Magnesium alloys are used in constructing
   (a) Brakes
   (b) Spokes and rim of moving vehicle
   (c) Rods
   (d) All of these

3. Aluminum is used in aircraft construction because of
   (a) Shining and Lustrous
   (b) Light weight
   (c) Low Cost
   (d) All of these

4. Heat Treatment is the process of heating the material

(a) Below the Recrystallize Temperature

(b) Above he recrystallize Temperature

(c) Both (a) and (b)

(d) None of these

5. The method used for Packing Purpose is

(a) Adhesives (b) Sealant Cover

(c) Both (a) and (b) (d) None of these

6. The material used for coils, Transformers insulating materials are

(a) Sealant (b) Bonding

(c) Adhesives (d) All of the these

7. The Factors influencing Corrosion includes

(a) High Chemicals

(b) Difference in potential of dissimilar metals when they are coupled together

(c) Both (a) and (b)

(d) None of these

8. The Factors affecting electrochemical corrosion are

(a) Potential difference

(b) Electrolyte

(c) Closed circuit

(d) All of the these

9. In Brinell hardness tester, the size indenter Ball is

(a) 6 mmϕ (b) 10 mmϕ

(c) 8 mmϕ (d) All of these

10. Hardness refers to

(a) Indentation (b) Destroys

(c) Both of these (d) None of these

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the properties of wrought iron.

Or

(b) Explain the purpose of alloying elements on Steel.

12. (a) Explain various alloys of magnesium.

Or

(b) Explain the characteristics of Non-ferrous materials.

13. (a) Explain various detection of defects in composite materials.

Or

(b) Explain various sealant agents used in packaging.

14. (a) Explain various quick release fasteners used in aircraft construction.

Or

(b) Explain various aircraft rivets used in aircraft construction.

15. (a) Explain various forms of threads.

Or

(b) Explain the importance of fasteners.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain tempering process of steel used in ferrous materials.

Or

(b) Explain various merits and demerits of tempering.

17. (a) Explain any '2' Non-ferrous metals used in aircraft Construction.

Or

(b) Explain the method of testing tension strength of ferrous metals.

18. (a) Write Short notes on composite and non-Composite materials used in aircraft construction.

Or

(b) Explain sandwich construction used in Aircraft construction.

19. (a) Explain various types of tabs and washers used in aircraft construction.

Or

(b) Explain locking bolts and fins.

20. (a) Explain insertion and removal of studs and rivets.

Or

(b) Explain Dimensions.

———————

C–7813	Sub. Code
	91334

B.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

Aircraft Maintenance Science

AVIATION LEGISLATION

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Category 'C' experience requirement for large aircraft
   (a) 3 years experience exercising in category B 1. 1, B 1. 3 or B 1. 2 privileges
   (b) CAR 145 B 1.1, B 1. 3 or B2 support staff
   (c) Both (a) and (b)
   (d) None of the above

2. Make the correct statement (MTCS).
   (a) Temporary C of R for purpose of bringing the aircraft by air
   (b) Valid till first landing at custom aerodrome in India
   (c) Both (a) and (b)
   (d) None of the above

3. Detail of flight crew _____.
   (a) Given in technical manual
   (b) Maintenance manual
   (c) Given in flight manual
   (d) None of the above

4. The records associated with the defects and their rectification action shall be preserved for a period of ————————.

(a) 6 months (b) 1 year

(c) two years (d) four years

5. Maintenance of an aircraft is done according to

(a) Maintenance data

(b) Aircraft maintenance program

(c) Flight manual

(d) None of the above

6. Continued validity of AME licence in ————————.

(a) 1 year (b) 2 year

(c) 4 year (d) 5 year

7. The "Observed Actual Climb Performance" shall in no case be lower than ———————— of the expected climb performance figure for the purpose of acceptable of test flight report.

(a) 1 % (b) 2 %

(c) 3 % (d) 4 %

8. Weight and balance schedules report preservation period is ————————.

(a) 3 years

(b) 5 years

(c) Till the date weight report replace by the new report

(d) None

9. During the thunderstorm refueling of the small aircraft will be ————————.

(a) Continue Refueling

(b) Stop Refueling

(c) Refueling Inside Hanger

(d) None of the above

10. Mark the correct statement (MTCS) (fuel tank safety)

(a) Aircraft above 5700 kg 10 passenger

(b) Aircraft below 5700 kg 19 passenger

(c) Large aeroplane maximum type certified passenger capacity of 30 or more of maximum certified payload of 7500 lbs (3402 kg) cargo or more

(d) None of the above

Part B

$(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b)

11. (a) Explain the Central Government's Emergency Power for protecting the public health as per aircraft act 1934.

Or

(b) What are requirements and condition for bringing an aircraft by air from other country?

12. (a) The certificate of airworthiness (CofA) shall remain valid subject to what are the conditions.

Or

(b) Write few points about the Preservation of Log Book.

13. (a) What do you understand by defect monitoring?

Or

(b) Explain about the classification of aircrafts with a chart.

14. (a) Write briefly about the evaluation of test flight report.

Or

(b) What are instruments and equipments to be fitted when the aircraft is operated in accordance with visual flight rules (VFR)?

15. (a) Explain about the periodic examination of the different types of medical kits in the aircraft.

Or

(b) Write briefly about Flight Test Report.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b)

16. (a) Explain about the Power of Central Government to prohibit or regulate construction of buildings, planting of trees etc. as per aircraft act 1934.

Or

(b) Under what are the conditions and reasons a certificate of airworthiness is likely to be suspended or cancelled.

17. (a) What is the procedure for defect recording, reporting, investigation, rectification and analysis of aircrafts?

Or

(b) Write down the conditions for the issuance of a special flight permit.

18. (a) What is the purpose and use of Minimum Equipment List (MEL)?

Or

(b) Explain about the circumstances necessitating flight testing.

19. (a) List of the documents to be carried on board the aircraft.

Or

(b) Explain about the safety procedures against static electricity discharge bonding and earthing during fueling of aircrafts.

20. (a) Explain

(i) Supervision of fueling (ii) Fueling condition (iii) Fueling place (iv) Positioning of fueling equipment

Or

(b) Write down the special precaution to be taken in the fueling zone.

C–7814	Sub. Code 91336

B.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

Aircraft Maintenance Science

ELECTRICAL FUNDAMENTALS - I

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is a good conductor of static electricity?

   (a) Wood (b) Rubber

   (c) Copper (d) Plastic

2. Electrical resistivity of a metallic wire depends upon its _____.

   (a) Length (b) Material

   (c) Thickness (d) Shape

3. Which electrolyte is used in lead-acid cells

   (a) Concentrated H_2SO_4

   (b) Diluted H_2SO_4

   (c) NaOH

   (d) NaCl

4. A 6v battery is connected across a resistance R. the current through R is 0.4 mA. What will be the value of R?

(a) 10 kΩ (b) 15 kΩ

(c) 20 kΩ (d) 25 kΩ

5. Materials having resistance almost equal to zero is_____.

(a) Semi-conductor (b) Conductor

(c) Superconductors (d) Insulators

6. For some materials, an increase in temperature causes an increase in resistance, these materials are said to have a:

(a) Standard temperature coefficient

(b) Negative temperature coefficient

(c) Positive temperature coefficient

(d) Ambient temperature coefficient

7. Collision between marble balls is which type of collision?

(a) Inelastic Collision

(b) Elastic Collision

(c) Destructive collision

(d) None of the options

8. The formula to find the work done is

(a) W=F+s (b) W=F.s

(c) W=F–s (d) W=F/s

9. Capacitor is a device used to_____.

(a) store electrical energy

(b) vary the resistance

(c) store magnetic energy

(d) dissipate energy

10. Why does capacitor block dc signal at steady state?

(a) due to high frequency of dc signal

(b) due to zero frequency of dc signal

(c) capacitor does not pass any current at steady state

(d) due to zero frequency of dc signal

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b)

11. (a) Write a short note on molecular structure of conductors.

Or

(b) Write a short note of how the electricity produced by pressure.

12. (a) Explain about nickel cadmium cell.

Or

(b) Explain the significance of the internal resistance of a supply.

13. (a) Explain the operation of rheostats and its uses.

Or

(b) Write short notes fixed resistors.

14. (a) Explain the concept of kinetic energy.

Or

(b) A resistor with resistance 10 Ω is connected to a 12 V battery. Calculate the power dissipated by the resistor.

15. (a) Write a short note on time constant.

Or

(b) Explain about the colour coding system in capacitor.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b)

16. (a) Explain detail about on structure and distribution of electrical charges.

Or

(b) Describe the conduction of electricity in solids, liquids, gases and vacuum.

17. (a) Explain detail about lead acid cells and its chemicals reaction.

Or

(b) Give detail explanation on operation of thermocouples.

18. (a) Explain how the resistance value is been found by using colour coding.

Or

(b) Explain the methods of construction of potentiometers and rheostats.

19. (a) Explain how power is dissipated by a resistor.

Or

(b) What is the work-energy theorem? A car of mass 1000 kg accelerates from rest to a speed of 20 m/s. Calculate the work done on the car. Assume no frictional losses

20. (a) Explain the role and working principle of a capacitor.

Or

(b) Describe about the exponential charge and discharge of capacitor.

C–7815

Sub. Code
91343

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fourth Semester

Aircraft Maintenance Science

MAINTENANCE PRACTICES – I

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which projection is commonly used in aircraft engineering drawings?

   (a) Oblique projection

   (b) First angle projection

   (c) Perspective projection

   (d) None of the above

2. Third angle projection is commonly used in:

   (a) USA

   (b) UK

   (c) Russia

   (d) Germany

3. What is the main reason for flaring the end of a pipe in aircraft hydraulic systems?

(a) To seal the line using a threaded cap

(b) To increase the internal flow diameter

(c) To provide a leak-proof connection with a flare nut

(d) To allow the pipe to be welded securely

4. Swaging is a process of

(a) Reducing diameter of tubing using dies

(b) Heating pipes to allow expansion

(c) Applying pressure to join threaded fittings

(d) Adding flexible joints between rigid pipes

5. Which of the following best describes the role of bearing lubrication?

(a) Eliminate need for alignment

(b) Reduce air friction

(c) Minimize metal-to-metal contact and heat generation

(d) Decrease rolling resistance

6. The most critical reason for removing all solvent residue after cleaning a bearing is to:

(a) Avoid dulling the metal finish

(b) Prevent loss of internal clearance

(c) Ensure proper adhesion of lubricant

(d) Maintain dimensional tolerances

7. Swaging of cable end fittings must be done:

(a) Using general workshop press

(b) Using approved dies and calibrated swaging tools

(c) By welding the terminals

(d) With vice grips and thread lock

8. A sign of incorrect swaging during cable installation is:

(a) Cable twisting

(b) Deformed or cracked swage sleeve

(c) High tension in slack condition

(d) Flared insulation

9. The radius of the bend in sheet metal depends mainly on:

(a) Type of paint coating

(b) Speed of bending tool

(c) Material type and thickness

(d) Number of holes nearby

10. Which inspection method is most suited to detect delamination in composites?

(a) Visual inspection

(b) Penetrant testing

(c) Tap test or ultrasonic inspection

(d) Radiographic analysis

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) List and describe different types of engineering drawings.

Or

(b) Explain block diagrams with examples.

12. (a) What are the precautions to be taken while bending metal pipes?

Or

(b) List causes of pipe or hose failures during aircraft operation.

13. (a) What are the causes of bearing defects such as spalling and pitting?

Or

(b) What defects are typically observed during bearing inspection?

14. (a) Explain how push-pull rods work and where they are typically used in aircraft.

Or

(b) Describe the function of lever mechanisms in aircraft control linkages.

15. (a) Explain the significance of bend allowance in sheet metal fabrication.

Or

(b) Describe the steps involved in preparing a surface for adhesive bonding.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Compare schematic, wiring, and block diagrams with proper examples.

Or

(b) Explain first angle and third angle projection with neat sketches.

17. (a) Describe the procedure for flaring and swaging aircraft tubing. Include tools and sketches.

Or

(b) Explain the standard practices in aircraft pipe bending, including minimum radius and tools used.

18. (a) Discuss in detail the types of bearing failures and their probable causes.

Or

(b) Discuss the inspection procedure for belts and pulleys and explain how tension is evaluated?

19. (a) Explain in detail the inspection and maintenance procedures of aircraft control cables.

Or

(b) Explain cable routing, tension measurement, and backlash minimization techniques.

20. (a) Describe different methods of inspecting composite structures and the defects they reveal.

Or

(b) Explain sheet metal working processes such as marking, cutting, bending, and forming in detail.

———————

C–7816

Sub. Code
91344

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fourth Semester

Aircraft Maintenance Science

HUMAN FACTORS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. The scientific study of the relationship between the flight crew and the flight environment, with the goal of optimizing the relationship between the two, is a good definition of _____ for pilots.

   (a) Physiology

   (b) Human factors

   (c) Psychology

   (d) Anthropology

2. Which branch of psychology focuses on how humans think and process information?

   (a) Experimental psychology

   (b) Social psychology

   (c) Engineering psychology

   (d) Cognitive psychology

3. What are the three main processes of memory?

(a) Recall, recognition, forgetting

(b) Sensing, storing, deleting

(c) Encoding, storage, retrieval

(d) Noticing, comparing, understanding

4. The most common type of color blindness, also known as Daltonism, is difficulty in distinguishing between which two colors?

(a) Blue and yellow

(b) Red and green

(c) Black and white

(d) Blue and green

5. What is sleep inertia and how long does it usually last?

(a) A sleep disorder that lasts for hours

(b) Post-waking confusion and grogginess lasting up to 15 minutes

(c) A type of deep REM sleep

(d) Alertness during sleep deprivation

6. What is the correct definition of a drug?

(a) Only illegal substances

(b) Any food or beverage that affects mood

(c) Any substance that brings about physical and/or psychological changes

(d) Any synthetic compound used in medicine only

7. What is the typical error rate for oral communication in work settings?

(a) 3% (b) 1%

(c) 0% (d) 10%

8. What are two ways the AMT can help during visual inspection?

(a) Wearing sunglasses and using a flashlight

(b) Watching training videos

(c) Using magnifiers/boroscopes and other senses like touch and smell

(d) Asking another person to inspect

9. Which model explains how liveware (humans) interact with three other elements?

(a) Swiss Cheese Model

(b) SHEL Model

(c) MEDA Model

(d) PEAR Model

10. What are two kinds of intended errors?

(a) Mistakes and Violations

(b) Lapses and Slips

(c) Conflicts and Collisions

(d) Feedback and Failures

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe the PEAR Model used in human factors. Explain its components with examples.

Or

(b) Describe how variations in lighting conditions affect aircraft maintenance work and what measures should be taken to ensure proper illumination?

12. (a) Explain the various factors that can affect and limit the visual acuity of the human eye.

Or

(b) Discuss the effects of demotivation in a high-risk working environment. Give examples.

13. (a) Discuss how work-related stress can be managed or minimized in a technical job environment.

Or

(b) Describe the major causes of high workload.

14. (a) Why it is important for an AMT to stay physically fit, and how can fatigue and body strength affect their work and safety?

Or

(b) Explain how repetitive tasks can affect aviation maintenance technicians (AMTs).

15. (a) Discuss the classification of errors in maintenance tasks.

Or

(b) When first conducting a Job Hazard Analysis, priority should go to the types of jobs?

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain Murphy's Law. How can it help improve safety culture?

Or

(b) Describe in detail the physiological responses of the body to cold exposure and the symptoms that can occur with prolonged exposure.

17. (a) Describe how decision-making is connected to attention and perception.

Or

(b) Explain the importance of shared goals, leadership, followership, communication, delegation, and workload distribution.

18. (a) Describe the causes and effects of fatigue on performance.

Or

(b) Discuss how alcohol consumption can impair human performance both immediately and over the longer term, focusing on sleep: attention, and safety-critical tasks.

19. (a) What are the common barriers to effective communication during shift handovers?

Or

(b) How can training and experience help AMTs recognize defects, and why is this important?

20. (a) What is the Maintenance Error Decision Aid (MEDA) process, and how does it help improve safety and reduce maintenance errors?

Or

(b) Explain the main steps to follow during a workplace emergency. Why is each step important for safety?

———————

C–7817

Sub. Code
91346

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fourth Semester

Aircraft Maintenance Science

ELECTRICAL FUNDAMENTALS — II

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What is the main function of a commutator in a DC generator?

   (a) Reduce friction (b) Convert AC to DC

   (c) Increase current (d) Provide cooling

2. In a compound motor, the windings are:

   (a) Only in series

   (b) Only in parallel

   (c) Both series and parallel

   (d) None of the above

3. The number of cycles completed in one second is called:

   (a) Phase (b) Period

   (c) Frequency (d) Amplitude

4. For a sine wave with Vp = 20 V, peak-to-peak voltage is:

(a) 10 V (b) 14.14 V

(c) 28 V (d) 40 V

5. In a purely resistive AC circuit, the phase angle between voltage and current is:

(a) 90° (b) 0°

(c) 45° (d) 180°

6. True power is measured in:

(a) Volt-ampere (b) Ohm

(c) VAR (d) Watts

7. The principle of transformer operation is based on:

(a) Ohm's Law

(b) Faraday's Law of electromagnetic induction

(c) Lenz's Law only

(d) Coulomb's Law

8. Band-stop filter is also known as:

(a) Band-reject filter

(b) High-pass filter

(c) Low-pass filter

(d) All-pass filter

9. In star connection, the line voltage is related to the phase voltage by:

(a) $VL = VP \times \sqrt{3}$ (b) $VL = VP / \sqrt{3}$

(c) VL = VP/ (d) $VL = 3 \times VP$

10. The power factor of a synchronous motor can be controlled by:

(a) Load adjustment

(b) Field excitation

(c) Slip control

(d) Supply voltage change

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) State the main components of a DC generator and their functions.

Or

(b) Explain the principle of operation of a DC motor.

12. (a) Define the terms frequency and period in relation to AC waveforms.

Or

(b) Explain the difference between single-phase and three-phase AC systems.

13. (a) Define impedance and write its formula for a series R-L circuit.

Or

(b) What is power factor? Give its significance.

14. (a) Define a transformer and state its principle of operation.

Or

(b) Define "filter" and list brief the four types.

15. (a) Draw and label the waveform produced by a single loop in a magnetic field.

Or

(b) Mention the applications of Permanent Magnet Generators.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Describe in detail the factors affecting the output voltage of a DC generator.

Or

(b) Describe the working of a series-wound motor and state its typical applications.

17. (a) Derive the mathematical relationship between RMS, average, and peak values of a sine wave.

Or

(b) Explain the principle of generation of three-phase AC and its advantages.

18. (a) Derive the expression for impedance in a series R-L circuit and explain with a phasor diagram.

Or

(b) Derive the formula for true power, apparent power, and reactive power in AC circuits.

19. (a) Explain the construction and working principle of a single-phase transformer with a neat diagram.

Or

(b) With a neat diagram, explain the operation of a voltage transformer.

20. (a) Describe the construction and working principle of revolving armature and revolving field type alternators.

Or

(b) Explain the working principle and characteristics of three-phase induction motors.

———————

C–7818	Sub. Code 91351

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Aircraft Maintenance Science

MAINTENANCE PRACTICES – II

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following materials is commonly used as a filler in brazing?

   (a) Tin (b) Aluminum

   (c) Bronze (d) Load

2. What is the primary purpose of flux in soldering?

   (a) Strengthen the joint

   (b) Prevent oxidation

   (c) Lower the melting point

   (d) Act as a filler material

3. What document specifies the location of the weighing points and the weighing procedure for a specific aircraft?

   (a) Aircraft Maintenance Manual (AMM)

   (b) Pilot's Operating Handbook (POH)

   (c) Minimum Equipment List (MEL)

   (d) Airworthiness Certificate

4. What does HIRF penetration primarily affect in an aircraft?

(a) Structural components

(b) Avionics and doctrinal systems

(c) Fuel systems

(d) Hydraulic systems

5. What is the recommended distance to maintain from a jet engine intake during taxi operations?

(a) 3 meters (b) 10 meters

(c) 15 meters (d) 25 meters

6. What is the primary safety concern during refueling operations?

(a) Fuel efficiency

(b) Static electricity discharge

(c) Weather conditions

(d) Fuel pump speed

7. Radiographic Tasting (RT) uses which of the following for defect detection?

(a) Magnetic fields

(b) Eletromagnetic induction

(c) X-rays or Gamma rays

(d) High-frequency sound waves

8. Which of the following is not a component of an endoscope?

(a) Insertion tube (b) Control handle

(c) Display unit (d) Welding tool

9. According to fire safety codes, firewalls must typically have a fire-resistance rating of atleast?

(a) 30 minutes (b) 1 hour

(c) 3 hours (d) 5 hours

10. Which item is typically included in a Pilot's survival kit?

(a) Emergency locator transmitter

(b) Parachute

(c) Flashlight

(d) All of the above

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are the precaution to be followed in soldering method?

Or

(b) Explain the tools used in welding method.

12. (a) Describe the preparation of aircraft for weighing.

Or

(b) Explain the inspections following flight through turbulence.

13. (a) What are the safety precautions followed in Aircraft Chocking?

Or

(b) Explain-anti-icing procedure in Aircraft.

14. (a) Describe the Oil & Chalk process.

Or

(b) Write short notes about Endoscope inspection.

15. (a) Explain about Fire Walls.

Or

(b) Discuss about seat safety system in Aircraft.

Part C

$(5 \times 8 = 40)$

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the inspection of soldered joints.

Or

(b) Explain the inspection of Bonded joints.

17. (a) Describe how to calculate centre of gravity and Balance limits in aircraft.

Or

(b) Explain in detail the inspections following lightning strikes and HIRF penetration.

18. (a) Describe the terms :

(i) Aircraft taxiing

(ii) Aircraft towing.

Or

(b) Explain the Refueling/defueling procedure in aircraft.

19. (a) Explain about Die penetrate testing and ultrasonic inspection.

Or

(b) Explain about fluorescent inspection and Eddy current inspection.

20. (a) Discuss in detail about Fire extinguishing systems in aircraft.

Or

(b) Describe the terms shown below :

(i) Ejection seats

(ii) Life rafts

(iii) Windows and Emergency exists

(iv) Seat belts.

C–7819	Sub. Code 91352

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Aircraft Maintenance Science

DIGITAL TECHNIQUES AND ELECTRONIC INSTRUMENT SYSTEMS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Convert 45 into binary number

   (a) 111001

   (b) 101101

   (c) 101010

   (d) 101111

2. In a flash analog-to-digital converter, the output of each comparator is connected to aninput of a

   (a) Decoder

   (b) Priority encoder

   (c) Multiplexer

   (d) Demultiplexer

3. What is the fastest mode of data communication between components in aircraft?

(a) Coaxial cable

(b) Twisted pair cable

(c) Fiber optic cable

(d) Radio communication

4. How many AND gates are required to realize $Y = CD + EF + G$?

(a) 4 (b) 5

(c) 3 (d) 2

5. A personal computer's primary memory, commonly known as its main memory, consists of?

(a) RAM only

(b) ROM only

(c) Both RAM and ROM

(d) Cache Memory

6. Which of the following includes A/D conversions and packing of discrete signals into logical words?

(a) Input processing

(b) Output processing

(c) Signal processing

(d) Mainframe processor

7. To display Numeric Data by means of Emission of Light, we use _____

(a) Liquid Crystal Display

(b) Counters

(c) Quantitative Display

(d) Qualitative Display

8. The effects of EMI can be reduced by

(a) Suppressing emissions

(b) Reducing the efficiency of the coupling path

(c) Reducing the susceptibility of the receptor

(d) All of these

9. Engine parameters are displayed on

(a) ECAM (b) EHSI

(c) FMSCDU (d) EICAS

10. During flight the EICAS system display on the lower CRT

(a) Flight phase page

(b) Secondary engine parameters.

(c) Synoptic display

(d) None of above

Part B

$(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Convert the number 18_{10} to the binary system.

Or

(b) Write the difference between the analog data and digital data.

12. (a) Explain AND and OR gate with logic gate symbols. tables and equivalent circuits?

Or

(b) Discuss the operation of data buses in aircraft systems.

13. (a) Write a short note on bit and byte?

Or

(b) How the computer technology helps in aviation?

14. (a) How the light emitting diodes works?

Or

(b) Write a short note on electromagnetic interference?

15. (a) Explain the roles and functions Inertial Reference System in modern aircraft.

Or

(b) Describe about Aircraft Communications Addressing and Reporting System.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) How to Convert Decimal to hexadecimal? With example.

Or

(b) Explain the Operation and application of analog to digital?

17. (a) Explain how to interpret logic diagrams in avionics applications.

Or

(b) Explain on fiber optic data bus and what are the benefits to aircraft?

18. (a) Discuss the role and significance of each of these components in the functioning of a computer system.

Or

(b) What are the catastrophic effects of unapproved software changes?

19. (a) Discuss the principles of operation cathode ray tubes.

Or

(b) What are lightning protection is been taken in aircraft?

20. (a) Describe the cockpit layout of electronic instrument systems (EFlS).

Or

(b) Discuss how Global Positioning System contribute to flight navigation and positioning.

———————

C–7820	Sub. Code
	91353A

B.Sc. DEGREE EXAMINATION, APRIL 2026.

Fifth Semester

Aircraft Maintenance Science

AEROPLANE STRUCTURE & SYSTEMS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What is the unit of measurements of stress?

   (a) Newton (N) (b) Pascals (Pa)

   (c) Joules (J) (d) Watts (W)

2. What is the relationship between stress and strain within an elastic limit?

   (a) stress is directly proportional to strain

   (b) stress in inversely proportional to strain

   (c) stress is equal to strain

   (d) none of these

3. What is the primary function of the empennage in an aircraft?

   (a) To provide lift and thrust

   (b) To control roll and pitch

   (c) To provide stability and control during flight

   (d) To support landing gear

4. Which of the following is a common method of attaching skin to the structural frame?

(a) Welding (b) Riveting

(c) Bolting (d) Screwing

5. What supports the aircraft during takeoff, landing and taxiing?

(a) Wing (b) Tail

(c) Undercarriage (d) Fuselage

6. Which controls an aircraft roll?

(a) Aileron (b) Elevator

(c) Rudder (d) Flaps

7. Where the fuel is typically stored in an aircraft?

(a) Wings (b) Fuselage

(c) Tail (d) Landing gear

8. What is the primary structural component of a wing?

(a) Skin (b) Rib

(c) Stringer (d) Spar

9. What is the main method to protecting an aircraft from lightning strikes?

(a) Installing rubber insulation

(b) Using conductive materials to dissipate electrical energy

(c) Avoiding stormy weather entirely

(d) Adding extra layers of paint

10. What determines the layout of an aircraft cabin?

(a) Pilot preference

(b) Airline operational requirements

(c) Weather conditions

(d) Airport runway length

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe about the Fail safe design.

Or

(b) Write a short note about Zonal and station numbers.

12. (a) Define the terms Farmers, stringers & longerons in aircraft fuselage.

Or

(b) Write the short notes on symmetry checks in aircraft.

13. (a) Describe about the operation and safety devices.

Or

(b) Briefly explain the seat installation in aircraft.

14. (a) Describe about aircraft landing gear.

Or

(b) Write the short notes on Flight control surfaces.

15. (a) Briefly describe about Lightning strikes.

Or

(b) Write a short no cargo handling.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Illustrate in detail about the Structural classification of aircraft.

Or

(b) Explain about the System installation provisions in detail.

17. (a) Discuss about the fuselage construction & its structural components in detail.

Or

(b) Discuss about the methods of surface protection n detail.

18. (a) Explain the fuselage pressurization in detail.

Or

(b) Illustrate in detail about cargo loading system.

19. (a) Discuss in detail about the aircraft wing construction and its components.

Or

(b) Explain about the Stabilizers construction in detail with neat sketches.

20. (a) Discuss about the Aircraft bonding procedure and precautions in detail.

Or

(b) Illustrate about cabin layout & cabin furnishing in detail.

———————

C–7821	Sub. Code 91353C

B.Sc. DEGREE EXAMINATION, APRIL 2026.

Fifth Semester

Aircraft Maintenance Science

AIRCRAFT ELECTRICAL SYSTEMS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What kind of switch is used to control the speed of a fan?
   (a) Single-pole switch
   (b) Double-pole switch
   (c) Rotary switch
   (d) Speed control switch

2. What is an element in an electrical circuit which serves as a protection against overload
   (a) Fuse (b) Resistor
   (c) Mica (d) Semiconductor

3. The electrolyte used in nickel- cadmium rechargeable cell is
   (a) Zinc chloride
   (b) Aqueous solution of potassium hydroxide
   (c) Mercuric oxide
   (d) Nickel hydroxide

4. Which quantity among the following increases when cells are connected in parallel
   (a) Voltage (b) Internal resistance
   (c) Amp hours (d) Current

5. In transmission system a feeder feeds power to
   (a) Service mains (b) Generating stations
   (c) Distributors (d) All of the above

6. Soldering irons are made of copper because it is
   (a) Heavy
   (b) Bad conductor of heat
   (c) Good conductor of heat
   (d) Thermal expansion is more

7. The voltage drop in feeder is independent of
   (a) Resistance (b) Length of wire
   (c) Type of grounding (d) Cross sectional area

8. Which is the most serious problem in vacuum circuit breaker
   (a) Poor arc quenching
   (b) Low thermal stability
   (c) Current chopping
   (d) All of the above

9. If a pilot can see a green light on the left and a red light on the right the aircraft is heading
   (a) Away from the pilot
   (b) Toward the pilot
   (c) Turning left
   (d) Turning right

10. When are taxi lights used?
   (a) While taxiing
   (b) While landing
   (c) During towing
   (d) Both A and C are correct

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are advantage and disadvantage of DC supply?

Or

(b) List the some of the electrical and electronic symbols.

12. (a) Write a short note on various ailments of lead acid battery.

Or

(b) What are advantage of Ni-Cd battery?

13. (a) List the advantages of single wire.

Or

(b) Write a short note about the Crimpling.

14. (a) Describe the different types of aircraft generators specific applications.

Or

(b) Discuss the concept of voltage regulation in aircraft power systems and its importance.

15. (a) Discuss the role of exterior emergency lighting and warning lights in aircraft operations.

Or

(b) Explain the various types of internal lighting systems used in aircraft and their specific purposes.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Give detail explanation on single phase system.

Or

(b) What are the control devices used in aircraft? Explain in detail.

17. (a) Explain the thermal runway procedure in battery.

Or

(b) Describe the charging and discharging procedure of batteries.

18. (a) What are the various types of aircraft loads in power distribution system?

Or

(b) Describe the operation of parallel and spilt bus bar system?

19. (a) Explain the basic requirements of an aircraft generator and its role in the aircraft power system.

Or

(b) Explain the construction and operation of a reverse Current Circuit Breaker (RCCB) in aircraft generators and its importance.

20. (a) Discuss the objectives of internal and external lighting in an aircraft and their importance in ensuring safe operations.

Or

(b) Explain the purpose and installation of various lighting systems such as navigation, instrument, cabin, ice inspection lamps, and science lighting in aircraft.

———————

C–7822	Sub. Code 91354A

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Aircraft Maintenance Science

GAS TURBINE ENGINES

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. A ball of mass 2kg is pushed with a force of 10N. According to Newton's second law, what is the acceleration of the ball?

   (a) 5 m/s^2

   (b) 2 m/s^2

   (c) 10 m/s^2

   (d) 20 m/s^2

2. Which type of engine is more efficient at higher speeds and altitudes?

   (a) turbojet

   (b) turbofan

   (c) piston engine

   (d) turboprop

3. What happens to the gross thrust as the aircraft speed increases?

(a) Gross thrust increases

(b) Gross thrust remains constant

(c) Gross thrust decreases

(d) Gross thrust becomes negative

4. What does Specific Fuel Consumption (SFC) represent in a gas turbine engine?

(a) The amount of fuel used per unit of time

(b) The fuel efficiency of the engine per unit of thrust or power

(c) The energy produced per unit of fuel consumed

(d) The temperature of the exhaust gases

5. What is the typical pressure ratio achievable by an axial compressor?

(a) 2:1

(b) 4:1

(c) 10:1 or higher

(d) 1:1

6. Impulse turbines are most commonly used in

(a) Low-speed engines

(b) High-pressure engines

(c) High-speed engines

(d) Low-pressure engines

7. The EEC system in an aircraft gas turbine engine primarily monitors which of the following?

(a) Throttle position

(b) Engine temperature and pressure

(c) Hydraulic fluid levels

(d) Aircraft position and altitude

8. The fuel pump in a gas turbine engine is altitude typically driven by

(a) An electric motor

(b) The turbine itself

(c) A hydraulic system

(d) Auxiliary power unit

9. At what oil temperature range does a gas turbine engine typically operate for optimum performance?

(a) 50°C to 80°C

(b) 100°C to 120°C

(c) 120°C to 150°C

(d) 80°C to 100°C

10. The fuel flow motor provides which of the following data to the engine control system?

(a) Fuel pressure

(b) The rate of fuel consumption

(c) Fuel temperature

(d) The fuel filter condition

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the Newton's law of motion.

Or

(b) Explain the operation of turbofan engine.

12. (a) Describe the terms :

(i) Thrust horse power

(ii) Equivalent shaft horsepower

Or

(b) Write short notes about compressor ratio.

13. (a) Explain about combustion section of gas turbine engine.

Or

(b) Differentiate between impulse and reaction turbines.

14. (a) Explain about EEC.

Or

(b) Describe the terms.

(i) Fuel cooled oil coder

(ii) Heaters

15. (a) Explain about percentage RPM.

Or

(b) Write short notes on oil pressure and temperature.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain in detail the relationship between force, work, power, energy, velocity and acceleration.

Or

(b) Explain the operation of turbojet and Turboshaft engine.

17. (a) Explain about gross thrust, net thrust and chocked nozzle thrust.

Or

(b) Explain the terms :

(i) By-Pass ratio

(ii) Engine pressure ratio

18. (a) Discuss in detail about centrifugal compressor.

Or

(b) Explain the types of turbine blades.

19. (a) Explain in detail about full authority digital engine control.

Or

(b) Describe in detail about fuel pump and filters.

20. (a) Discuss in detail about exhaust gas temperature.

Or

(b) Explain about engine pressure ratio.

———————

C– 7823

Sub. Code
91354C

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Aircraft Maintenance Science

AIRCRAFT INSTRUMENT SYSTEM

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What does the gyroscope attitude indicator display?

   (a) The Aircraft's altitude

   (b) The orientation of the aircraft relative to the horizon

   (c) The rate of climb or descent

   (d) The speed of the aircraft

2. What is the standard pressure at sea level in the international standard atmosphere?

   (a) 1100.25 hPa

   (b) 1000.00 hPa

   (c) 950.00 hPa

   (d) 1013.25 hPa

3. What does the Pitot-static probe measure?

(a) Temperature and humidity

(b) Fuel pressure

(c) Airspeed, altitude & vertical speed

(d) Engine performance

4. What could happen if the pitot tube becomes blocked?

(a) Airspeed readings may become inaccurate

(b) The altitude indicator will malfunction

(c) Fuel flow will increase

(d) The compass will stop working

5. What does the vertical speed indicator display?

(a) Ground speed of the aircraft

(b) Wind direction

(c) Rate of climb or descent

(d) Temperature variations

6. The Mach meter is used to measure

(a) Engine RPM

(b) Speed relative to the speed of sound

(c) Air temperature

(d) Vertical acceleration

7. What does the slip indicator show?

(a) The aircraft's ground speed

(b) Whether the aircraft is in a coordinated turn

(c) The rate of climb or descent

(d) The Mach number during turn

8. Which aircraft system commonly uses gyroscopes?

(a) Navigation & flight instruments

(b) Communication systems

(c) Engine monitoring system

(d) Hydraulic systems

9. What is the purpose of compass calibration?

(a) To adjust the compass for magnetic variation

(b) To adjust the compass for magnetic deviation

(c) To check the compass for accuracy

(d) All of the above

10. What is the term for the difference between magnetic and compass heading?

(a) Variation

(b) Deviation

(c) Error

(d) Declination

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write the short notes about International and Standard Atmosphere.

Or

(b) Describe about static pressure and dynamic pressure in instrument system.

12. (a) Write a short note on Instrument dial marking.

Or

(b) Describe about operational range marking.

13. (a) Describe about the Airspeed indicator in air data system.

Or

(b) Write a short note about barometer in air data system.

14. (a) Write the applications of Gyro in different aircraft systems.

Or

(b) Write a short note on Directional gyro/Direction indicator.

15. (a) Briefly explain about Fundamentals of magnetism.

Or

(b) Describe about compass calibration.

Part C (5 × 8 = 40)

16. (a) Discuss about the general assumptions of ICAO in detail.

Or

(b) Explain in detail about the different layers of atmosphere with neat diagram.

17. (a) Discuss in detail about Quantitative displays with simple diagrams.

Or

(b) Discuss about the Qualitative displays with simple diagrams.

18. (a) Explain the working principle of vertical speed indicator with neat sketch.

Or

(b) Illustrate the working principle of Machmeter with neat sketch.

19. (a) Explain the working principle of Turn and slip indicator in detail.

Or

(b) Discuss the constructional features of Artificial horizon in detail.

20. (a) Discuss about the constructional features of direct reading compasses with applications.

Or

(b) Illustrate about the Remote reading compasses with its application and errors.

———————

C–7824	Sub. Code 91355A

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Aircraft Maintenance Science

AEROPLANE HYDRAULIC SYSTEMS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Section A (10 × 1 = 10)

Answer **all** questions.

1. What is the primary characteristic of a fluid?

   (a) Rigidity

   (b) Compressibility

   (c) Ability to flow

   (d) High viscosity

2. Which of the following is a desirable quality of a fluid in a hydraulic system?

   (a) High viscosity

   (b) Low compressibility

   (c) High surface tension

   (d) High density

3. What is the primary characteristic of an open-centre hydraulic circuit?

(a) The pump is always loaded

(b) The pump is unloaded when no fluid is required

(c) The circuit has a fixed displacement pump

(d) The circuit has a variable displacement pump

4. What is the main advantage of a closed-centre hydraulic circuit?

(a) Improved efficiency

(b) Increased reliability

(c) Reduced heat generation

(d) Simplified circuit design

5. What is the primary advantage of phosphate ester-based fluids?

(a) High viscosity index

(b) Low pour point

(c) Fire-resistant properties

(d) Low cost

6. Which of the following is a potential risk associated with Intermixing of phosphate ester-based fluids?

(a) Incompatibility with seals and O-rings

(b) Reduced fire-resistant properties

(c) Increased viscosity

(d) All of the above

7. In the event of a hydraulic system failure, what is the purpose of an emergency pressure generation system?

(a) To provide a backup source of hydraulic pressure

(b) To alert the pilot of a system failure

(c) To shut down the engine

(d) To activate the fire suppression system

8. What is the purpose of a master warning light in a aeroplane?

(a) To indicate a specific system malfunction

(b) To alert the pilot of a general system malfunction

(c) To provide navigation information

(d) To control the autopilot system

9. Which of the following is a characteristic of a hydraulic reservoir?

(a) High-pressure rating

(b) Large storage capacity

(c) Small size and weight

(d) Complex internal design

10. What is the primary purpose of regular hydraulic fluid sampling?

(a) To check fluid viscosity

(b) To detect fluid contamination

(c) To measure fluid pressure

(d) To test fluid temperature

Section B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Define pressure and explain how it is related to force and area.

Or

(b) Describe the concept of a hydraulic shock absorber and its application in passive hydraulic systems.

12. (a) Enumerate the operation of an open-centre hydraulic circuit.

Or

(b) Explain the importance of a relief valve in a basic hydraulic system.

13. (a) Explain how viscosity affects system performance and reliability.

Or

(b) Describe the importance of flash point and fire point in hydraulic fluid selection.

14. (a) What are the advantages of using electric systems for emergency pressure generation?

Or

(b) What is pressure control, and why is it critical in fluid power systems?

15. (a) What is the primary function of a hydraulic reservoir in a fluid power system?

Or

(b) What is the function of an automatic cut-out valve in hydraulic systems?

Section C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the concept of Pascal's Law and its application in hydraulic systems, including its advantages and limitations.

Or

(b) Discuss the principles and applications of fluid power systems, including hydraulic and pneumatic systems.

17. (a) Explain the difference between a closed-centre and an open-centre hydraulic circuit.

Or

(b) Discuss the design and operation of a basic hydraulic system with a hand pump, including the components involved and the control strategies used.

18. (a) Describe the importance of a hydraulic sampling schedule in maintaining the reliability and efficiency of a hydraulic system.

Or

(b) What are the challenges in controlling contamination in high-pressure fluid systems?

19. (a) Why is emergency pressure generation essential in critical systems like helicopters, industrial machinery and aviation?

Or

(b) In what ways do indication systems interact with avionics to provide real-time status updates in aircraft?

20. (a) How do gear pumps, vane pumps, and piston pumps operate in hydraulic systems?

Or

(b) What are the differences between manual, solenoid-operated, and automatic shutoff valves?

———————

C–7825

Sub. Code
91355C

B.Sc. DEGREE EXAMINATION, APRIL 2026.

Fifth Semester

Aircraft Maintenance Science

AIRCRAFT COMMUNICATION AND NAVIGATION SYSTEMS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Section A (10 × 1 = 10)

Answer **all** questions.

1. Any carrier waves above 30 MHz are called
   (a) Electromagnetic wave
   (b) Space wave
   (c) Sky wave
   (d) Ground wave
2. The frequencies below 20,000 KHz are called
   (a) low frequency (b) very low frequency
   (c) radio frequency (d) audio frequency
3. The frequency modulated signal will have
   (a) variable amplitude
   (b) constant amplitude and variable frequency
   (c) constant amplitude and frequency
   (d) constant frequency

4. The antenna coupler is used in the transmitter

(a) to connect antenna to transmitter

(b) to connect antenna to amplifier

(c) to improve the power output

(d) to improve modulation

5. VHF communication system is used to communicate between

(a) aircraft and satellite

(b) satellite and ATC

(c) ATC and airport

(d) ATC and aircraft

6. The HR communication system provides

(a) short range of communication

(b) medium range of communication

(c) extended range of communication

(d) long range of communication

7. The pilot uses ADF to find

(a) the direction of radio stations

(b) the direction of airport

(c) the position of aircraft

(d) the direction VOR station

8. Instrument landing system helps the pilot to

(a) take off aircraft during night

(b) land aircraft during night

(c) take off aircraft during day time

(d) land aircraft during poor visibility.

9. The mixer of radar produces

(a) high frequency pulses

(b) low frequency pulses

(c) low voltage pulses

(d) high voltage pulses

10. The flat plate antenna is used in the modern radar system due to

(a) low cost

(b) less maintenance

(c) twice the efficiency

(d) easy installation

Section B

$(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain space wave and its properties.

Or

(b) Explain ground wave and its properties.

12. (a) What are different types of antenna used in the aircraft? Explain.

Or

(b) Explain the operation of electret microphone.

13. (a) Explain HF communication system.

Or

(b) Explain amplitude modulation.

14. (a) Explain marker beacons system.

Or

(b) Explain radio altimeter system.

15. (a) Write short notes on radome.

Or

(b) Explain the operation of PPI.

Section C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain Various frequency bands of radio systems and its applications.

Or

(b) Explain the sky wave and its characteristic.

17. (a) Draw the block diagram of simple radio receiver and explain.

Or

(b) What are the different types of amplifiers? Explain.

18. (a) Draw a block diagram of transmitter of VHF communication system and explain.

Or

(b) Explain the operation of HF communication system.

19. (a) Explain the operation of MLS with the help of a diagram.

Or

(b) Explain the operation of Instrument Landing System.

20. (a) What are the safety precautions to be followed around radar installation?

Or

(b) Draw a block diagram of analog radar and explain.

———————

C–7826

Sub. Code
91361

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Aircraft Maintenance Science

AEROPLANE SYSTEM MAINTENANCE

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Applicable storage of time of aircraft ————————.

   (a) 3 months

   (b) 4 months

   (c) 2 months

   (d) 5 months

2. Phases of storage procedures ———————— .

   (a) 1 (b) 3

   (c) 5 (d) 4

3. The three primary towing methods include ————————.

   (a) Hook-and-Chain Towing,

   (b) Flatbed Towing

   (c) towing with Wheel Lifts

   (d) All

4. We need towing for ————————

(a) Engine failure

(b) Transmission failures

(c) Dead battery

(d) All

5. 'AVGAS 100 is ———————— colour.

(a) Green (b) Red

(c) Blue (d) All

6. The aircraft must be cleared of ———————— prior to dispatch

(a) ice, (b) frost

(c) snow (d) All

7. Ground support equipment (GSE) is the support equipment found at an airport, usually on the ————————

(a) apron (b) Hangar

(c) taxing way (d) All

8. Container loaders, also known as ————————

(a) Cargo loaders

(b) 'K loaders"

(c) Luggage loaders

(d) All

9. Basic aircraft maintenance involves the actions that are required for ————————

(a) maintaining

(b) restoring the integrity

(c) performance

(d) All

10. Specific checklists may vary depending on the ————————

(a) aircraft type

(b) regulatory requirements,

(c) some common items

(d) All

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write the significance of aircraft towing system.

Or

(b) Write short note on jack point locations on aircraft.

12. (a) How to asses aircraft conditions for storage of aircraft?

Or

(b) List out the maintenance during storage of aircraft.

13. (a) Write down the aircraft fuel requirements?

Or

(b) What are the restrictions apply for fuelling zone?

14. (a) Write short note on container loader.

Or

(b) List down the visual inspections for prior to use of work stand?

15. (a) What is the aircraft maintenance process?

Or

(b) What is routine maintenance in aviation?

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) List out the key safety considerations for storage of aircraft.

Or

(b) Explain set of processes before, during, and at the time of exiting the storage of aircraft.

17. (a) List down and explain the aircraft towing procedures.

Or

(b) Elaborate the key features of aircraft wheel chocks?

18. (a) List out the measures to be taken to minimise water accretion in fuel system.

Or

(b) Elaborate the precautions to be observed while fueling the aircraft?

19. (a) Discus about the categories of ground support equipment.

Or

(b) Explain about the basic maintenance of GSE.

20. (a) List down and explain the pre-flight inspections of aircraft.

Or

(b) Discuss about the importance of efficient troubleshooting.

———————

C–7827	Sub. Code 91362

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Aircraft Maintenance Science

AVIONICS SYSTEM MAINTENANCE

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What type of power is generated by most small aircraft alternators?
   (a) DC only
   (b) AC only
   (c) AC converted to DC
   (d) None of the above

2. In a transformer, voltage is changed by
   (a) Increasing resistance
   (b) Using DC power
   (c) Convening it to hydraulic energy
   (d) Magnetic induction

3. A transmission line is used to
   (a) Guide radio waves from antenna to receiver
   (b) Generate carrier signal
   (c) Record audio
   (d) Modulate frequencies

4. The ELT (Emergency Locator Transmitter) typically transmits on:

(a) 108.0 MHz
(b) 121.5 MHz and 406 MHz
(c) 30 MHz
(d) 3.5 GHz

5. The altimeter operates based on which principle?

(a) Gyroscopic force
(b) Pitot-static pressure difference
(c) Static air pressure
(d) Electrical sensing

6. EFIS stand for

(a) Electronic Flight Information System
(b) Engine Fuel Indicator Sensor
(c) Electronic Flight Indicator Sensor
(d) Engine Flight Instrument System

7. The system that automatically adjusts control surfaces to maintain balanced flight is

(a) Auto throttle
(b) Automatic Trim Control
(c) Yaw damper
(d) EFIS

8. ALS typically operate during:

(a) Manual approaches
(b) Climb phase
(c) Takeoff only
(d) CAT III low visibility approaches

9. The main purpose of a board maintenance system in avionics?

(a) To increase fuel efficiency
(b) To maintain aircraft structural integrity
(c) To monitor and troubleshoot avionics systems
(d) To manage air traffic control

10. Why is printing capability important in aircraft maintenance systems?

(a) For printing boarding passes

(b) For printing fault reports and maintenance logs

(c) For printing advertisements

(d) For cockpit displays

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the function of a voltage regulator and how it works.

Or

(b) Describe the different types of controlling devices.

12. (a) Describe about the radio wave propagation.

Or

(b) Compare VHF and HF communication systems.

13. (a) What are the types of aircraft compasses and how do they differ?

Or

(b) Describe the function and components of the EICAS.

14. (a) Explain the role of yaw damper and its contribution to flight stability.

Or

(b) Briefly describe the interface between autopilot and navigation aids.

15. (a) Describe the working of a central maintenance system in computers.

Or

(b) State the importance of printing in onboard maintenance operations.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the various methods for monitoring battery health and performance.

Or

(b) How do modern anti-ice systems, integrated with lighting, prevent the accumulation of ice on an aircrafts exterior surfaces?

17. (a) Describe the construction and working principles of Aircraft Transmitters.

Or

(b) With a neat block diagram, explain the components and working of VOR.

18. (a) Describe the pitot-static system in detail with diagrams.

Or

(b) Write a detailed note on Flight Director System, Inertial Reference System (IRS).

19. (a) Describe the need and function of automatic trim in aircraft.

Or

(b) Discuss the architecture of a modern autopilot system and how it integrates with navigation.

20. (a) Elaborate on the concept and implementation of data loading systems. What are the key steps involved in safely updating aircraft software?

Or

(b) Discuss how does ELS contribute to improved efficiency and regulatory compliance?

C–7828

Sub. Code
91364A

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Aircraft Maintenance Science

AIRCRAFT PROPELLERS AND CONTROL

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Blade angle is
   (a) Same at all stations
   (b) Varied from root to tip
   (c) Equal to advance angle
   (d) Independent of pitch

2. Plane of rotation refers to:
   (a) Circular path traced by blade tips
   (b) Axis of propeller shaft
   (c) Slip correction angle
   (d) None of the above

3. The tractor propeller is mounted on
   (a) Tail cone
   (b) Underside of the wing
   (c) Top of the fuselage
   (d) Front of the engine

4. Which propeller changes pitch automatically during flight?

(a) Fixed pitch (b) Feathering

(c) Constant speed (d) Tractor

5. Synchronization keeps propeller speeds

(a) Identical (b) Opposite

(c) Asynchronous (d) Variable

6. Which system improves passenger comfort by reducing vibration?

(a) Anti-icing (b) Synchrophasing

(c) Fuel injection (d) Starter motor

7. Dynamic balancing corrects

(a) Static weight issues

(b) Blade corrosion

(c) Vibration during rotation

(d) Ice formation

8. Blade tracking errors can lead to

(a) Better control (b) Lower RPM

(c) Constant speed (d) Unbalanced rotation

9. Desiccants are used to

(a) Lubricate seals

(b) Prevent moisture accumulation

(c) Increase pressure

(d) Strengthen bolts

10. Temporary storage duration is typically

(a) More than 5 years

(b) One day

(c) Up to 3 months

(d) Up to 1 year

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is propeller slip? How is it calculated?

Or

(b) Write a note on angle of attack and angle of advance.

12. (a) Explain the concept of reverse pitch and its function.

Or

(b) Explain blade face, blade back, and blade shank.

13. (a) Explain passenger comfort improvements using synchrophasing.

Or

(b) Describe the basic components of a synchrophaser system.

14. (a) Explain the procedure for static balancing.

Or

(b) What steps are involved in visual inspection of metal blades?

15. (a) How is a governor preserved and stored?

Or

(b) Write a short note on accumulator storage procedures.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain in detail the blade element theory with neat diagram.

Or

(b) Explain geometric pitch and effective pitch with suitable diagram.

17. (a) Explain the working of a constant speed propeller with diagram.

Or

(b) Compare tractor and pusher propellers in terms or performance and application.

18. (a) Write a detailed note on fluid-type anti-icing systems.

Or

(b) Explain in detail the working and benefits of synchrophasing.

19. (a) How is a full inspection of a metal propeller performed?

Or

(b) Write a detailed note on damage types and repair limits in propellers.

20. (a) Describe the preservation and de-preservation processes with examples.

Or

(b) Discuss environmental factors affecting propeller storage.

C–7829	Sub. Code 91364B

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Aircraft Maintenance Science

NDT, WELDING AND HEAT TREATMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which gas requires extra caution when working in workshops?

   (a) Hydrogen (b) Oxygen

   (c) Nitrogen (d) Carbon Dioxide

2. What is the purpose of MSDS in a workshop?

   (a) Log employee attendance

   (b) Track tool use

   (c) Provide safety info

   (d) Record fire alarms

3. Which inspection uses high-frequency sound waves?

   (a) Magnetic Particle (b) Ultrasonic

   (c) Radiographic (d) Eddy Current

4. Which of the following is a limitation of eddy current inspection?

(a) Cannot detect surface flaws

(b) Requires conductive material

(c) Requires thick materials

(d) High radiation risk

5. Which welding technique uses a non-consumable tungsten electrode?

(a) SMAW (b) GMAW

(c) GTAW (d) SAW

6. Which welding method produces the highest temperature?

(a) Gas welding

(b) Resistance welding

(c) Plasma arc welding

(d) MIG welding

7. What is the main difference between soldering and brazing?

(a) Brazing uses no filler

(b) Soldering is stronger

(c) Brazing occurs at higher

(d) Soldering uses gas flame temperatures

8. Which gas is often used in brazing?

(a) Oxygen (b) Argon

(c) Nitrogen (d) Acetylene

9. Which heat treatment process improves surface hardness only?

(a) Normalizing (b) Case carburizing

(c) Annealing (d) Tempering

10. What is the critical temperature in steel heat treatment?

(a) Minimum working temperature

(b) Temperature where phase change begins

(c) Freezing point

(d) Boiling point

Part B

$(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) What safety measures should be taken while working with oils and chemicals?

Or

(b) Discuss precautions while using oxygen in maintenance workshops.

12. (a) Describe the uses and limitations of visual inspection.

Or

(b) What are the safety precautions in radiographic testing?

13. (a) Write a short note on electric arc welding and its types.

Or

(b) What are the key points to be checked during inspection of welded joints?

14. (a) Differentiate between soldering and brazing.

Or

(b) Explain the process of silver soldering.

15. (a) Define critical temperature and explain its role in heat treatment.

Or

(b) Explain the concept and process of tempering.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain in detail the safety precautions to be followed in an aircraft workshop.

Or

(b) Explain the fire classification system and matching extinguishers with examples.

17. (a) Explain the principles and applications of eddy current inspection in aircraft.

Or

(b) Compare all major NDT methods in terms of procedure, equipment and application.

18. (a) Write a detailed comparison between TIG and MIG welding.

Or

(b) Describe the plasma arc welding and plasma arc cutting processes.

19. (a) Discuss the procedure and applications of aluminium soldering in aviation.

Or

(b) Compare soldering, brazing, and welding in terms of temperature, strength, and application.

20. (a) Describe the steps involved in hardening, tempering, and annealing.

Or

(b) Explain surface hardening techniques like carburizing and nitriding.

———————

C–7830	Sub. Code
	91364C

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Aircraft Maintenance Science

ENGINE PROPULSION SYSTEM

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. In a gas turbine engine, the Mass is the air delivered by the _____.
   (a) compressor
   (b) turbine
   (c) combustion chamber
   (d) all

2. Brayton cycle is the _____.
   (a) Constant volume cycle
   (b) Constant pressure cycle
   (c) Constant temperature cycle
   (d) All

3. The fuel flowmeter is situated _____.
   (a) Between LP pump and the FCOC
   (b) Between LP pump and HP pump
   (c) Between HP shut off valve and fuel nozzles
   (d) All

4. The fuel-cooled oil cooler _____.

(a) Heats the oil and cools the fuel

(b) Heats the fuel only

(c) Heats the fuel and cools the oil

(d) All

5. Pressure sensors are designed around the principle of converting physical force into an _____.

(a) Electrical output (b) Mechanical output

(c) Magnetic output (d) All

6. The primary purpose of a lubricant is to reduce _____.

(a) Friction between moving parts

(b) Wear

(c) Temperature

(d) All

7. The starter generator internal circuit has four field _____.

(a) Windings: a series field (C field)

(b) Shunt field

(c) Compensating field

(d) All

8. Air turbine starters are designed to provide high starting torque from a _____.

(a) Small, lightweight source

(b) Medium source

(c) High source

(d) All

9. Ignition system is used to ignite the fuel in the _____.

(a) Combustor (b) Turbine

(c) Nozzle (d) All

10. Use of continuous ignition is _____.

(a) Take off

(b) Landing

(c) Some abnormal an emergency situation

(d) All

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is Newton third law of motion and its significance?

Or

(b) Write short note on propulsive efficiency of gas turbine engine.

12. (a) Explain the types of fuel nozzles.

Or

(b) What is the function of a fuel filter? And its types.

13. (a) How to test the EGT indicator?

Or

(b) How to measure the oil temperature in gas turbine engine?

14. (a) How to troubleshoot the starter generator starting system.

Or

(b) List down the various types of starters used for gas turbine engine.

15. (a) Write short note igniter plugs.

Or

(b) What is the ignition system of a gas turbine?

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss about the operation considerations of air inlet of turbo jet engine.

Or

(b) List down and explain the combustion chamber components.

17. (a) Enumerate the composition of FADEC.

Or

(b) Describe about the role of fuel heater in gas turbine engine.

18. (a) Explain Enhancements to the fuel systems commonly found in transport-category aircraft.

Or

(b) Describe about the fuel quantity indicating system of an gas turbine engine.

19. (a) Explain about the electric starter system.

Or

(b) List down the turboprop starting procedure.

20. (a) Explain about the typical ignition system components.

Or

(b) Explain the maintenance of ignition system leads.