| C–6737 |
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| 97213 |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**First Semester**

**Aviation**

**INTRODUCTION TO AVIATION INDUSTRY**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Aviation is broadly categorized into _____

   (a) civil aviation (b) military aviation

   (c) general aviation (d) all

2. A low-cost carrier (LCC) also called as _____

   (a) low-cost airline (b) budget

   (c) discount carrier (d) all

3. The government is investing _____ in airport infrastructure to meet the demand.

   (a) $11 billion (b) $20 billion

   (c) $15 billion (d) $21 billion

4. Airline capacity in India will reach _____ departing seats in 2025.

   (a) 230 million (b) 250 million

   (c) 300 million (d) None

5. This is the _____ and most basic part of a ticket before any add-ons, taxes or extra charges have been added.

(a) Lowest price (b) Average price

(c) Highest price (d) All

6. A commuter flight is a particular type of _____ that people use to commute from home to work.

(a) short haul flight

(b) long haul flight

(c) medium haul flight

(d) all

7. Air operation area used for _____

(a) Landing

(b) Take-off

(c) Surface maneuvering of aircraft

(d) All

8. The basic terminal operations can be summarized as _____

(a) Check-in (b) Baggage Handling

(c) Ticketing (d) All

9. Aviation accounts for _____ of global carbon emissions.

(a) 5% (b) 10%

(c) 3% (d) all

10. ICAO is a specialised agency of the _____

(a) UNESCO

(b) WHO

(c) UNITED NATION

(d) All

## Part B (5 × 5 = 25)

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

11. (a) What is aviation and importance of the aviation industry?

Or

(b) Write short note on pricing policy of low-cost carrier.

12. (a) What are the crucial role of DGCA in operational area of aviation?

Or

(b) What are the main functions of aviation security?

13. (a) Write short note on code-share flight.

Or

(b) List out the conditions for travel credit.

14. (a) List out the wide range of activities of information system in airport operation.

Or

(b) List out the functions of airport terminal.

15. (a) What is the global environmental impact of air transportation?

Or

(b) What does an aviation organization do?

## Part C

(5 × 8 = 40)

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

16. (a) How to understanding the main types of aviation?

Or

(b) List out the characteristics of LCC operation.

17. (a) Discuss about various aspects of bright future of Indian aviation.

Or

(b) What are the functional areas of DGCA?

18. (a) Discuss about some of the air travel vocabulary.

Or

(b) Briefly explain about the traffic conference area-3.

19. (a) Explain about the four types airport operations.

Or

(b) List out and explain the layouts of airport terminals.

20. (a) Discuss about the climate impact of air transportation.

Or

(b) Explain about the ICAO Standards.

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| 97215 |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fist Semester**

**Aviation**

**BASICS OF AIRCRAFT ELECTRICALS AND ELECTRONICS**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Ohm's Law states that voltage is equal to
   (a) Current divided by resistance
   (b) Current multiplied by resistance
   (c) Resistance divided by current
   (d) Current plus resistance
2. The RMS value of a sinusoidal voltage is
   (a) The average value
   (b) The peak value
   (c) 0.707 times the peak value
   (d) The peak-to-peak value
3. Which of the following is NOT a type of DC generator?
   (a) Separately excited
   (b) Series wound
   (c) Shunt wound
   (d) Induction type

4. Which motor is commonly used for aircraft auxiliary power units (APUs)?

   (a) DC series motor

   (b) DC shunt motor

   (c) Three-phase induction motor

   (d) Single phase induction motor

5. P-type semiconductor material is created by doping with

   (a) Pentavalent impurities

   (b) Trivalent impurities

   (c) Silicon

   (d) Germanium

6. An SCR is a

   (a) Voltage-controlled device

   (b) Current-controlled device

   (c) Power amplifier

   (d) Diode

7. The binary equivalent of decimal number 25 is

   (a) 11001 (b) 10101

   (c) 10011 (d) 11100

8. An XOR gate produces a high output when

   (a) Both inputs are high

   (b) Both inputs are low

   (c) The inputs are different

   (d) Any one input is high

9. The instrument element converting measured quantity to an electrical signal is a

   (a) Indicator (b) Transducer

   (c) Controller (d) Amplifier

10. What is the purpose of a Digital Storage Oscilloscope (DSO)?

(a) To store and analyze digital signals

(b) To measure resistance

(c) To measure power factor

(d) To detect magnetic fields

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

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

11. (a) Explain Kirchhoff's law with neat diagram.

Or

(b) Compare star and delta connections in AC circuits with equations.

12. (a) Derive the EMF equation of a DC generator.

Or

(b) Explain the general construction of single phase induction motor.

13. (a) Explain the characteristics of PN junction diode.

Or

(b) Explain the types of BJT.

14. (a) Simplify the Boolean expression using the K-map method: $F(A,B,C) = \Sigma(0, 1, 3, 5, 7)$.

Or

(b) Explain the logic gates with corresponding truth tables.

15. (a) Explain the operating principles of moving coil.

Or

(b) What are instrument transformers? Explain the applications of CT and PT.

## Part C

(5 × 8 = 40)

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

16. (a) Explain the concept of independent and dependent voltage and current sources with practical examples.

Or

(b) Derive the expression for RMS value and average value of a sinusoidal AC waveform.

17. (a) Explain the construction and working principle of a self-excited DC generator with a diagram.

Or

(b) Explain the working principle, types and applications of transformers.

18. (a) Discuss the construction, working, and applications of JFET and MOSFET.

Or

(b) Explain the working principle of an inverter and its types.

19. (a) Explain the construction and operation of half-adders and full-adders.

Or

(b) Explain the representation of logic functions using SOP and POS forms.

20. (a) Explain in detail the functional elements of an instrument with suitable examples.

Or

(b) Discuss the principles of a data acquisition system and its importance in modern instrumentation.

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**C–6739**

**Sub. Code**
**97223**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Second Semester**

**Aviation**

**BASICS OF AIRCRAFT**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. How fast can a biplane fly _____

   (a) 100 mph (b) 80 mph

   (c) 60 mph (d) all

2. The hot air balloon is invented in _____ by Joseph and Stephen Montgolfier.

   (a) 1700 (b) 1783

   (c) 1800 (d) all

3. Classification of flight vehicles are _____

   (a) Conventional aircraft

   (b) Gliders

   (c) Helicopter

   (d) All

4. Flaps are located on the _____

(a) Trailing edge (b) Leading edge

(c) Wing tip (d) All

5. Earth's atmosphere is composed of _____

(a) 78% $N_2$ (b) 21% $O_2$

(c) 1% of other gases (d) all

6. What are the laws of motion in aeronautics _____

(a) Newton's I$^{st}$ law of motion

(b) II$^{nd}$ law

(c) III$^{rd}$ law

(d) all

7. Typical piston engine operating according to the _____

(a) 2 stroke cycle

(b) 4 stroke cycle

(c) 3 stroke cycle

(d) all

8. The ratio of propulsive power to kinetic energy production rate is called _____

(a) thermal efficiency

(b) overall efficiency

(c) propulsive efficiency

(d) All

9. The structural component of aircraft grouped in to three categories are _____

(a) fuselage (b) wings

(c) tail (d) all

10. Most airplanes today are made of _____

(a) Aluminum alloy (b) Copper

(c) Stainless steel (d) All

## Part B

(5 × 5 = 25)

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

11. (a) Write short note on air balloon envelope.

Or

(b) Write the concept of noise control in aerodynamics.

12. (a) Explain the aircraft configurations base on wing types.

Or

(b) List out the contents of cockpit.

13. (a) Write short note on atmospheric earth.

Or

(b) Explain the use of Newton's law of motion.

14. (a) List out the four strokes of piston engine and its significance.

Or

(b) Write short note on jet engine performance parameters.

15. (a) Write short note on truss type structure of fuselage.

Or

(b) List out the major stresses acting on aircraft.

## Part C (5 × 8 = 40)

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

16. (a) Discuss about the types of hot air balloon.

Or

(b) Discuss about the flow control for drag reduction in future aerodynamics.

17. (a) List out and explain the basic components of aircraft.

Or

(b) Describe about the flight control and actuation system.

18. (a) Discuss about the structure of atmosphere.

Or

(b) (i) What are the four basic flight manoeuvres

(ii) During flight, list out the pilot tasks and responsibilities.

19. (a) List out the four strokes of piston engine and its significance.

Or

(b) Write note on jet engine performance parameters and its significance.

20. (a) Explain the three types of fuselage construction.

Or

(b) Discuss about the application of titanium alloy in aircraft construction.

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**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Second Semester**

**Aviation**

**AVIATION PHYSICS**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. How is strain defined?
   (a) The deformation per unit length of a material
   (b) The internal force per unit area
   (c) The energy stored in a material
   (d) The resistance to deformation

2. What does torque measure?
   (a) Linear displacement
   (b) Rotational force
   (c) Power output
   (d) Electrical resistance

3. What is the purpose of a bevel gear?
   (a) To transmit motion b/w intersecting shafts
   (b) To increase the speed of rotation
   (c) To reduce friction
   (d) To maintain parallel shaft motion

4. If a machine has a mechanical advantage of 4, what does it mean?

   (a) The machine reduces the input force by a factor of 4

   (b) The machine increases the input force by a factor of 4

   (c) The machine can lift 4 times its weight

   (d) The machine allows the input force to be multiplied by 4

5. Which of the following best describes rectilinear motion?

   (a) Motion along a curved path

   (b) Motion along a straight line

   (c) Motion in a circular path

   (d) Random motion

6. Which is an example of periodic motion?

   (a) A car moving along a straight road

   (b) A pendulum swinging back and forth

   (c) An athlete running a circular track

   (d) A stone falling freely under gravity

7. What happens to most materials when their temperature increases?

   (a) They expand

   (b) They contract

   (c) Their density decreases

   (d) Their mass increases

8. Pressure is defined as:

(a) Force per unit distance

(b) Force per unit area

(c) Energy per unit volume

(d) Mass per unit volume

9. The General Gas Law combines:

(a) Boyle's Law, Charles's Law, and Gay- Lussac's Law

(b) Bernoulli's Principle and Pascal's Law

(c) Archimedes' Principle and Pascal's Law

(d) Dalton's Law and Charles's Law

10. Sound is:

(a) A form of electromagnetic wave

(b) A mechanical wave that travels through a medium

(c) A form of thermal energy

(d) A type of potential energy

## Part B

$(5 \times 5 = 25)$

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

11. (a) Define stress and strain.

Or

(b) Explain the concept of work in physics and its practical applications.

12. (a) Explain the various types of gears and their uses in mechanical systems.

Or

(b) Analyze a specific practical example of a lever.

13. (a) Define periodic motion and provide examples, highlighting its importance in physical systems.

Or

(b) Discuss curvilinear motion, with its definition and examples.

14. (a) Explain specific heat capacity and its significance in thermal processes.

Or

(b) Define pressure and discuss its measurement.

15. (a) Explain about the Pascal's law with it's application.

Or

(b) Explain about the Bernoulli's principle with it's application.

**Part C** (5 × 8 = 40)

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

16. (a) A metal rod with a cross-sectional area of 0.005 $m^2$ is subjected to a tensile force of 10,000 N. Calculate the stress experienced by the rod.

Or

(b) A cylindrical rod made of a certain material has a length of 1 meter and a cross-sectional area of 0.01 $m^2$. When subjected to a tensile force of 50,000 N, it elongates by 0.002 meters. Calculate the Young's modulus of the material.

17. (a) Explain about the development of simple machines.

Or

(b) Explore the physics behind the wedge, its development, and its various uses in different industries and everyday life.

18. (a) Explain about any three types of motion with example.

Or

(b) A car initially travelling at 25 m/s accelerates at a rate of 2 $m/s^2$. How long will it take for the car to reach a speed of 45 m/s? Also, calculate the distance travelled during this time.

19. (a) Explain about the following:

(i) Thermal efficiency

(ii) Thermal contraction/Expansion

Or

(b) A metal block with a mass of 5 kg needs to be heated from 25°C to 75°C. If the specific heat capacity of the metal is 0.5 J/g°C, calculate the total amount of heat energy required.

20. (a) Explain about the following:

(i) Mach number

(ii) Resonance

Or

(b) Explain about the following:

(i) Dalton's law

(ii) General Gas law

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**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**Third Semester**

**Aviation**

**AVIATION WEATHER AND METEOROLOGY**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Which layer of the atmosphere is closest to the Earth's surface?
   (a) Stratosphere (b) Mesosphere
   (c) Troposphere (d) Thermosphere

2. Lines connecting points of equal temperature are called:
   (a) Isotherms (b) Isotachs
   (c) Isobars (d) Contours

3. The rate at which the temperature decreases with altitude in the ISA is called the:
   (a) Environmental lapse rate
   (b) Dry adiabatic lapse rate
   (c) Standard lapse rate
   (d) Isothermal lapse rate

4. A ridge is a region of relatively low atmospheric pressure.
   (a) True (b) False

5. Buys Ballot's Law relates wind direction to:

(a) Humidity (b) Visibility

(c) Temperature (d) Pressure

6. A sudden, sharp increase in wind speed lasting minutes is called a:

(a) Gale (b) Squall

(c) Gust (d) Fohn

7. The Intertropical Convergence Zone (ITCZ) is characterized by:

(a) High pressure (b) Low pressure

(c) Strong winds (d) Clear skies

8. Tropical revolving storms in the North Atlantic Ocean are called:

(a) Cyclones (b) Typhoons

(c) Hurricanes (d) Tornadoes

9. IMD stands for:

(a) International Meteorological Department

(b) Indian Meteorological Department

(c) Institute of Meteorology and Dynamics

(d) Integrated Meteorological Data

10. Weather radar is used to detect:

(a) Air pressure (b) Wind speed

(c) Precipitation (d) Temperature

## Part B (5 × 5 = 25)

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

11. (a) Explain about the Troposphere.

Or

(b) Explain the isothermal layers in detail.

12. (a) Explain the concept of the International Standard Atmosphere (ISA).

Or

(b) Describe troughs and ridges and their impact on weather.

13. (a) Discuss the hazards associated with Cumulonimbus (CB) clouds.

Or

(b) Explain about turbulence in Weather hazards.

14. (a) Explain about variation of pressure with altitude.

Or

(b) Write a short note on surface air temperature.

15. (a) Explain about the SIGMIET.

Or

(b) Write a short note on satellite weather image for the flight in meteorology.

## Part C (5 × 8 = 40)

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

16. (a) Explain in detail about Earth's atmosphere.

Or

(b) Describe how the mesosphere protects Earth from meteoroids.

17. (a) Differentiate between Environmental Lapse Rate (ELR), Dry Adiabatic Lapse Rate (DALR), and Saturated Adiabatic Lapse Rate (SALR).

Or

(b) Explain in detail about Coriolis Effect.

18. (a) Explain about Sea Breeze and Land Breeze.

Or

(b) Explain about the micro burst in aviation weather hazards.

19. (a) Explain the characteristics and weather associated with each type of frontal system.

Or

(b) Discuss the air route climatology of major routes over India and neighboring countries.

20. (a) Explain information for flight planning in meteorology.

Or

(b) What is a PIREP? Explain about it in detail.

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**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**Third Semester**

**Aviation**

**FLIGHT SAFETY AND SUPPORT SYSTEMS**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is used to level an aircraft?

   (a) Chocks

   (b) Spirit level or inclinometer

   (c) Towing tractor

   (d) Marshalling wand

2. Which equipment is used to prevent an aircraft from rolling during mooring?

   (a) Jack (b) Wheel chock

   (c) Trestle (d) Ladder

3. Which area is designated for aircraft parking and loading/unloading?

   (a) Runway (b) Apron

   (c) Taxiway (d) Clear zone

4. What is the purpose of taxi tracks at an airport?
   (a) Refuelling aircraft
   (b) Storing luggage
   (c) Guiding aircraft to/from runways
   (d) Firefighting
5. What is the purpose of a Ground Power Unit (GPU)?
   (a) To clean the aircraft
   (b) To provide electrical power to the aircraft on the ground
   (c) To refuel the aircraft
   (d) To load passengers
6. What is the purpose of a trestle in ground handling?
   (a) To clean the aircraft
   (b) To support the aircraft during maintenance
   (c) To refuel the aircraft
   (d) To load passengers
7. Why are symmetry checks important in aircraft rigging?
   (a) Reduce fuel consumption
   (b) Improve passenger comfort
   (c) Ensure balanced flight
   (d) Increase speed
8. Why is a duplicate inspection required during rigging?
   (a) To reduce maintenance time
   (b) To verify accuracy and safety
   (c) To clean the equipment
   (d) To reduce weight
9. What is the purpose of inflating aircraft tires to the correct pressure?
   (a) Reduce fuel consumption
   (b) Increase speed
   (c) Ensure safe landings
   (d) Improve passenger comfort

10. What is the primary symptom of brake fading?
    (a) Increased braking performance
    (b) Reduced braking efficiency due to overheating
    (c) Excessive brake pedal travel
    (d) Improved fuel efficiency

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

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

11. (a) Describe Tying down operation of the Aircraft.

Or

(b) Describe Jacking operation of Aircraft.

12. (a) Explain Runway markings and Configurations.

Or

(b) Explain about Airfield Lighting Systems.

13. (a) Briefly explain the maintenance of portable hydraulic test stand.

Or

(b) Explain about Air-conditioning and heating units in aircrafts.

14. (a) Explain the use of Tensiometers and Protractors.

Or

(b) Describe Angular alignment check procedure of flight control surface.

15. (a) Describe the wheel brake inspection.

Or

(b) Describe about bleeding in Shock Struts.

## Part C (5 × 8 = 40)

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

16. (a) Write in detail about the towing procedure of the aircraft.

Or

(b) Explain in detail about Levelling procedure.

17. (a) Explain Taxiway markings and Runway marking with neat sketch.

Or

(b) Explain in detail about the safety procedures followed at Airports. What are dispersal areas?

18. (a) Write short notes on following:

(i) GPU

(ii) Portable Hydraulic Test Stands.

(iii) Electrical Power Supply Units.

Or

(b) Explain the following:

(i) Lower Deck Loader

(ii) Middle Deck Loader

(iii) Ladders

19. (a) Describe flying controls rigging procedure.

Or

(b) What is the significance and describe Symmetry checks?

20. (a) Explain about maintenance of Landing Gears in detail.

Or

(b) Describe the disassembly and assembly of tire from wheel.

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| C–6743 | Sub. Code 97236 |
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**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Third Semester**

**Aviation**

**BASIC MATHEMATICS**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. What is the first term in the binomial expansion of $(1+x)^{-2}$

   (a) 1 (b) $-2x$

   (c) $1-2x$ (d) $1+2x$

2. What is the expansion of $(1-x)^{-1}$ using the binomial series?

   (a) $1+x+x^2+x^3+\ldots$ for $|x|<1$

   (b) $1-x+x^2-x^3+\ldots$ for $|x|<1$

   (c) $1-2x+3x^2-4x^3+..$

   (d) None of the above

3. The amplitude (argument) of the complex number $z=1+I$ is

   (a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$

   (c) $\pi$ (d) 0

4. The real part of $e^{i\theta}$

(a) $\cos\theta$ (b) $\sin\theta$

(c) $i\sin\theta$ (d) $\tan\theta$

5. Leibnitz's theorem is used to differentiate

(a) A function of one variable

(b) A product of two functions

(c) A function with multiple terms

(d) A function of several variables

6. The function $f(x\,y)=x^3+y^3$ is homogeneous of degree

(a) 1 (b) 2

(c) 3 (d) 4

7. The integral $\int e^x\,dx$ evaluates to

(a) $e^x+C$ (b) $xe^x+C$

(c) $\dfrac{1}{e^x}+C$ (d) $e^x-1$

8. Which method is commonly used to evaluate integrals of rational functions?

(a) Integration by parts

(b) Partial fraction decomposition

(c) Trigonometric substitution

(d) None of the above

9. A differential equation of the form $x=f(y,\,p)$ is called

(a) Equation solvable for $x$

(b) Equation solvable for $y$

(c) Equation solvable for $p$

(d) Clairaut's equation

10. The singular solution of Clairaut's equation represents

(a) A family of straight lines

(b) A single straight line

(c) An envelope of the family of solutions

(d) A hyperbola

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

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

11. (a) Define partial fractions and explain their importance in mathematics.

Or

(b) Find the first four terms in the expansion of $(1+2x)^{-2}$ using the binomial series.

12. (a) Expand $\sin 5\theta$ in terms of multiple angles of $\theta$.

Or

(b) Prove that $2\theta = 2\cos 2\theta - 1$ using De Moivre's theorem.

13. (a) Find the nth derivative of $f(x) = e^{ax} \sin bx$.

Or

(b) Show that $f(x,y) = x^2 y^3 + xy^2$ is a homogeneous function and verify Euler's theorem.

14. (a) Evaluate $\int (x+2) e^{x^2+4x}\, dx$ using substitution.

Or

(b) Evaluate $\int \frac{dx}{x^2 - a^2}$ using partial fractions.

15. (a) Solve $y = Px + e^p$.

Or

(b) Solve $y = Px + \sin P$ using Clairaut's method.

## Part C (5 × 8 = 40)

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

16. (a) Using partial fractions, evaluate $\int \frac{3x+2}{(x-1)(x+2)}dx$.

Or

(b) Solve the equation $(1-x)^{-3}$ using the binomial theorem and verify your answer with differentiation.

17. (a) Prove that $\cos 5\theta = 16\cos^5\theta - 20\cos 3\theta + 5\cos\theta$.

Or

(b) Show that $(1+i)^{10} = 32\sqrt{2}\left(\cos\frac{10\pi}{4} + i\sin\frac{10\pi}{4}\right)$.

18. (a) Find the nth derivative of $f(x) = x^m e^{ax}$ using Leibnitz's theorem.

Or

(b) Prove Euler's theorem for a homogeneous function and explain its applications.

19. (a) Evaluate $\int \frac{dx}{\sqrt{x^2 - 4x + 4}}$ using trigonometric substitution.

Or

(b) Solve $\int \frac{x^2}{(x+2)(x+3)}dx$ using partial fraction decomposition.

20. (a) Solve the differential equation $y = Px + \frac{1}{p}$ and interpret the solution geometrically.

Or

(b) Solve $y = Px + P^2 + P^3$ and discuss its general and singular solutions.

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**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**Fourth Semester**

**Aviation**

**INDUSTRIAL DRAWING PRACTICES**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Which type of line is used to represent visible edges or outlines in a technical drawing?

   (a) Hidden Line (b) Object Line

   (c) Center Line (d) Dimension Line

2. Which organization establishes the code of practice for technical drawing in India?

   (a) American National Standards Institute (ANSI)

   (b) Bureau of Indian Standards (BIS)

   (c) International Organization for Standardization (ISO)

   (d) European Committee for Standardization (CEN)

3. When a rectangular prism is placed with its base on the HP and viewed from the top, what shape is seen?

   (a) Rectangle (b) Square

   (c) Trapezoid (d) Hexagon

4. When a hexagonal prism is placed on its base on the HP, what shape is seen in the top view?

(a) Rectangle (b) Hexagon

(c) Circle (d) Pentagon

5. When a pentagonal pyramid with a vertical axis is cut by a plane perpendicular to its base and passing through its apex, the section is:

(a) Pentagon (b) Triangle

(c) Trapezoid (d) Rectangle

6. If the true shape of the section of a rectangular prism is a rectangle, the section plane must be:

(a) Parallel to the base

(b) Perpendicular to the base

(c) Inclined to the base

(d) Parallel to the axis

7. What angle do the axes make with each other in an isometric view of a rectangular prism?

(a) 30 degrees (b) 60 degrees

(c) 90 degrees (d) 120 degrees

8. How do the top and bottom faces of a frustum of a cone appear in an isometric view?

(a) Circles (b) Ellipses

(c) Ovals (d) Rectangles

9. In a perspective projection of a rectangular prism with its axis perpendicular to the ground plane, what is the shape of the front face?

(a) Rectangle (b) Trapezoid

(c) Square (d) Parallelogram

10. In converting the pictorial view of a rectangular prism to orthographic views, what shapes will be seen in the top, front, and side views respectively?

(a) Rectangle, Rectangle, Rectangle

(b) Rectangle, Square, Rectangle

(c) Square, Rectangle, Square

(d) Rectangle, Rectangle, Square

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

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

11. (a) Discuss the significance of technical drawing in the engineering field. Include its role in communication between engineers, architects, and manufacturers.

Or

(b) Draw the projections of a line 90 mm long, inclined at 40 degrees to the HP and 50 degrees to the VP. Determine and show the true length of the line using auxiliary planes.

12. (a) Draw the projection of a cylinder of base 30 mm diameter and axis 60mm long resting with its base on HP.

Or

(b) An Hexagonal Prism, having a base with a 30 mm side and 65 mm long axis, has an edge it's base in the VP Such that the axis is inclined at 300 to the VP and Parallel to the HP. Draw its Projections?

13. (a) How will you draw the true shape of the section of triangular prisms with axis in vertical position and cut by a section plane above base.

Or

(b) How will you draw the true shape of the section of Cone with axis in vertical position and cut by a section plane above base.

14. (a) What procedure will you follow to draw the isometric projection of a frustum of cone.

Or

(b) What procedure will you follow to draw the isometric projection of a cylinder?

15. (a) What procedure will follow for drawing of perspective projection of prism with axis perpendicular to the ground planet.

Or

(b) What procedure will follow for drawing of perspective projection of triangular pyramid prism with axis perpendicular to the ground plane?

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

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

16. (a) A straight-line AB has its A 25 mm above HP and 30 mm in front of the VP. The other end B is 60mm above the HP and 80 mm Infront of VP. Find the true length and mark its traces.

Or

(b) A line PQ 70 mm long is parallel to the HP and inclined at 30° to the VP. The end P is 25 mm above the HP and 40 mm infront of the VP. Draw the projections of straight line and find its true length.

17. (a) Draw the projection of square pyramid of base of side 30 mm and axis 50 mm When it is resting on the HP on one of its base corners with a base side containing the corner making 35° with the HP. The axis is inclined at 30° to the VP and is parallel to the HP and vortex is away from VP.

Or

(b) What procedure will you follow to draw the projection of pentagonal prism which is rest on its ground and its axis is inclined at A° to the ground and B° to the VP.

18. (a) A triangular prism, base 30 mm side and axis 50 mm long, is lying on the H.P. on one of its rectangular faces with its axis inclined at 30° to the V.P. It is cut by a horizontal section plane, at a distance of 12 mm above the ground. Draw its front view and sectional top view.

Or

(b) A cylinder of 40 mm diameter, 60 mm height and having its axis vertical, is cut by a section plane, perpendicular to the V.P., inclined at 45° to the H.P. and intersecting the axis 32 mm above the base. Draw its front view and true shape of the section.

19. (a) Draw the isometric projection of a hollow rectangular prism of base 50 mm × 40 mm(outside) and height 75 mm and thickness 8 mm when its axis is horizontal.

Or

(b) How will you draw the isometric projection of a hexagonal prism side of base 25 mm and height 60 mm?

20. (a) A square pyramid of the base 20 mm and altitude 40 mm rests on its base on the ground such that one of its base sides is parallel to the picture and 10 mm in front of it. The station is 50 mm in front of the picture plane, 25 mm to the left of the axis of the pyramid and 55 mm above the ground. Draw the perspective view of the pyramid.

Or

(b) A cube of side 25 mm rests on one end of its faces on the ground the nearest vertical edge being 20 mm behind the picture plane and 40 mm to the left of the station point. A face containing the nearest vertical edge is inclined at 60° to the PP. The station point is 40 mm above the ground and 60 mm in front of the PP. Draw the perspective view of the cube.

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| C–6745 | Sub. Code 97245 |
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**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**Fourth Semester**

**Aviation**

**AVIATION COMMUNICATION AND RADIO AIDS**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. What is polarization in the context of radio waves?
   (a) The frequency of the radio waves
   (b) The speed of the radio waves
   (c) The direction in which the electric field of the radio wave oscillates
   (d) The amplitude of the radio waves

2. The frequency range of FM radio is
   (a) 555 KHz to 1.6 MHz
   (b) 2 GHz to 4 GHz
   (c) 20 Hz to 20 KHz
   (d) 88 MHz to 108 MHz

3. What is the typical shape of a radio wave?
   (a) Square (b) Triangle
   (c) Parabolic (d) Sine

4. Which of the following is not a communication error?

(a) Amount of information

(b) Unclear pronunciation

(c) Attenuation

(d) Misunderstanding

5. Which type of messages are typically transmitted over the AFTN?

(a) Personal messages from passengers

(b) Advertisements and promotions

(c) In-flight entertainment schedules

(d) Operational control messages, flight plans, and weather information

6. The protocol for ACARS was designed by_____

(a) Bocing (b) ARINC

(c) FAA (d) ICAO

7. What is the primary purpose of Air Traffic Control (ATC) communication?

(a) To provide in-flight entertainment

(b) To ensure safe and efficient movement of aircraft

(c) To offer weather updates for passengers

(d) To track aircraft maintenance schedules

8. Which communication system is primarily used for medical transport flights?

(a) VOR (VHF Omnidirectional Range)

(b) HF (High Frequency) radio

(c) SATCOM (Satellite Communication)

(d) NDB (Non-Directional Beacon)

9. Where was the DME developed?

(a) Australia (b) Germany

(c) India (d) Canada

10. The line of position is called the _____ from the VOR.

(a) Diagonal (b) Axial

(c) Radial (d) Lateral

**Part B** (5 × 5 = 25)

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

11. (a) Explain the relationship between Wavelength and Frequency.

Or

(b) Explain about Polarization.

12. (a) Explain about Sky Waves and Ground Waves.

Or

(b) What is Fading? Explain briefly about it.

13. (a) Explain about UHF Radio Waves.

Or

(b) Explain about Fixed Telecommunication Network.

14. (a) Explain the Distress Communication Procedure during Emergency.

Or

(b) List out the reason for communication Failure caused in Aviation and explain in detail.

15. (a) Explain the working of NDB/ADF System.

Or

(b) Explain in detail the working of MLS System.

## Part C

(5 × 8 = 40)

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

16. (a) Explain about Attenuation of Radio Waves in the Ionosphere.

Or

(b) Explain about Modulation and different types of Modulation.

17. (a) Explain the working of Radio Altimeters in detail.

Or

(b) Explain about Sky Waves and surface Waves.

18. (a) Explain about VHF Radio Waves and their Characteristics.

Or

(b) Write short notes on

(i) Airborne Radio Relay

(ii) Inter Phone

(iii) Service Telephone.

19. (a) Briefly explain the urgency procedure when an aircraft is lost its control due to bird hit.

Or

(b) Write short notes on Radar Assistance.

20. (a) Explain the operating principle of VOR.

Or

(b) Explain in detail about FMS.

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| 97246 |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fourth Semester**

**Aviation**

**PHYSICAL AND HEALTH EDUCATION**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. What is the primary goal of health education?

   (a) To provide medical treatments

   (b) To promote health awareness and healthy behaviors

   (c) To conduct clinical research

   (d) To administer health services

2. What is a common challenge faced in health education?

   (a) High technology adoption rates

   (b) Over-abundance of medical professionals

   (c) Excessive funding for health programs

   (d) Lack of access to reliable health information

3. What is a key component of physical health?

(a) Regular physical activity

(b) High stress levels

(c) Poor diet

(d) Lack of sleep

4. Which of the following is considered a component of health-related fitness?

(a) Balance

(b) Agility

(c) Reaction time

(d) Cardiovascular endurance

5. What is a key characteristic of communicable diseases?

(a) They can be transmitted from one person to another

(b) They are caused by genetic factors

(c) They are exclusively chronic conditions

(d) They do not require a host for transmission

6. What is an effective prevention measure for tuberculosis (TB)?

(a) Vaccination with the BCG vaccine

(b) Avoiding physical exercise

(c) Increasing salt intake

(d) Taking high-dose vitamins

7. What is the primary function of carbohydrates in the diet?

(a) Building muscle tissue

(b) Providing energy

(c) Synthesizing hormones

(d) Repairing cells

8. What is the main role of proteins in the body?

(a) Building and repairing tissues

(b) Providing quick energy

(c) Hydrating the body

(d) Enhancing food flavor

9. What does CPR stand for?

(a) Cardiopulmonary Reflex

(b) Cardiovascular Rehabilitation

(c) Cardiopulmonary Resuscitation

(d) Cardiovascular Resuscitation

10. What is the first step in caring for a conscious adult who is choking?

(a) Perform CPR immediately

(b) Ask if they can speak or cough

(c) Give them water to drink

(d) Lay them down

## Part B

$(5 \times 5 = 25)$

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

11. (a) Discuss the concept of health education and its importance in improving public health.

Or

(b) Discuss the responsibilities of national health organizations in implementing health education programs.

12. (a) Describe the components of health-related fitness and their significance.

Or

(b) Discuss the importance of mental health and its role in overall well-being.

13. (a) Define communicable diseases and describe their main characteristics, including transmission methods and common examples.

Or

(b) Discuss effective strategies for preventing dengue fever, including mosquito control and community awareness programs.

14. (a) Define nutrition and explain its role in maintaining health and well-being.

Or

(b) Describe the role of proteins in the body and their significance for growth and repair.

15. (a) Define first aid and explain its primary purpose and scope.

Or

(b) Explain the steps to take when providing first aid for electrical burns.

## Part C

(5 × 8 = 40)

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

16. (a) Provide a details exploration of the challenges encountered in health education, such as resource limitations, cultural barriers, and information accessibility, and propose solutions to address these issues.

Or

(b) Discuss the contributions of state-level health organizations to health education, including program development, community outreach and policy implementation.

17. (a) Provide a comprehensive overview of physical fitness, including its components, benefits and how it contributes to overall health.

Or

(b) Analyze the concept of holistic health, including its physical, mental, social, and spiritual aspects and how they interact to promote overall well-being.

18. (a) Discuss comprehensive prevention strategies for tuberculosis, including vaccination programs, public health initiatives and the role of personal hygiene.

Or

(b) Examine the relationship between tobacco use and cancer, focusing on the types of cancers associated with tobacco, the biological mechanisms involved and public health strategies for prevention.

19. (a) Explore the different types of carbohydrates, their dietary sources and their role in energy metabolism and overall health.

Or

(b) Analyze the importance of water in human health, including its functions, sources and the consequences of dehydration and over hydration.

20. (a) Provide a comprehensive overview of heatstroke, including its symptoms, risk factors, prevention strategies, and detailed first aid measures to treat it effectively.

Or

(b) Explore the various types of burns, their causes, symptoms and detailed first aid measures for each type.

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| 97251 |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**AIR NAVIGATION (GENERAL)**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. What shape best describes the Earth?

   (a) Perfect sphere

   (b) Ellipsoid

   (c) Oblate spheroid

   (d) Flat disk

2. What is the primary reference for navigation during cruise flight?

   (a) GPS

   (b) Visual landmarks

   (c) The Artificial Horizon

   (d) The Airspeed Indicator

3. What does “track” refer to in navigation?

(a) The actual path flown over the ground

(b) The aircraft’s heading without wind correction

(c) The magnetic bearing to a waypoint

(d) The difference between true north and magnetic north

4. A compass deviation is caused by:

(a) The Earth’s magnetic variation

(b) Differences in latitude and longitude

(c) Wind correction angles

(d) The aircraft’s instruments and electrical systems

5. DME operates by measuring the:

(a) Bearing to a ground station

(b) Slant-range distance to a ground station

(c) Altitude above sea level

(d) Airspeed relative to the wind

6. What is the function of an aircraft transponder?

(a) To transmit aircraft position and altitude to air traffic control

(b) To provide in-flight entertainment

(c) To help with fuel calculations

(d) To measure wind speed

7. On a topographical map, closely spaced contour lines indicate:

(a) Flat terrain

(b) Steep terrain

(c) A valley

(d) A river

8. Which type of chart is mainly used for plotting long-distance flights?

(a) Lambert Conformal Conic Chart

(b) Topographic Chart

(c) Aerodrome Chart

(d) City Map

9. Kepler's First Law states that planetary orbits are:

(a) Circular

(b) Elliptical with the Sun at one focus

(c) Parabolic

(d) Hyperbolic

10. The International Date Line is located at:

(a) 0° longitude

(b) 90° longitude

(c) 180° longitude

(d) 45° latitude

## Part B (5 × 5 = 25)

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

11. (a) What are the types of navigation system used in aircraft? Explain any one type of a major navigation system.

Or

(b) What is Traffic advisory and resolution advisory in TCAS?

12. (a) Briefly explain about Wind correction angle.

Or

(b) Briefly explain about Magnetic compass and Magnetic heading.

13. (a) Explain in detail about the operation of VOR (Very High Omni Range).

Or

(b) Explain about Flight Management System (FMS).

14. (a) Write short notes on Map reading and their importance in Navigation.

Or

(b) With suitable example, explain about conversion angle and scale of General charts used for navigation.

15. (a) How do days and years are measured in connection with Navigation?

Or

(b) Write short notes on Zone time and Local Time.

**Part C** (5 × 8 = 40)

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

16. (a) Write the operation method of Airborne Collision Avoidance System (ACAS).

Or

(b) Write briefly about ELT and its operation.

17. (a) What are different types of air speed? Explain in detail about each one of them and their relationship?

Or

(b) Briefly explain about Pilotage in terms of air navigation principle.

18. (a) Expand the following:

(i) GPS

(ii) GNSS

(iii) GLONASS

Or

(b) Explain in detail about the operation of Automatic Direction Finder (ADF).

19. (a) Describe about Convergency and Great Circle Track.

Or

(b) Explain about General Chart properties with suitable examples in aircraft navigation.

20. (a) Briefly explain about on Solar system.

Or

(b) Explain the different types of twilight. How do they impact daily life and navigation?

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**C–6748**

**Sub. Code**
**97252**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**AIRCRAFT SYSTEMS**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Hydraulics is the science relating to the behaviour of _____ under various conditions.

   (a) Air (b) Vapour

   (c) Liquids (d) All

2. If a force is applied to a liquid in a confined space, then this force will be felt equally in _____

   (a) All directions

   (b) Opposite directions

   (c) Right angle direction

   (d) All

3. Due to the flexibility of tyre side walls, an _____

   (a) Unstable

   (b) Rapid sinusoidal oscillation

   (c) Vibration

   (d) All

4. Normal nose wheel steering operating pressure is derived from the undercarriage _____

(a) down' line (b) up line

(c) neutral line (d) all

5. A stop which limits the movement of the control surface is called a

(a) primary stop (b) secondary stop

(c) neutral stop (d) all

6. The tension of the cable is measured with a _____

(a) Tensiometer (b) Cable meter

(c) Tachometer (d) All

7. Baffles - are fitted in the tanks to dampen rapid movement of fuel _____

(a) Surging or sloshing

(b) Venting

(c) Heating

(d) All

8. Gas turbine engines rely on an _____ system to create a spark.

(a) electrical ignition system

(b) hydraulic

(c) dual-magneto system

(d) all

9. The recirculation system uses _____ fans to move air from the passenger compartment.

(a) Four (b) Three

(c) Two (d) All

10. The _____control knob changes the flow from diluter demand to steady flow if it is rotated to the emergency setting.

(a) Normal (b) Mixer

(c) Emergency (d) All

## Part B (5 × 5 = 25)

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

11. (a) Write down the purpose of hydraulic accumulator and its types.

Or

(b) Explain about the significance of sequence valve in landing gear system.

12. (a) Write short note on undercarriage configuration with neat sketch.

Or

(b) List out the factors affecting design and construction of landing gear.

13. (a) Write down the short note on flight control checks.

Or

(b) Explain the typical push-pull rod with neat diagram.

14. (a) Write short note on magnetic plug detector.

Or

(b) List out the various types of starter systems used in aircraft and its significance.

15. (a) List out major components of air-conditioning pack.

Or

(b) Explain about chemical oxygen generator.

## Part C

($5 \times 8 = 40$)

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

16. (a) Explain about the typical hydraulic system in small executive aircraft with neat sketch.

Or

(b) List out and explain the various flow control valves used in aircraft hydraulic system.

17. (a) List out and explain the landing gear safety features availing in the normal civil aircraft.

Or

(b) Explain about the hydraulic gear retraction system.

18. (a) Discuss about the speed brakes used in aircraft.

Or

(b) Explain about the various types of trailing edge flaps.

19. (a) Discuss about the dry sump lubrication system with neat sketch.

Or

(b) Explain the typical GTE starting sequence and its types.

20. (a) Describe about the diluter demand oxygen system used in aircraft.

Or

(b) Describe the various types of fire detection systems used in aircraft.

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| 97253A |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**AIRPORT AND FLIGHT OPERATION**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Open sky refers to an agreement between two countries to allow any number of airlines to fly from either of them without any restriction on _____.

   (a) number of flights (b) number of destinations

   (c) number of seats (d) All

2. A solar equinox is a moment in time when the Sun crosses the _____.

   (a) Earth's equator (b) North hemisphere

   (c) South hemisphere (d) All

3. The origin of a clear way should be at the end of _____ available.

   (a) taxiway (b) take-off run

   (c) Run way run (d) all

4. The airport lighting rows should be in the interval of no more than _____.

(a) 40 meters (b) 50 meters

(c) 60 meters (d) all

5. Flight time of a flight crew shall not exceed _____.

(a) 30 hrs. in 7 consecutive days

(b) 125 hours during a period of 30 consecutive days

(c) 1000 hours during the preceding 12 months

(d) All

6. The purpose of landing slots is to help airports run _____.

(a) smoothly (b) efficiently

(c) effectively (d) all

7. Controllers monitor aircraft progress _____.

(a) issue route changes

(b) altitude adjustment instructions

(c) ensure safe traffic separation

(d) All

8. The flight release may be in any form but must contain at least the following information concerning each flight:

(a) Company or organization name

(b) Make, model, and registration number of the airplane being used

(c) Date of flight

(d) All

9. Aircraft load manifest is the document that list and describe the _____.

(a) cargo

(b) passengers

(c) weight and balance

(d) All

10. ETOPS are safety standards set by the _____.

(a) ICAO (b) IATA

(c) BCAS (d) All

**Part B** (5 × 5 = 25)

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

11. (a) Write short note on Impact of Poor Time Zone Awareness on Travel Plans.

Or

(b) What is Coordinated Universal Time and its mechanism?

12. (a) What do you understand the primary runways.

Or

(b) How does aircraft fuelling work? And its safety precautions.

13. (a) What are the conditions for split duty?

Or

(b) Discuss about the pilot cumulative duty limitations.

14. (a) Explain the trip fuel or fuel to destination.

Or

(b) List out and explain the key characteristics of jet route.

15. (a) Explain about the surface weather analysis chart.

Or

(b) Discuss about the ETOP's effects on modern aircraft.

**Part C** (5 × 8 = 40)

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

16. (a) How Time Zones Affect Flight Operations.

Or

(b) Briefly explain the economic geography?

17. (a) Describe the conditions for location and number of exit taxiways.

Or

(b) Explain about the parallel taxiway geometry.

18. (a) Discuss about the general conditions for all operation in related to the flight duty.

Or

(b) How landing slots works and its benefits.

19. (a) Discuss about the streamlined way point information.

Or

(b) What information is included on a flight release sheet?

20. (a) Describe the various items of contents in a flight plan.

Or

(b) How does PBN works, benefits and its components?

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**C–6750**

**Sub. Code**
**97253B**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**AIR REGULATIONS**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is NOT a key element of a bilateral agreement?

   (a) Traffic rights

   (b) Airport construction policies

   (c) Capacity

   (d) Tariff regulations

2. What is the main benefit of Open Sky Agreements?

   (a) Increases airline competition

   (b) Bans foreign airlines

   (c) Limits the number of international flights

   (d) Provides government subsidies to airlines

3. What is the main classification of airspace?

(a) Controlled and uncontrolled

(b) Domestic and international

(c) Public and private

(d) Military and civil

4. Which organization is responsible for FIR management?

(a) ICAO (b) IATA

(c) FAA (d) EASA

5. When was the Indian Aircraft Act passed?

(a) 1925 (b) 1934

(c) 1950 (d) 1995

6. Which organization investigates civil aviation accidents in India?

(a) DGCA (b) FAA

(c) NTSB (d) IATA

7. Which factor can affect a pilot's information processing capability?

(a) Workload (b) Stress

(c) Fatigue (d) All of the above

8. Which personality trait is most beneficial for pilots?

(a) Aggressiveness (b) Adaptability

(c) Impulsiveness (d) Arrogance

9. As per ICAO Annex 6, which document must an aircraft always carry?

(a) Flight Data Recorder

(b) Noise Certificate

(c) Certificate of Airworthiness

(d) Cargo Manifest

10. The purpose of an Emergency Locator Transmitter (ELT) is to:

(a) Transmit an emergency signal after an accident

(b) Provide real-time flight tracking

(c) Monitor cockpit conversations

(d) Help detect turbulence

## Part B (5 × 5 = 25)

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

11. (a) Discuss the importance of global conventions in ensuring aviation safety and security.

Or

(b) What are the functions of DGCA in India?

12. (a) Mention the primary objectives of Air Traffic Services (ATS).

Or

(b) Explain how control areas contribute to airspace organization.

13. (a) What is the purpose of national aviation laws?

Or

(b) Discuss any two major aviation accidents in history.

14. (a) Write short notes on decision making.

Or

(b) List common signs and symptoms of pilot fatigue.

15. (a) Explain the various emergency safety equipment used in aircrafts.

Or

(b) Discuss the challenges associated with conducting flight operations in low-visibility conditions.

## Part C

(5 × 8 = 40)

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

16. (a) Explain the freedom of air a set of aviation agreements in detail.

Or

(b) Explain the key provisions of the Tokyo, Montreal, and The Hague Conventions.

17. (a) What is the difference between a controlled and an uncontrolled airport?

Or

(b) Discuss the functions of Flight Information Services (FIS).

18. (a) Describe the standard procedures followed in aviation accident investigations.

Or

(b) Describe the significance of medical fitness regulations for airline crew.

19. (a) Differentiate between the cognitive and psychosocial approaches to understanding human error.

Or

(b) What are the factors affecting Human performance?

20. (a) Discuss in detail about the operational procedure requirements.

Or

(b) What are the communication and navigational requirement in ATC? List their purposes.

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| C–6751 |
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| 97253C |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**AIR TRAFFIC CONTROL**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Air traffic controllers use their skills and judgment to safely direct more than _____ flights daily to their destinations.

   (a) 70,000 (b) 50,000

   (c) 10,000 (d) All

2. ATC service is provided for the purpose of _____.

   (a) preventing collision

   (b) expediting the orderly flow of traffic

   (c) all

   (d) none

3. Area Control Service (ACC) is a service in aviation that manages aircraft flying between _____

   (a) departure (b) arrival airspaces

   (c) approach (d) all

4. A flight plan is a document that outlines an aircraft's intended _____

(a) route (b) flight path

(c) destination (d) all

5. ICAO Emergency Phases are _____

(a) Uncertainty phase (b) Alert phase

(c) Distress phase (d) All

6. The rules of air-radar service include using radar _____

(a) to track aircraft

(b) detect potential hazards

(c) help pilots navigate

(d) all

7. Take-off speed is the minimum speed at which the pilot is allowed to climb after attaining a height of _____

(a) 20 m (b) 10.7 m

(c) 15 m (d) All

8. The aerodrome data includes information about the _____

(a) aerodrome's physical characteristics

(b) safety-related equipment

(c) operation

(d) all

9. Visual aids for denoting obstacles include _____

(a) lights (b) bands,

(c) flags (d) All

10. Location signs are used to identify _____ either.

(a) taxiway (b) runway

(c) exit way (d) all

## Part B (5 × 5 = 25)

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

11. (a) What are the parts of ATC?

Or

(b) List out the restrictions for VFR Pilot.

12. (a) What does ACC do and how does it work?

Or

(b) What are the contents of clearance?

13. (a) Explain about the longitudinal separation methods.

Or

(b) Explain the key points of flight information alerting service.

14. (a) List out the factors affecting the length of the runway.

Or

(b) Write short note on reference code.

15. (a) How to exiting the runway after landing?

Or

(b) What is signal area and its importance?

## Part C (5 × 8 = 40)

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

16. (a) List out the ATC services.

Or

(b) How does VFR and IFR affect flying and how to choose whether to fly under VFR or IFR?

17. (a) Discuss about the separation methods and minima for vertical separation.

Or

(b) Explain the purposes of ATC clearances and its amendment of clearance.

18. (a) Discuss about the notification procedure for alerting service.

Or

(b) List out and explain the basic radar service to VFR aircraft.

19. (a) List out the factors considered for runway width.

Or

(b) Write short note on aerodrome reference code nomination.

20. (a) List out the factors for considering the aerodrome operator in relate to obstacle control process.

Or

(b) Explain about the take-off and landing procedures.

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| C–6752 |
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| 97254A |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**PUBLIC RELATIONSHIP IN THE AVIATION INDUSTRY**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is an important aspect of relationship marketing?

   (a) One-time sales focus

   (b) Ignoring customer feedback

   (c) Long-term customer engagement

   (d) Selling only through discounts

2. Why is pricing of services more complex than pricing goods?

   (a) Services are intangible and vary in quality

   (b) Services can be stored

   (c) Services have fixed costs

   (d) Services are always uniform

3. Which transport service is considered part of tourism marketing?

(a) Courier services

(b) Logistics transport

(c) Airlines and Railways

(d) Road construction companies

4. What is a major challenge in quality management for hospitality services?

(a) Service consistency and customer expectations

(b) Reducing the number of staff

(c) Increasing menu prices

(d) Advertising luxury hotels

5. What is a key aspect of PR in aviation security?

(a) Handling media in crisis situations

(b) Reducing passenger complaints

(c) Designing aircraft seats

(d) Promoting fuel efficiency

6. Why is neutrality important in aviation PR?

(a) To increase ticket sales

(b) To ensure fair and unbiased communication

(c) To reduce government oversight

(d) To eliminate customer complaints

7. What is the role of PR during a crisis at an airport?

(a) Hiding information from passengers

(b) Communicating transparently with the public

(c) Focusing only on internal operations

(d) Cancelling flights immediately

8. What is a crucial part of media handling during a PR crisis?

(a) Delaying responses

(b) Providing accurate and timely information

(c) Avoiding media interaction

(d) Ignoring negative press

9. Which of the following is a key element in PR strategy?

(a) Avoiding communication

(b) Ignoring brand image

(c) Building relationships with stakeholders

(d) Avoiding customer feedback

10. What is the main role of PR evaluation?

(a) Identifying and improving communication efforts

(b) Measuring the success of PR campaigns

(c) Reducing PR budget

(d) Avoiding media coverage

## Part B (5 × 5 = 25)

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

11. (a) Describe the types and the importance of Services.

Or

(b) Enumerate the scope of Relationship Marketing.

12. (a) List out the role of service industry in tourism.

Or

(b) List out the role of hotel industry in tourism.

13. (a) What is electronic media in aviation industry? Explain.

Or

(b) Identify security requisites for a successful Public Relation airport manager.

14. (a) How can a public relation officer prepare for a crisis at the airport?

Or

(b) What is crisis? Crisis is inevitable but it can be managed. Explain.

15. (a) Explain the various alternatives and choices of communication in aviation industry.

Or

(b) Briefly explain the following terms:

(i) Persuasion

(ii) Dialogue.

## Part C

(5 × 8 = 40)

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

16. (a) Explain about the promoting and distributing services.

Or

(b) Explain marketing mix decisions.

17. (a) Explain the bases of segmentation for Indian Railway system.

Or

(b) Analyze the role of airlines, railways, and passenger transport in shaping the tourism industry.

18. (a) What are the various types and roles of media handling?

Or

(b) Discuss the key issues in Public Relations (PR) for airport and air operators.

19. (a) What are the key challenges in defining PR problems during an airport crisis?

Or

(b) Evaluate the effectiveness of various media channels in crisis communication at airports.

20. (a) Explain the strategies for successful Public Relation personnel in an organization.

Or

(b) Explain the importance of PR planning and prioritization in achieving organizational goals.

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| 97254B |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**LOGISTICS AND AIR CARGO MANAGEMENT**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is NOT a function of a logistics channel?

   (a) Transportation

   (b) Warehousing

   (c) Production planning

   (d) Order processing

2. JIT inventory management relies heavily on:

   (a) Accurate demand forecasting

   (b) Large safety stocks

   (c) High carrying costs

   (d) Slow supplier response time

3. What is the primary goal of deregulation in the transportation sector?

(a) Increase government control

(b) Reduce competition among transport providers

(c) Enhance efficiency and lower costs

(d) Increase restrictions on transport companies

4. Which of the following is an example of alternative warehousing?

(a) Public warehouse

(b) Private warehouse

(c) On-demand warehousing

(d) Cold storage warehouse

5. Which of the following is a key challenge in global supply chain management?

(a) Reduced transportation costs

(b) Currency exchange rate fluctuations

(c) Limited market expansion opportunities

(d) Decreased customer expectations

6. Which of the following is a key challenge in strategy implementation?

(a) Identifying business opportunities

(b) Lack of leadership support

(c) Conducting market analysis

(d) Setting long-term objectives

7. Which of the following is a key factor measured by SLI?

(a) Warehouse rental cost

(b) On-time delivery performance

(c) Number of employees in a warehouse

(d) Marketing expenses

8. Which of the following is an example of perishable cargo?

(a) Electronics

(b) Machinery parts

(c) Furniture

(d) Fresh vegetables

9. What is the main advantage of dedicated cargo carriers over passenger airlines carrying cargo?

(a) They only transport passengers

(b) They have fewer customs regulations

(c) They operate only on weekends

(d) They can carry larger and heavier shipments

10. Which of the following technologies is transforming real-time cargo tracking?

(a) Block chain and IoT

(b) Manual paperwork

(c) Traditional barcodes only

(d) Fax machines

## Part B (5 × 5 = 25)

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

11. (a) Discuss the key objectives of a logistics channel.

Or

(b) What are the key inputs required for Material Requirements Planning (MRP)?

12. (a) Why is a Transportation Management System (TMS) important in logistics?

Or

(b) Can you explain the four fundamental cost components involved in transportation?

13. (a) How do the roles of Quality Assurance and Quality Control differ in a production environment?

Or

(b) How does strategy implementation differ from strategy formulation?

14. (a) Differentiate between general cargo and special cargo.

Or

(b) How demand and currency rate affect the freight rate in air cargo industry?

15. (a) What are the key procedures involved in aircraft handling with cargo?

Or

(b) What essential facilities and equipment are required in a cargo terminal?

**Part C** (5 × 8 = 40)

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

16. (a) Explain the role of global logistics in international trade.

Or

(b) Explain the major environmental issues caused by logistics operations.

17. (a) What role does packaging play in supply chain management?

Or

(b) Explain the key technology trends shaping the future of material handling.

18. (a) Explain the common documents used for transport in global supply chain management.

Or

(b) How can logistics performance be improved?

19. (a) Explain the various industry regulations in air cargo.

Or

(b) What is Air way bill? Explain its purpose and validation.

20. (a) Discuss the steps involved in Airport Cargo activity.

Or

(b) Explain the Emerging Trends in cargo operations.

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**C–6754**

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| 97254C |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**AIRPORT PLANNING**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Dynamic strategic planning is the approach recommended for _____

   (a) Airport development

   (b) Airline development

   (c) ATC development

   (d) All

2. The unreliability of forecasts has well documented for a _____

   (a) Long time (b) Short time

   (c) Medium time (d) All

3. Significant obstacles on and in the vicinity of the water aerodrome _____

   (a) Location

   (b) Top elevation to the nearest (next higher) foot

   (c) Type

   (d) All

4. An "approach area" in airport site selection refers to the airspace surrounding a potential airport site that is crucial for aircraft to _____

(a) Safely descend

(b) Land,

(c) Essentially the flight path leading up to the runway

(d) All

5. The construction of runways in more than one direction is usually motivated by the requirement to provide adequate coverage for

(a) Crosswinds (b) Head wind

(c) Tail wind (d) All

6. The ICAO specifies that a runway should not be used if the cross-wind component exceeds _____

(a) 19 km/h (b) 24 km/h

(c) 37 km/h (d) All

7. Airport passenger buildings serve the many needs of different types of users They process _____

(a) Check-in and baggage for arriving

(b) Departing travellers,

(c) Move transfer passengers between flights

(d) All

8. Boarding passes" either downloaded to their _____

(a) Mobile device (b) Preprinted at home

(c) Office (d) All

9. Aircraft noise potential impacts include _____

(a) Sleep disturbance

(b) Stress related health effects

(c) Mental health effects

(d) All

10. Ground operations that minimize noise include _____

(a) Taxing with one engine turned off

(b) Extended towing of taxing aircraft by ground vehicles;

(c) APU usage

(d) All

**Part B** (5 × 5 = 25)

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

11. (a) Write short note on airport master plan.

Or

(b) What do you understand the concept of aggregate forecast?

12. (a) Explain about the lighting of movement area on water aerodrome.

Or

(b) List out the characteristics of soil for airport site selection.

13. (a) List out the four declared distances are defined in ICAO.

Or

(b) Write the obstacle limitation surfaces defined by the ICAO.

14. (a) List out the five configurations of airport passengers building.

Or

(b) Write down the three factors for desirability of configuration of passengers building and which one best.

15. (a) Write down the balanced approach for aircraft noise management as per ICAO recommendations.

Or

(b) Write down short note on noise charges in airport.

**Part C** (5 × 8 = 40)

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

16. (a) Describe about the concept of dynamic strategic planning of airport.

Or

(b) Elaborate the difficulties in developing multi airport system.

17. (a) Explain the shore facilities of water aerodrome.

Or

(b) List out the factors for the selection of a suitable site for airport.

18. (a) Explain the taxiway system of an airport.

Or

(b) Discuss about the separation requirements for aircraft operating to/from parallel runways.

19. (a) List out the special considerations in the design of passenger buildings in terms of passenger perspective.

Or

(b) Describe an airport queuing system.

20. (a) Explain about the noise abatement operation procedures in airport.

Or

(b) Discuss about the environmental impact assessment in airport.

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**C–6755**

**Sub. Code**
**97255A**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**PRINCIPLES OF ROTORCRAFT**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. What is the primary function of the main rotor in a helicopter?

   (a) Provide forward thrust

   (b) Stabilize the helicopter in flight

   (c) Generate lift and control movement

   (d) Reduce aerodynamic drag

2. Blade flapping in helicopters is primarily a response to:

   (a) Dissymmetry of lift

   (b) Changes in engine power

   (c) Airspeed variation

   (d) Rotor drag forces

3. What is the primary benefit of ground effect in helicopters?

(a) Reduction in induced drag and increased lift efficiency

(b) Higher fuel consumption

(c) Increased rotor blade stall

(d) Increased power requirement

4. Power loading in a helicopter is defined as:

(a) Ratio of power available to weight

(b) Rotor speed divided by altitude

(c) The weight of the aircraft divided by blade area

(d) The engine thrust-to-weight ratio

5. Which of the following engine types is most commonly used in modem helicopters?

(a) Ramjet

(b) Gas turbine

(c) Piston engine

(d) Turbojet

6. Autorotation in a helicopter is required during:

(a) Engine failure

(b) Takeoff

(c) Cruise flight

(d) Normal landing

7. What is the function of damping in helicopter stability?

(a) Increase engine efficiency

(b) Reduce oscillations and stabilize flight dynamics

(c) Improve rotor blade flexibility

(d) Minimize ground effect

8. Which factor has the most significant effect on longitudinal stability?

(a) Center of gravity (CG) location

(b) Landing gear placement

(c) Number of rotor blades

(d) Tail boom length

9. What type of vibration absorber is commonly used in helicopters?

(a) Tuned mass dampers

(b) Rubber bushings

(c) Hydraulic pumps

(d) Gyroscopes dampers

10. Which factor is the most important consideration when selecting an airfoil for a helicopter blade?

(a) Lift-to-drag ratio

(b) Blade material

(c) Engine power output

(d) Fuel efficiency

## Part B (5 × 5 = 25)

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

11. (a) Explain Power Losses and Rotor Efficiency in detail.

Or

(b) Explain the importance of the Tail Rotor System of Helicopter.

12. (a) Explain about power losses due to Blade Stall.

Or

(b) Write short notes on conditions for maximum lift of helicopter.

13. (a) Explain about state of Autorotation of Helicopter in Still Air.

Or

(b) Define about the range and endurance and importance of it.

14. (a) Compare lateral stability and longitudinal stability in a helicopter.

Or

(b) What is the difference between stability and control of airplane and helicopter?

15. (a) Explain the properties of Vibrating Systems.

Or

(b) What is flapping motion in helicopter rotor blades, and why does it occur?

## Part C

$(5 \times 8 = 40)$

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

16. (a) Describe the power transmission system in a helicopter, including the drive to the main and tail rotors.

Or

(b) Examine the factors that influence rotor blade loading and its effect on flight performance.

17. (a) Describe the phenomenon of hovering and the factors affecting its efficiency.

Or

(b) Analyze the high-speed limitations of helicopters and their causes.

18. (a) Discuss the comparative performance of different helicopter engine types.

Or

(b) Discuss the role of Automatic Flight Control Systems (AFCS) in helicopters.

19. (a) Describe the importance of pitch and roll damping in maintaining helicopter stability.

Or

(b) Explain stick-fixed longitudinal dynamic stability in helicopters.

20. (a) Discuss the phenomenon of vibrations in helicopters and their sources.

Or

(b) Analyze the different types of blade motions: flapping, lagging, and feathering.

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| 97255B |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**PISTON ENGINE AND PROPELLER**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. Which cycle is used in most aircraft piston engines?

   (a) Diesel cycle

   (b) Otto cycle

   (c) Dual cycle

   (d) Carnot cycle

2. The engine firing order is designed to:

   (a) Reduce cooling requirements

   (b) Improve fuel efficiency

   (c) Minimize vibration and balance the engine

   (d) Increase power output

3. What is the function of the crankshaft in a piston engine?

(a) Convert reciprocating motion to rotary motion

(b) Provide cooling to the cylinders

(c) Control fuel flow

(d) Reduce engine vibrations

4. Which type of engine cooling system is commonly used in aircraft piston engines?

(a) Water cooling

(b) Air cooling

(c) Oil cooling

(d) Evaporative cooling

5. What is the main function of a float-type carburetor in an aircraft engine?

(a) Maintain a constant fuel-air mixture ratio

(b) Store excess fuel

(c) Reduce engine vibrations

(d) Control the exhaust gases

6. Which characteristic is essential for aviation lubricating oil?

(a) High volatility

(b) High viscosity index

(c) Low density

(d) High freezing point

7. What is the primary function of an aircraft magneto ignition system?

(a) Store electrical energy

(b) Generate high-voltage electricity

(c) Improve engine cooling

(d) Reduce noise during engine start without a battery

8. What is the purpose of ignition shielding in aircraft ignition systems?

(a) Improve spark plug efficiency

(b) Prevent radio interference

(c) Increase magneto power output

(d) Reduce fuel consumption

9. Which force acts perpendicular to the plane of rotation of a propeller?

(a) Drag

(b) Thrust

(c) Centrifugal force

(d) Torque

10. Which type of propeller maintains an optimal blade angle automatically?

(a) Fixed-pitch propeller

(b) Variable-pitch propeller

(c) Wooden propeller

(d) Metal propeller

## Part B (5 × 5 = 25)

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

11. (a) Explain the significance of stroke length in a four-stroke engine.

Or

(b) Discuss the impact of compression ratio on engine thermal efficiency.

12. (a) Describe the function of the accessory section in a piston engine.

Or

(b) Explain the working principle of propeller reduction gears.

13. (a) Discuss the principle of operation of a hydromechanical fuel control system.

Or

(b) Explain the maintenance procedure for a float-type carburetor.

14. (a) Describe the function and operation of capacitor-type ignition systems.

Or

(b) Explain the magneto timing procedure and its importance.

15. (a) Explain the forces acting on a propeller in flight.

Or

(b) Describe the operation of a constant-speed propeller and its advantages.

## Part C (5 × 8 = 40)

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

16. (a) Explain about the principles of valve timing and port timing.

Or

(b) Discuss engine performance parameters and methods for power calculation.

17. (a) Explain the construction and working of the crankshaft, connecting rod and propeller shaft.

Or

(b) Discuss the different types of cooling systems used in aircraft piston engines.

18. (a) Explain in detail the operation and function of a hydromechanical/electronic fuel control system.

Or

(b) Discuss the properties, classification and importance of lubricating oil in aircraft engines.

19. (a) Describe the various types of ignition systems used in aircraft piston engines and their working principles.

Or

(b) Explain the function, construction, and maintenance of spark plugs in aircraft engines.

20. (a) Discuss the different types of propellers and their applications in aviation.

Or

(b) Explain the propeller pitch-changing mechanism and its effect on aircraft performance.

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**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**TURBINE ENGINE**

**(2023 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 1 = 10)

Answer **all** questions.

1. For every force acting on a body, there is an equal and opposite reaction _____

   (a) Newton I$^{st}$ law (b) Newton II$^{nd}$ Law

   (c) Newton III$^{rd}$ law (d) All

2. The working cycles of the gas turbine is _____

   (a) Otto Cycle (b) Diesel cycle

   (c) Brayton cycle (d) All

3. The air inlet is usually _____ in a subsonic intake.

   (a) Convergent

   (b) Divergent

   (c) Convergent-Divergent

   (d) All

4. Variable inlet guide vanes (VIGVs) are fitted to engines which have a particular problem with inherent compressor stall at _____

(a) Low rpm

(b) During engine acceleration

(c) Deceleration

(d) All

5. Jet A1 type of fuel with a normal temperature at _____

(a) 20°C (b) 15°C

(c) 10°C (d) All

6. In gas turbine engine systems, the fuel is passed through a _____

(a) Heat exchanger

(b) Fuel heater

(c) Water trap

(d) All

7. The filters however are at _____ regular intervals to examine any debris collected and evaluate the wear rate of the engine.

(a) Removed (b) Washed out

(c) Refitted (d) All

8. The torque meter pump is used to boost engine to a much greater figure

(a) Oil pressure (b) Oil temperature

(c) Oil viscosity (d) All

9. All gas turbine engines have a dual ignition system fitted and they all use _____

(a) High energy

(b) Low energy

(c) Medium energy

(d) All units for engine starting

10. Automatic ignition is a feature of some aircraft and is typically activated by the _____

(a) Aircraft stall warning system

(b) Fire warning

(c) icing warning

(d) All

**Part B** (5 × 5 = 25)

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

11. (a) Write short note on the temperature limit of the gas turbine engine.

Or

(b) What are the advantages and disadvantages of ramjet engine?

12. (a) List out various types of air inlet.

Or

(b) Write the methods of prevention of compressor stall or surge.

13. (a) List out the main requirements for ideal fuel for gas turbine engine.

Or

(b) What are the advantages of FADEC system?

14. (a) Write short note on oil cooler in engine oil system.

Or

(b) List out the reasons for lubrication of aircraft engine system.

15. (a) Write short note on igniter plug.

Or

(b) List out the requirements of a engine starting system.

**Part C** (5 × 8 = 40)

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

16. (a) Describe about the any one method of thrust augmentation.

Or

(b) Briefly explain about the principle of jet propulsion.

17. (a) List out and explain the operational considerations for the design of air intake.

Or

(b) Explain the task of the turbine assembly and the stresses on the turbine.

18. (a) Briefly explain about the high-pressure fuel system with neat diagram.

Or

(b) Explain the fuel control unit of large size of aircraft.

19. (a) Explain about the gas turbine lubrication system of aircraft.

Or

(b) Describe the types of lubricating oils and its importance.

20. (a) Explain about the typical high energy ignition unit in aircraft engine.

Or

(b) Describe about the typical electric starter motor used in transport aircraft.

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| C–6759 |
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| 97252 |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**AIRCRAFT SYSTEM AND INSTRUMENTS**

**(2019 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 2 = 20)

Answer **all** the questions.

1. What do you understand the multidisc brake system?

2. What are the basic components of oleo-pneumatic strut?

3. Write the purpose of fairlead in conventional flight control system?

4. Write the three types of auto pilot system.

5. Write the significance of Aviation fuel Jet-A1.

6. What is the purpose of magnetic plug detector?

7. Define anoxia.

8. What is de-icing and anti-icing system?

9. What is attitude indicator?

10. What is the difference between altimeter and accelerometer?

## Part B (5 × 5 = 25)

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

11. (a) Write the working principle of retractable landing gear.

Or

(b) List out the application of low- and high- pressure pneumatic system.

12. (a) Explain about the power assisted control system.

Or

(b) Write short note on active control technology.

13. (a) List out the basic components of multi engine fuel system.

Or

(b) Write short note on gas turbine ignition unit.

14. (a) What do you understand the chemical oxygen generator?

Or

(b) Explain the pneumatic de-icing system.

15. (a) Write the basic components and principle of Machmeter?

Or

(b) What are the temperature gauges used in aircraft?

## Part C

(3 × 10 = 30)

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

16. (a) Explain the braking system used in multi-engine aircraft with neat diagram.

Or

(b) Briefly explain about the digital fly by wire system.

17. (a) Describe about the air and electrical starter used in transport aircraft.

Or

(b) With neat sketch, explain the gravity feed fuel system of an aircraft.

18. (a) Explain the aircraft fire protection system.

Or

(b) Write short note on navigation instruments.

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**C–6761**

**Sub. Code**
**97254**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**RADIO AIDS & INSTRUMENTS**

**(2019 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 2 = 20)

Answer **all** questions.

1. What down the properties of radio waves?

2. What is polar diagram?

3. Classify the frequency band.

4. What is Multi-Hop Refraction?

5. What is the possible range of VLF communication station?

6. What are the functions of radio transmitter?

7. When must a VOR accuracy test be performed?

8. What is the function of DME?

9. What is the nature of a radar signal?

10. Define Radar altimeter.

## Part B (5 × 5 = 25)

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

11. (a) Briefly explain the relationship between wavelength and frequency.

Or

(b) Explain with the block diagram of radio receiver.

12. (a) Explain about Sky Waves and Ground Waves.

Or

(b) Explain about Attenuation of Radio Waves in the Ionosphere.

13. (a) Describe a typical VHF communication transceiver used in light aircraft.

Or

(b) Explain about LF Radio Waves and their Characteristics.

14. (a) Explain in briefly about glide slope with necessary diagram.

Or

(b) Explain the working of NDB/ADF System.

15. (a) Describe the operation of a plan position indicator.

Or

(b) What is Airborne Weather Radar and Explain in detail about it.

## Part C

(3 × 10 = 30)

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

16. (a) Explain in detail about Phase Modulation.

Or

(b) Explain the principles unit of analog radar system with block diagram.

17. (a) Describe installation of radio equipment.

Or

(b) What is Secondary Surveillance RADAR? Explain in detail about it.

18. (a) Explain the weather radar frequencies.

Or

(b) Elaborate on the impact of radio waves in the environment.

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**C–6762**

**Sub. Code**
**97255**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Aviation**

**TOTAL QUALITY MANAGEMENT**

**(2019 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 2 = 20)

Answer **all** questions.

1. What are the major benefits of TQM?

2. What do you mean by service quality?

3. What is the use of Performance Appraisal?

4. List the five elements of 5 'S'.

5. Describe the evolution of six sigma in Motorola company

6. Explain the stages of FMEA.

7. What is the essential feature of Total Productive Maintenance?

8. What are the eight pillars of TPM?

9. What are the general requirements of Quality Management System?

10. Draw the Documentation Pyramid.

## Part B (5 × 5 = 25)

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

11. (a) What are the barriers for TQM implementation and how are they overcome?

Or

(b) What is Service Quality? Explain its various elements towards Customer Satisfaction.

12. (a) Write short note on seven steps of strategic planning cycle.

Or

(b) Write a note on Quality Planning.

13. (a) Explain bench marking and its steps with an example.

Or

(b) What are the types of FMEA?

14. (a) What are the five goals of TPM?

Or

(b) Briefly explain the steps involved in QFD.

15. (a) Discuss the benefits of ISO 9000 certification.

Or

(b) Explain the features and procedures to obtain ISO 14000 Environmental certification.

## Part C

(3 × 10 = 30)

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

16. (a) What is 5S? Explain all the elements of 5S principle in detail

Or

(b) Define Deming philosophy and fourteen points for improvement of Quality Management.

17. (a) Explain Bench Marking and its steps with an example.

Or

(b) What is the role of supplier partnership?

18. (a) Explain the failure mode and effect analysis (FMEA) and its types with an example.

Or

(b) Explain Six Sigma concepts with an example.

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**C–6763**

| Sub. Code |
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| 97261 |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Sixth Semester**

**Aviation**

**FLIGHT OPERATION**

**(2019 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 2 = 20)

Answer **all** questions.

1. What are the roles of ATC?

2. What is meant by navigation log?

3. Define ATR.

4. What is overfly permission?

5. Define Overfly permission.

6. Explain about flight dispatching.

7. What are flight plan exercises?

8. Give some specifications of airbus a320.

9. What is AIP?

10. Explain about FBO.

## Part B (5 × 5 = 25)

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

11. (a) Explain the operation limitations of an aircraft.

Or

(b) What is Crew Briefing and Flight Release Sheets?

12. (a) Brief about the training program in flight operation.

Or

(b) What are Flight Crew Standards followed by the DGCA?

13. (a) Explain computerised flight plan in detail.

Or

(b) Explain about Revenue and Yield Management.

14. (a) Write short notes on:

(i) Landing slot arrangement,

(ii) Landing permission.

Or

(b) Discuss about navigation flight planning.

15. (a) Explain about the Specifications of ATR.

Or

(b) Explain about methods of Flight Planning.

## Part C

(3 × 10 = 30)

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

16. (a) What is NOTAM? Explain in detail.

Or

(b) Give the specifications of :

(i) Airbus A320

(ii) Cessna type of Aircrafts.

17. (a) Explain in detail about flight duty time limitations.

Or

(b) Explain about Crew Scheduling in detail.

18. (a) Brief about:

(i) PBN

(ii) ETOPS

(iii) RNP

(iv) RNAV.

Or

(b) Explain about Flight Plan exercises using performance data.

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| C–6764 |
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| Sub. Code |
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| 97262 |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Sixth Semester**

**Aviation**

**PRINCIPLES OF ROTORCRAFTS**

**(2019 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 2 = 20)

Answer **all** questions.

1. What is the primary function of the tail rotor on a helicopter?

2. How does the angle of attack of the rotor blades affect lift generation?

3. Discuss the Vortex Ring State (VRS) in helicopter flight.

4. How is the maximum lift of a helicopter determined?

5. What factors affect the gross weight of a jet helicopter?

6. Describe the concept of autorotation in helicopter flight.

7. Explain stick-fixed lateral dynamic stability in helicopters.

8. Discuss the longitudinal stability characteristics of helicopters.

9. Discuss the properties of vibrating systems and how they apply to helicopter rotors.

10. Explain the phenomenon of vibration in helicopter rotors and its impact on the fuselage.

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

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

11. (a) Describe the function and design considerations of the tail rotor in a helicopter.

Or

(b) Discuss the power plant options for helicopters and their impact on performance.

12. (a) Discuss the phenomenon of blade stall and its implications for helicopter safety.

Or

(b) Explain how the maximum lift of a helicopter is determined and factors that influence it.

13. (a) Discuss the rate of climb in helicopters and factors that affect it.

Or

(b) Explain the concept of best climbing speed in helicopters and its significance.

14. (a) Discuss the lateral stability characteristics of helicopters and how they are achieved.

Or

(b) Compare and contrast the stability and control of airplanes and helicopters.

15. (a) Describe the feathering motion of rotor blades and its effects on vibration.

Or

(b) Discuss the properties of vibrating systems and how they apply to helicopter rotors.

**Part C** (3 × 10 = 30)

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

16. (a) Explain the concept of blade loading and its effects on rotor performance and efficiency.

Or

(b) Discuss the phenomenon of blade stall and its implications for helicopter safety, including how it can be detected and prevented?

17. (a) Discuss factors that affect the gross weight of a jet helicopter and how they impact performance, including methods to optimize gross weight.

Or

(b) Explain the concept of control response in helicopters and factors that influence it, including how it is managed through control systems.

18. (a) Discuss the properties of vibrating systems and how they apply to helicopter rotors, including methods to improve rotor system damping.

Or

(b) Explain the concept of power loading in helicopters and its implications for flight performance, including methods to improve power loading.

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| C–6765 |
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| Sub. Code |
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| 97263 |

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Sixth Semester**

**Aviation**

**PERSONALITY DEVELOPMENT**

**(2019 onwards)**

Duration : 3 Hours Maximum : 75 Marks

**Part A** (10 × 2 = 20)

Answer **all** questions.

1. Explain the importance of listening in family relationships.

2. Explain the importance of communication at work place.

3. Define the term “Empathy”.

4. Define the term “Emotional intelligence”.

5. Differentiate between a leader and a boss.

6. List any two qualities of an effective leader.

7. List any two skills that help in interviews.

8. Explain the importance of follow-up after an interview.

9. Differentiate between group discussion and debate.

10. List two skills required to make a positive impression during a job interview.

## Part B (5 × 5 = 25)

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

11. (a) Explain with the help of an example in your life where long time listening has helped you to provide solution to the problem.

Or

(b) Explain the importance of communication in family relationships with the help of an example.

12. (a) Discuss the importance of Emotional competency at work place.

Or

(b) Write short notes on basics methods to improve creativity.

13. (a) Write short notes on various management skills required at workplace.

Or

(b) Discuss the importance of motivation at the workplace.

14. (a) Write short notes on various rules of interviewing.

Or

(b) Describe the effect of illegal questions asked during an interview.

15. (a) Explain about grooming and personal appearance preferred for landing the job.

Or

(b) Discuss the importance of interview training and mock interviews.

## Part C

(3 × 10 = 30)

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

16. (a) Explain about the various barriers of listening.

Or

(b) Discuss the observation, listening and communication at the work place.

17. (a) Show the resume required for the job of "Airport Operations Coordinator". Mention the skills required for the job role and explain why.

Or

(b) Explain the importance of presentation and seminars. Mention the various presentation skills required for landing the job.

18. (a) Discuss about various leadership skills required for the role of Manager in Aviation Industry.

Or

(b) Describe about the various time management skills required at the work place and what are the common time wasters at the work place.

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