C–1923	Sub. Code 97223

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Second Semester

Aviation

AIR REGULATIONS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Open Sky Policy?

2. What is Human Overload and under load?

3. What are the objectives of ATS?

4. What do you understand about Stress Management?

5. Expand:
   (a) DGCA
   (b) ICAO
   (c) IATA
   (d) AAI
   (e) MCA
   (f) BCAS

6. What do you mean by Operator Certification?

7. List out few safety equipment necessary for operational requirement in Aviation.

8. What is the difference between an incident and accident?

9. Write about Cockpit Management.

10. Define Airspace, Control Zone and Control Areas.

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

Answer **all** questions.

11. (a) Explain in detail about the DGCA organizational structure.

Or

(b) Write short notes on Indian Aircraft Act 1934 and Indian Aircraft Rules 1937.

12. (a) Explain in detail about:

(i) Controlled Airport

(ii) Uncontrolled Airport

Or

(b) What are the factors affecting Human performance?

13. (a) Write shorts on Visual Flight Rules (VFR) and Instrument Flight Rules (IFR).

Or

(b) Write short notes on Fatigue and stress management.

14. (a) Explain in detail about the specification of Flight Information Region.

Or

(b) What are the factors affecting performance of a person?

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

Or

(b) What are the powers of commander of aircraft under the Tokyo conventions?

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain the following:

(i) Personality and Attitude

(ii) Decision making

(iii) Avoiding and managing errors.

Or

(b) Explain briefly on all Freedoms of Air.

17. (a) Explain in detail on the contents of clearances and Flight Information Services provided by the Air Traffic Control.

Or

(b) Explain in detail about the roles and responsibilities of DGCA.

18. (a) Discuss in detail about All Weather Operations Requirements.

Or

(b) What are the factors affecting Human performance?

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C–1924	Sub. Code 97224

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Second Semester

Aviation

AIRCRAFT AND ENGINE (GENERAL)

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Air Balloon.

2. Define aerodynamics.

3. Define Glider.

4. What is the purpose of Horizontal Stabilizer?

5. Define Atmosphere.

6. Define Mach Number.

7. What is the purpose of propeller in Aircraft?

8. Differentiate Rocket and Aircraft.

9. What is called Factor of Safety?

10. Define Stress.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain in brief about Ornithopter.

Or

(b) Explain about the first successful flight made by Wright Bros.

12. (a) With neat sketch explain the components of an Airplane.

Or

(b) Explain the basic flight instruments required for flying.

13. (a) Explain the relation between Temperature, Pressure and Altitude.

Or

(b) Explain in brief about Newton's three Laws of Motion.

14. (a) Give a brief note about the application of Rockets.

Or

(b) How does a piston engine function? Explain.

15. (a) Explain the relation between stress and strain for different types of materials with graph.

Or

(b) Explain the contribution of composite materials in aircraft.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Narrate in detail about the developments made in Aerodynamics, Structures and Propulsion over the years.

Or

(b) Explain the different types of Aircraft in detail.

17. (a) Define ISA and Explain the five layers of Atmosphere.

Or

(b) Explain the working of Gas Turbine Engine and its types.

18. (a) Explain in detail about the evolution of construction of Aircraft Fuselage.

Or

(b) A steel rod 4 m long and 20 mm diameter is subjected to an axial tensile load of 40 KN. Find change in length, change in volume and change in diameter of the rod. Take E = 2 × 105 N/mm2 and poissions ratio is 0.25.

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C–1925	Sub. Code 97232

B.Sc. DEGREE EXAMINATION, APRIL 2024

Third Semester

Aviation

COMPUTER APPLICATIONS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. List down the advantages of LINUX.

2. List out the characteristics of Computer.

3. What is an ISP (Internet Service Provider)?

4. How will you create a new word document and save the document in MS-word?

5. What are the palettes available in Photoshop?

6. Define Multimedia.

7. Differentiate static RAM and dynamic RAM.

8. What is a memory card reader?

9. Define transmission medium.

10. Write about WAN.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the characteristics of computer.

Or

(b) Write in detail the shutdown menu of computer.

12. (a) Explain the four status bar modes in MS-Excel.

Or

(b) Explain in detail the components of an e-mail.

13. (a) Explain the concepts of red eye removal and hot spot removal in Photoshop.

Or

(b) Write in detail about the tools that add 3-Dimensinal effects to objects in Coral Draw.

14. (a) Explain the components of a CPU in detail.

Or

(b) What is a Scanner? How to set up a scanner and scan a document?

15. (a) Explain the different types of computer Networks.

Or

(b) Write about the components: switches, bridges, routers.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Classify and explain the computers, based on size, purpose and mechanism.

Or

(b) Explain in detail the common cyber attacks of e-mail.

17. (a) Write the different types of tools used in Photoshop in detail.

Or

(b) What is a Motherboard? Explain the different types of motherboards in detail.

18. (a) Write in detail the different types of Network topologies.

Or

(b) Write in detail about the different types of cables used to connect computer parts.

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C–1926

Sub. Code
97233

B.Sc. DEGREE EXAMINATION, APRIL 2024

Third Semester

Aviation

AVIATION WEATHER AND METEROLOGY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is significance of the prime meridian?
2. What is physical geography?
3. What is a weather hazard?
4. What is the Coriolis Effect?
5. What is isothermal layer?
6. What is altimetry?
7. What is land friction layer?
8. What is convergence?
9. What is SIGMET?
10. What is SPECI?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain in brief about the Troposphere.

Or

(b) Explain about objectives of aviation weather.

12. (a) What is Microburst? What are the effects of Microburst?

Or

(b) Explain in brief the formation of clear ice.

13. (a) Explain in brief the working of a bi-metallic thermometer.

Or

(b) Explain the variation of pressure with altitude with the help of a diagram.

14. (a) Explain in brief about level of clouds.

Or

(b) Explain about

(i) Convergence

(ii) Divergence

15. (a) Explain about the SIGMIET.

Or

(b) What are Surface Weather Observations?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the detail notes on thunderstorms in weather hazard.

Or

(b) Explain in detail

(i) Thermosphere

(ii) Mesosphere

17. (a) Discuss on the meteorology satellite and satellite cloud imageries.

Or

(b) Explain about the variation of temperature with altitude.

18. (a) Explain in detail

(i) Anabatic wind

(ii) Katabatic wind

Or

(b) What is METAR? List the contents of a METAR Report.

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C–1927	Sub. Code 97234

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Third Semester

Aviation

FLIGHT SAFETY AND SUPPORT SYSTEM

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What you understand by Towing?

2. Explain about aircraft cleaning.

3. Explain about Firefighting as a safety measure for aircrafts.

4. What is a control tower?

5. What is electrical power supply equipment?

6. What are hoisting cranes used for?

7. Explain about symmetrical checks in rigging of aircrafts.

8. What is duplicate inspection?

9. What is a shock strut in a landing gear?

10. Explain about the inspection of Tyres of aircrafts.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write notes on Aircraft Cleaning.

Or

(b) Describe the helicopter securing procedure.

12. (a) Explain about clear zone layout and approach zones in detail.

Or

(b) Explain Airport Lightings with neat sketch.

13. (a) Describe about ground support Air Start Unit.

Or

(b) What are the equipments used in maintenance of aircrafts?

14. (a) Explain the rigging of control surfaces.

Or

(b) Explain the balance check of flying control surface.

15. (a) Explain the maintenance of landing gear brakes in detail.

Or

(b) Explain the phenomenon of shock strut charging.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain about aircraft jacking procedure in detail.

Or

(b) Describe the precautions to be observed against wind storm damage.

17. (a) Explain in detail about the safety procedures followed at airports and what are dispersal areas.

Or

(b) Explain about Aircraft rescue and fire fighting in detail.

18. (a) Explain about maintenance of landing gears in detail.

Or

(b) Explain the inspection and maintenance of brake assembly.

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C–1928

Sub. Code
97235

B.Sc. DEGREE EXAMINATION, APRIL 2024

Third Semester

Aviation

YOGA FOR HUMAN EXCELLENCE

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is meant by misconception of yoga?

2. Write any two aims of yoga.

3. Define karma yoga.

4. Write any five limbs of yoga.

5. What is meant by logic practices?

6. Write any two importance of yoga in physical Education.

7. Define asanas.

8. List down the types of Pranayama.

9. What is meant by school of meditation?

10. Write any two benefits of Tamil Siddha meditation.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write in detail about the Thirumoolar thirumandhiram.

Or

(b) Narrate the misconceptions of yoga.

12. (a) List down the paths of yoga and explain any two in detail.

Or

(b) Write in detail about any four limbs of yoga.

13. (a) Narrate some of the teaching techniques of yoga in this pandemic situation.

Or

(b) Narrate the application of yoga in physical education.

14. (a) Discuss about the methods and uses of kriyas.

Or

(b) List down the types of Pranayama and explain any two with examples.

15. (a) Write in detail about the benefits of meditation.

Or

(b) Discuss about the (i) Vallalar mediation (ii) Tamil Siddha meditation.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Write in detail about the origin and history of yoga.

Or

(b) Write down the Patanjali eight limbs of yoga.

17. (a) Narrate the development of yoga in 21st century.

Or

(b) Discuss about the classification of asanas with examples.

18. (a) Write the concept and benefits of Transcendental meditation.

Or

(b) Explain about the different schools of mediation.

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C–1929	Sub. Code 97242

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Aviation

AIR NAVIGATION (GENERAL)

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is controlled airspace?
2. What is operating frequency of ELT?
3. What is the relation between the speed of aircraft and the climb of an aircraft?
4. Write True course.
5. What are the four components of DR Navigation?
6. Expand the following:
   (a) GPS
   (b) GNSS
   (c) NDB
   (d) ACAS
7. Write about Tropical Maps.
8. Write about General chart properties.

9. Define Time conversion.

10. What are the planetary objects?

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

Answer **all** questions.

11. (a) How does a Magnetic Compass work?

Or

(b) Write a short note on check and maintenance of Emergency Locator Transmitter (ELT).

12. (a) What is

(i) Traffic advisory?

(ii) Resolution advisory in TCAS?

Or

(b) How the bearing and homing are understood in terms of navigation?

13. (a) Explain the operation of Inertial Navigation System.

Or

(b) Write short notes on Transponder system used in aircraft.

14. (a) Write short note on great circle course on a spherical earth.

Or

(b) Explain in detail about Map reading with suitable examples.

15. (a) State Kepler's Law and explain the application of Kepler's law in Meterology.

Or

(b) Write short notes on Solar system.

Part C $(3 \times 10 = 30)$

Answer **all** questions.

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

Or

(b) How does Traffic Collision Avoidance System (TCAS) work? Explain in detail.

17. (a) Write briefly about the operation of LORAN-C navigation and its uses.

Or

(b) Explain briefly about Satellite Navigation System.

18. (a) Explain in detail about Map reading with suitable examples.

Or

(b) Write short notes on the following in terms of conversion of Time:

(i) Standard Time

(ii) Map Reading

(iii) Planetary Objects

(iv) The seasons.

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C–1930	Sub. Code
	97243

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Aviation

AVIATION COMMUNICATION

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is RADAR?

2. What is Call Sign, the used in Aviation Communication?

3. How communication is useful in terms of Search and Rescue Operation?

4. Write short notes on Position Report.

5. Why HF communication is used in long travel aircraft?

6. What is the frequency band of Very High Frequency?

7. What is Flight Plan?

8. What is the major classification of Airspace?

9. What is the purpose of Medical Transport?

10. How radio communication is useful during emergency?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write short notes on CALL Sign.

Or

(b) Write short notes on Conditional Clearances.

12. (a) Explain about Radar in Approach Control Service.

Or

(b) Write short notes on Search and Rescue Operation.

13. (a) Explain about Fixed Telecommunication Network.

Or

(b) Explain in detail about Altimeter Regions.

14. (a) Write short notes on landing procedure of ATC.

Or

(b) Explain briefly about the Classification of Air Space and Air Routes.

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

Or

(b) List out the reason for Communication Failure caused in Aviation and explains in detail.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain briefly about Radar Procedures carried out in ATC / GCA.

Or

(b) Give the meaning of following phrases of Aviation Communication:

(i) CORRECTION

(ii) AFFIRM

(iii) CROSS

(iv) DEPART

(v) COMPLY

(vi) CONTACT

(vii) CORRECT

(viii) BREAK BREAK

17. (a) Explain in detail about the following:

(i) Area Control Service

(ii) Approach Control Service

Or

(b) Write short notes on the following:

(i) Airborne Radio Relay.

(ii) Inter Phone

(iii) ACARS

(iv) Service Telephone.

18. (a) Explain in detail about Landing Procedure of ATC Communication.

Or

(b) Explain briefly about Communication failure in ATC with Aircraft.

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C–1931

Sub. Code
97244

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Aviation

LOGISTICS AND AIR CARGO MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is inventory management?
2. What is logistics Management?
3. Write about cross docking.
4. What is bonded ware housing?
5. What is mean by global environment?
6. What is air cargo?
7. State weight criteria.
8. What is an integrated cargo carrier?
9. What is airway bill?
10. Write about cargo zone.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the scope of logistics management.

Or

(b) State the functions of inventory management.

12. (a) Discuss the trends in material handling.

Or

(b) State Transport security in detail.

13. (a) Explain the benefits of Supply chain management.

Or

(b) Explain the importance of TQM.

14. (a) Explain the charges covered in air cargo tariff.

Or

(b) State the types of valuation charges.

15. (a) Explain the requirements in airway bill in detail.

Or

(b) State the functions of cargo carrier.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Describe the air cargo logistics process.

Or

(b) Discuss about the role of warehouse in global logistics.

17. (a) Explain the methods of purchasing in detail.

Or

(b) Explain the significance of International documentation.

18. (a) Describe the emerging trends in cargo carriers.

Or

(b) Discuss the steps involved in air cargo carriers.

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C–1932	Sub. Code 97251

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fifth Semester

Aviation

PUBLIC RELATIONSHIP IN THE AVIATION INDUSTRY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Empathy.
2. What is strategy?
3. What is Public relation?
4. Define Aviation crisis.
5. What is communication?
6. What are the features of customers?
7. What are the services provided in hotel industry?
8. What is integrity?
9. What is service quality?
10. Define PR planning.

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

Answer **all** questions.

11. (a) Write about the elements of marketing mix.

Or

(b) What are Promotional Services?

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

Or

(b) Write about the Planning and programming in public relation.

13. (a) Elaborate the challenges in human relations.

Or

(b) Explain the challenges of service marketing.

14. (a) Explain the four C's of Marketing.

Or

(b) Dos and don'ts of price fixing – List out

15. (a) Explain the key characteristics of high cost carriers.

Or

(b) Explain Hotel industry in detail.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) What is pricing? Explain how it is plays a major role in the industry.

Or

(b) PR is the resource tool for the business – Justify.

17. (a) Explain in detail about elective medial handling.

Or

(b) Explain the issues and problems in PR with suitable examples.

18. (a) Explain the process in detail about Air operators.

Or

(b) Why strategy planning is required in the aviation industry?

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C–1933	Sub. Code
	97252

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fifth Semester

Aviation

AIRCRAFT SYSTEM AND INSTRUMENTS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define reservoir.

2. What is the role of shuttle valve in hydraulic system?

3. Write the significance of Fair Lead in conventional FC system.

4. Define Servo Unit.

5. Write the role of Scavenge pump in Piston engine oil system.

6. What is the significance of Booster pump in GTE fuel system?

7. What is the purpose of air-conditioning system?

8. Define Anoxia.

9. List out the basic flight instruments.

10. Write the basic principle of Gyroscopic instruments.

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

Answer **all** questions.

11. (a) List out the basic requirements of hydraulic system with simple sketch.

Or

(b) Write short note on hydraulic brake cylinder.

12. (a) Explain the role of push pull rod system with neat sketch.

Or

(b) Write short note on active control technology.

13. (a) Discuss about the Gravity feed fuel system.

Or

(b) Write and explain the types of GTE starters.

14. (a) What is De-icing and explain about any one type?

Or

(b) Write short notes on Fire Detection System.

15. (a) Write short notes on Pitot Static system.

Or

(b) Write short note on Pitot-Static tube.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Briefly explain about the oleo-Pneumatic strut with diagram.

Or

(b) List out and explain the components of conventional flight control system.

17. (a) Discuss about the Piston engine lubrication system.

Or

(b) Explain about the Boot-strap air cycle system with neat diagram.

18. (a) List out and explain any one type of Fire protection system.

Or

(b) With neat sketch, explain the Fully powered flight control system.

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C–1934

Sub. Code
97253

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fifth Semester

Aviation

AVIATION SECURITY AND SAFETY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Expand CISF and BCAS.
2. Who is the head for ministry of civil aviation?
3. What is pre hold screening of passengers?
4. What are the inflight threats?
5. What IED?
6. What are prohibited articles?
7. What is Baggage Screening?
8. What is weapon handling?
9. What is mean by bomb threat?
10. What is the action taken for a specific Bomb Threat?

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

Answer **all** questions.

11. (a) What is the role of BCAS Indian aviation?

Or

(b) Write about the organization structure of Indian aviation security.

12. (a) What are the security measures of air cargo?

Or

(b) What are the security measures to be followed in catering?

13. (a) Write in detail about dealing with hijacking.

Or

(b) What are isolated aircrafts? And write about its parking position.

14. (a) Write in detail about escorting people and consignment.

Or

(b) What is prisoner handling? Explain in detail.

15. (a) Write about Hijacking situation management.

Or

(b) Explain about bomb threat contingency plans.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Write in detail about the role of CISF in Indian Aviation.

Or

(b) Explain about difference of security measures followed by FAA and CAA.

17. (a) Explain about how Special Passengers are handled.

Or

(b) Explain about Weapon and Prisoner Handling procedures at Airports before boarding.

18. (a) Explain about Searching Techniques involved for bomb threats in detail.

Or

(b) Explain about various Security Handling Methods.

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C–1935

Sub. Code
97254

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fifth Semester

Aviation

RADIO AIDS AND INSTRUMENTS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

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.

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

Or

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

12. (a) Discuss briefly about radio spectrum.

Or

(b) Explain about the attenuation.

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

Or

(b) Explain what are the factors affecting range of communication.

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

Or

(b) Describe the operation of radio altimeter system.

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

Or

(b) Explain the weather radar frequencies.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain with block diagram of operation of ADF loop antenna.

Or

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

17. (a) Describe installation of radio equipment.

Or

(b) Explain briefly airborne weather radar system.

18. (a) Describe the secondary radar system.

Or

(b) Explain the precision approach radar.

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C–1936

Sub. Code
97255

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fifth Semester

Aviation

TOTAL QUALITY MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Total Quality management.
2. What is TQM Triangle?
3. What is Kaizen?
4. What do you mean by strategic planning?
5. What are benefits of TPM?
6. Describe the evolution of six sigma in Motorola company.
7. What is "Taguchi's Quality Loss Function"?
8. What are the eight pillars of TPM?
9. Draw the Documentation Pyramid.
10. What are the general requirements of Quality Management System?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain TQM Framework and importance of each element with case study.

Or

(b) What are the barriers for TQM implementation and how are they overcome?

12. (a) Explain the phases of PDSA cycle with suitable illustration.

Or

(b) Discuss different types of teams.

13. (a) Write about the types based on the object to be benchmarked.

Or

(b) Explain about stages of FMEA.

14. (a) What are the six big losses of company?

Or

(b) Explain the Taguchi's quadratic quality loss function.

15. (a) Explain the features and procedures to obtain ISO 14000 Environmental Certification.

Or

(b) Explain the elements and implementation of ISO 9000 (ISO 9000 : 2000) Standards.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) What is meant by strategic planning? Narrate the seven steps procedure of strategic planning cycle.

Or

(b) Explain the contributions of Deming and Crosby to TQM.

17. (a) What is the role of supplier partnership?

Or

(b) Explain the New seven tool of quality management.

18. (a) Explain the pillars of TPM.

Or

(b) Explain the EMS and its major elements? Discuss the provisions of ISO 14000 in detail.

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C–1937	Sub. Code 97261

B.Sc. DEGREE EXAMINATION, APRIL 2024

Sixth Semester

Aviation

FLIGHT OPERATION

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define the term "Flight Dispatcher".
2. Define DGCA.
3. Define Split Duty.
4. What is AIR?
5. Define Airbus.
6. What is called Over fly Permission?
7. What is called Navigation Log?
8. Define the word AIP in Aviation Industry.
9. What is Load Manifest Form?
10. Define RNAV.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain in brief about Competency Check and Regency Check.

Or

(b) Explain the Flight Crew Standards as per DGCA.

12. (a) Explain in detail about Flight Duty Time Limitations.

Or

(b) What is called Revenue and Yield Management? Explain in detail.

13. (a) Give a short history about Boeing.

Or

(b) Give a short history about Cessna.

14. (a) Explain Crew Briefing and Flight Release Sheet.

Or

(b) Explain in detail about coded ICAO flight Plan.

15. (a) How does Computerized Flight Plan is different from Conventional Plan? Explain.

Or

(b) Explain the uses of Weather Charts in detail.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain the Aircraft Operational Procedure in Indian Civil Aviation.

Or

(b) Explain the concepts of Split Duty, Break and Consecutive Night Flying in detail.

17. (a) Compare Airbus A320 and BOEING 737 in detail.

Or

(b) Explain Navigation Plan and Jet Routes for a flight.

18. (a) Give a detailed overview about PBN, ETOPS and RNP.

Or

(b) Explain the salary structure of crew members and their duty time limitations.

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C–1938	Sub. Code
	97262

B.Sc. DEGREE EXAMINATION, APRIL 2024

Sixth Semester

Aviation

PRINCIPLES OF ROTORCRAFT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. Define Rotor Efficiency.
2. Differentiate Feathering and Flapping in helicopter.
3. Define Airfoil.
4. What is called parasite drag?
5. Define SAS.
6. What is called rate of climb?
7. Define stability of helicopter.
8. Differentiate stick fixed and stick free stability.
9. What is called flapping motion in helicopter?
10. What are called vibration absorbers?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Draw the layout of a Helicopter and name the parts clearly.

Or

(b) Explain Power Losses and Rotor Efficiency in detail.

12. (a) How State Vortex Ring is a negative effect in helicopters? Clarify.

Or

(b) Explain High Speed Limitation in Helicopter.

13. (a) Explain the working of Turbo-Shaft Engine in detail.

Or

(b) How to calculate the Horse Power required for a Helicopter?

14. (a) Differentiate stability of Airplane and Helicopter.

Or

(b) How to measure vibration of blades in Helicopter?

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

Or

(b) What are the characteristics of Lateral stability of Helicopter?

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Briefly explain Generation of lift in helicopter with suitable diagrams.

Or

(b) Explain AFCS of helicopter in detail.

17. (a) Explain the following in detail.

(i) Induced Power

(ii) Ground Effect

(iii) Power Leading.

Or

(b) What are the types of Gas Turbine Engine? Explain them in detail.

18. (a) Explain in detail about the Stability Augmentation System in Helicopter.

Or

(b) Explain stick fixed and stick free stability of helicopter.

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C–2466	Sub. Code 97213

B.Sc. DEGREE EXAMINATION, APRIL 2024.

First Semester

Aviation

INTRODUCTION TO AVIATION INDUSTRY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Section A (10 × 1 = 10)

Answer **all** questions.

1. What category of aviation involves the use of privete and recreational aircraft?

   (a) Commercial Aviation

   (b) Military Aviation

   (c) General Aviation

   (d) Cargo Aviation

2. What does a bilateral air services agreement between two countries primarily regulate?

   (a) Airline Safety Protocols

   (b) Air Traffic Control Procedures

   (c) International Flight routes and Operations

   (d) Airport Intrastructure Development

3. Which of the following airlines is a well known low cost carrier in India, offering budget–friendly domestic and international flights?

   (a) Air India (b) Vistara

   (c) Indigo (d) Jet Airways

4. What role does CISF play in countering terriosm at airports?

(a) Intelligence Gathering

(b) Armed Conflict

(c) Survellience and Prevention

(d) Negotiation and Crisis Management

5. What does the term "ETD" stand for in commercial aviation?

(a) Estimated Time of Depature

(b) Early Takeoff Decision

(c) Emergency Takeoff Drill

(d) Excess Turbulence Duration

6. Which SSR code is used to indicate a passenger travelling with a pet in the cabin?

(a) SSR PETC (b) SSR PETR

(c) SSR PETM (d) SSR PETL

7. What is the primary objectives of Airport Management?

(a) Maximizing Passenger Comfort

(b) Ensuring Aircraft Speed

(c) Safe and Efficient Airport Operation

(d) Maximizing Airline Profits

8. Which phase of airport planning involve identifying the airport's purpose, location and basic design criteria?

(a) Master Planning

(b) Strategic Planning

(c) Feasibility Planning

(d) Terminal Planning

9. Which factor poses a challenge to airlines interms of environmental sustainability and has led to efforts to develop more fuel efficient aircraft?

(a) Pilot Shortages

(b) Aging Passenger Fleet

(c) Rising Fuel costs

(d) Carbon Emission and Climate Change concerns

10. Which term describes the practice of airlines partening with other carriers to share Flights and increase their route networks?

(a) Code Sharing (b) Price Discrimination

(c) Direct Marketing (d) Market Segmentation

Section B

$(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Discuss the impact and challenges of low coast carriers in the indian aviation industry.

Or

(b) Explain the significance of Airport codes in the aviation industry.

12. (a) Discuss the role and functions of DGCA.

Or

(b) What is the primary objectives of BCAS?

13. (a) Discuss various essential aviation terminologies and their significance in the aviation industry.

Or

(b) Explain the concept of Traffic Conference Area.

14. (a) What are the key factors that influence terminal design?

Or

(b) Describe the typical structure of an airport, detailing its key components and facilities.

15. (a) Discuss the impact of global, social and environmental factors on air transportation.

Or

(b) Explain the competition in Airline Industry.

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

Answer **all** questions.

16. (a) Discuss the role and significance of the ICAO.

Or

(b) Examine the evolution of aviation from its inception to the present day.

17. (a) Explain the importance of CISF at Airports.

Or

(b) Discuss the future of Indian Civil aviation.

18. (a) Explain the concept of Special Service Requirements.

Or

(b) Discuss the importance of TACT.

19. (a) Describe the functions of Airport.

Or

(b) Discuss the role and responsibilities of airport authorities in the efficient operation of airports.

20. (a) Analyze the market potential of the indian airline industry.

Or

(b) Examine the current challenges facing the Global airline industry.

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C–2467

Sub. Code
97215

B.Sc. DEGREE EXAMINATION, APRIL 2024.

First 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. The square waveform of current has following relation between r.m.s. value and average value
   (a) R.M.S. value of current is greater than the average value
   (b) R.M.S. value of current is less than the average value
   (c) R.M.S. value of the current is to average value
   (d) There is no meaning of r.m.s value and average value for square wave

2. An arc across the switch opening an R-L circuit is a result is a result of the
   (a) Long time constant
   (b) Large self-induced voltage across the inductance
   (c) Source of the voltage caused by IR drop across the resistance
   (d) Low resistance of the open switch

3. Considering a human handed control system for the dc motor speed control, if the resistance wire cut out too slowly, then the ————————.

(a) Starting resistance would burn

(b) Field winding would burn

(c) Speed will rise steeply

(d) Any of the mentioned

4. A transformer can have zero voltage regulation at ————————.

(a) Leading power factor

(b) Lagging power factor

(c) Unity power factor

(d) Zero power factor

5. During reverse bias, a small current develops known as – ————————.

(a) Forward current

(b) Reverse current

(c) Reverse saturation current

(d) Active current

6. Which of the following is the correct order of turn-off times?

(a) MOSFET < BJT < IGBT < SCR

(b) MOSFET < IGBT < BJT < SCR

(c) SCR <BJT < IGBT < MOSFET

(d) BJT < MOSFET < IGBT < SCR

7. How many bits are needed to store one BCD digit?

(a) 2 bits (b) 4 bits

(c) 3 bits (d) 1 bit

8. What is the group of 1s in 4 cells of a K – map called?

(a) Pair (b) Quad

(c) Octet (d) Octave

9. Which of the following is the merit of moving iron instruments?

(a) It can be used at high frequencies

(b) Its current sensitivity is high

(c) It has linear scale

(d) It can be used under severe overload condition

10. Primary of an instrument transformer (C.T.) is connected in

(a) Series with the line

(b) Parallel with the line

(c) Any of these answer

(d) Across two lines

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

Answer **all** questions.

11. (a) In Series RL Circuit with R = 100 Ohms and L = 20 Henry has a DC Voltage of 200 Volts applied through a switch at $t = 0$. Find

(i) Current and Voltage across each element

(ii) Current at time t = 0.5 Seconds

(iii) Current at time t = 1 Second

(iv) Time at which $e_R = e_L$?

Or

(b) Derive the expressions for the resistance in

(i) Series Circuit

(ii) Parallel Circuit.

12. (a) Describe in detail, the construction and working principle of three phase induction motor.

Or

(b) Draw and explain the construction and principle of operation of a DC generator.

13. (a) Examine the construction and working principle of Zener diode with a neat sketch.

Or

(b) Draw the circuit diagram and explain the working principle of full wave rectifier.

14. (a) Convert (A+B)(A+C)(B+C') into standard POS form.

Or

(b) Explain the working of full Subtractors.

15. (a) What is the use of LVDT? Discuss its basic principle of operation.

Or

(b) Derive the torque equation of a moving iron instrument.

Part C

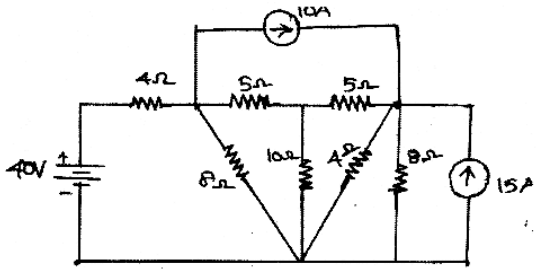
$(5 \times 8 = 40)$

Answer **all** questions.

16. (a) Drive an expression of simple RC circuit with neat diagram?

Or

(b) Use Nodal Voltage method and estimate the power dissipated in the 10 Ω resistance on the circuit shown in the Fig.



17. (a) Explain with a neat sketch the principle of operation of a dc motor.

Or

(b) Draw a power flow diagram of a 3 phase induction motor and explain all the stages?

18. (a) With neat sketch explain the construction, operation, and its characteristics of PN junction diode.

Or

(b) Explain the working principle of a Half wave rectifier and its various parameters.

19. (a) Simplify the function using K-map

(i) $F(ABCD) = \sum (0, 1, 2, 4, 5, 7, 11, 15)$

(ii) $F(WXYZ) = \sum (2, 3, 10, 11, 12, 13, 14, 15)$

Or

(b) Design a parallel adder/subtractor.

20. (a) Derive the errors of CT and PT and discuss its preventives.

Or

(b) Explain the generalized diagram of a digital data acquisition system.

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C–2468	Sub. Code 97223

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Second Semester

Aviation

BASICS OF AIRCRAFT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Hot air balloon was first invented by

   (a) Sir George Cayley

   (b) Montgolfier Bros

   (c) Wright Bros

   (d) Leonardo Davinci

2. The horizontal structural member of monocoque construction of aircraft is called

   (a) flaps (b) bulkhead

   (c) Longerons (d) ribs

3. The advanced Flight Control System is

   (a) Push Pull Rod FCS

   (b) Cable Pulley FCS

   (c) Fly by Wire FCS

   (d) Power Assisted FCS

4. The instrument used to measure the velocity of the aircraft is

(a) VSI (b) Altimeter

(c) Artificial Horizon (d) Air Speed Indicator

5. Ozone Layer is available in which layer of atmosphere?

(a) Mesosphere (b) Exosphere

(c) Troposphere (d) Stratosphere

6. Which of the following factor doesn't change Lift of an aircraft

(a) Velocity (b) Density

(c) Temperature (d) Co-efficient of Lift

7. Small Range Aircrafts use which type of engine?

(a) Piston Engine (b) Turbo Jet Engine

(c) Rocket Motor (d) Turbo Fan Engine

8. Which type of propellant uses oxidizer?

(a) Solid Propellant

(b) Solar Sail

(c) Nuclear Propellant

(d) Cryogenic Propellant

9. Which material is used to withstand high temperature in aircraft engine

(a) Aluminium (b) Composite Material

(c) Titanium (d) Steel

10. As per Hooke's Law, stress in directly proportional to strain

(a) Within elastic limit

(b) Within plastic limit

(c) Above plastic limit

(d) Above elastic limit

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the types of aircraft based on number of wings.

Or

(b) List out the developments of Aircraft in the field of aerodynamics.

12. (a) Explain secondary control surfaces of an aircraft.

Or

(b) Explain the basic instruments for flying of aircraft.

13. (a) Explain the importance of Ozonosphere.

Or

(b) Explain the relationship between Lift and Drag in a flight.

14. (a) Differentiate turbo – propeller and turbo jet engine.

Or

(b) Explain the working of solid propellant rocket.

15. (a) Explain the uses of composite materials in aircraft.

Or

(b) Differentiate Metallic materials and non metallic materials in terms of usage in aircraft.

Part C (5 × 8 = 40)

Answer **all** questions.

16. (a) Explain in detail about the evolution of aircraft engines.

Or

(b) Explain the history of Airports and Airlines in detail.

17. (a) Explain the Working of Push pull rod FCS and fly by wire FCS.

Or

(b) Classify the Aircraft based on purposes and types of parts of aircraft.

18. (a) Explain the relationship between Temperature and Pressure with respect to Altitude.

Or

(b) Explain Airfoil and its terminologies in detail.

19. (a) Explain the working of Piston engine of an aircraft.

Or

(b) Explain the system of four types of Gas Turbine Engine merits and demerits.

20. (a) Differentiate Monocoque construction and Geodesic construction of aircraft in detail.

Or

(b) Explain the relationship between stress and strain using Hookes law and Stress Strain relationship diagram.

C–2469	Sub. Code
	97225

B.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Aviation

AVIATION PHYSICS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. Which of the following are the SI units of force?

   (a) Kgm/s^2 (b) N/m

   (c) Newton-meter (d) Newton

2. What is the stress-strain curve?

   (a) It is the percentage of stress and stain

   (b) It is the relationship between stress and strain

   (c) It is the difference between stress and strain

   (d) None of the mentioned

3. A toothed wheel that transmits motion and power is called

   (a) Wheel and axle

   (b) Roman steelyard

   (c) Gear

   (d) Screw jack

4. In a wheel and axle the load is attached to

(a) Wheel

(b) Axle

(c) Beam

(d) Thin rope

5. A particle is moving with a constant speed along a straight-line path. A force is not required to

(a) Change its direction

(b) Decrease its speed

(c) Keep it moving with uniform velocity

(d) Increase its momentum

6. If a body is rotating about an axis passing through its centre of mass, the angular momentum of the body is directed along its ————————.

(a) Circumference

(b) Radius

(c) Axis of rotation

(d) None of the option

7. Heat transfer takes place according to which of the following law?

(a) Newton's second law of motion

(b) First law of thermodynamics

(c) Newton's law of cooling

(d) Second law of thermodynamics

8. What instrument is commonly used to measure atmospheric pressure?

(a) Thermometer

(b) Barometer

(c) Hygrometer

(d) Anemometer

9. A source of sound moves towards an observer. What happens to the speed of sound in the medium?

(a) Increases

(b) Decreases

(c) Remains the same

(d) Depends on speed with which source moves

10. What is the shape of the graph that is drawn between pressure and volume?

(a) A straight line (b) Circular

(c) Parabola (d) Hyperbola

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

Answer **all** questions.

11. (a) Explain in detail about the types of friction with examples.

Or

(b) A hoist lifts a truck up 2 meters above the ground in 15 seconds. Find the power delivered to the truck? [Given: 1000 kg as the mass of the truck].

12. (a) Describe about Mechanical Advantage.

Or

(b) Explain the concept of ramp, wedge and screw.

13. (a) List the different types of motion with example.

Or

(b) A ball is dropped from a certain height. It took the ball 15 seconds to reach the ground. What is the height at which the ball was initially; also answer which equation of motion is used to answer this question? [Take g = 10m/sec^2]

14. (a) Explain in detail about Thermal Expansion / Contraction with examples.

Or

(b) How much heat is absorbed by a 20 g granite boulder as energy from the sun causes its temperature to change from 10°C to 29°C? (Specific heat capacity of granite is 0.1 cal/g.°C).

15. (a) Explain in detail about Mach number.

Or

(b) What is Resonance? List the various types of resonance.

Part C (5 × 8 = 40)

Answer **all** questions.

16. (a) Explain in detail about the relationship between stress and Strain with graph.

Or

(b) (i) A mass of 2 Kg is taken from the ground to the height of 10m. Find the potential energy of the object?

(ii) If a force of 30 N in lifting a load of 2 kg to a height of 10 m ($g = 10\ ms^{-2}$), then calculate the amount of work done in this process?

17. (a) Discuss in detail about the different types of pulley with neat sketch.

Or

(b) With a schematic diagram explain the structure of gear.

18. (a) Define Rotational Motion and Periodic Motion with neat sketch.

Or

(b) A flywheel has a constant angular acceleration of 2.0 rad/s^2

(i) Find the angle through which the flywheel turns as it comes to rest from an angular speed of 220 rad/s.

(ii) Find the time required for the flywheel to come to rest.

19. (a) List various types of pressure with examples.

Or

(b) A swimming pool of width 9.0 m and length 24.0 m is filled with water to a depth of 3.0 m. Calculate pressure on the bottom of the pool due to the water.

20. (a) Explain about the fundamentals of measurement of Sound Intensity.

Or

(b) Describe Buoyancy and Fluid Pressure with examples.

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