CP-3003 **6.4**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

PRODUCTION AND MAINTENANCE MANAGEMENT

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions

1. What do you mean by a functional system ?

2. State any three uses of graphical method in aggregate planning.

3. What do you mean by six sigma in quality ?

4. What do you mean by simulations ?

5. What is a comparative statement in purchase ?

6. What do you mean by Preventive Maintenance ?

7. What do you mean by work sampling ?

8. What do you mean by Quality Audit ?

Part - B (5 × 12 = 60)

Answer **All** questions

9. (a) Explain the critical issues in product design and process planning.

(*Or*)

(b) Explain the various types of production systems.

10. (a) Illustrate the nature and use of forecasting in production plan.

(*Or*)

(b) Write an essay on "Modern Manufacturing Practices".

11. (a) Describe the steps in TQM.

(*Or*)

(b) Describe about method study in detail.

12. (a) Explain how information system influence maintenance management.

(*Or*)

(b) Explain the concept, functions and scope of reliability programmes.

13. (a) Explain Inventory control and Inventory Decisions.

(*Or*)

(b) Explain the principles and philosophy of stores accounting.

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CP-2982 **1.2**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

MATHEMATICS

Time : 3 Hours Maximum : 75 Marks

Section - A (5 × 3 = 15)

Answer any **five** questions.

1. Resolve into partial fractions $\frac{3}{(x+1)(x+2)}$

2. Show that :

$$1+n\left(\frac{2a}{1+a}\right)+\frac{n(n+1)}{1.2}\left(\frac{2a}{1+a}\right)^2+\ldots=\left(\frac{1+a}{1-a}\right)^n$$

3. Find modulus amplitude form

$12 + 5i$

4. Express $\frac{1}{3-2i}+\frac{1}{2-3i}$ in the form of $x + iy$

5. If $y = x^2 \sin ax$ find y_1 and y_2.

6. Evaluate $\int \frac{\sin\sqrt{x}}{\sqrt{x}}\,dx$.

7. If $f = x^3 + y^3 + z^3 + 3xyz$. show that $\frac{\partial^2 f}{\partial x^2 \partial y}=\frac{\partial^2 f}{\partial y \partial x}$.

8. Solve $\frac{dy}{dx} = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$.

Section - B (5 × 12 = 60)

Answer **all** questions.

9. (a) Resolve into partial fractions $\frac{2x^3 - 3x^2 + 4x - 5}{(1-x)^4}$.

(*Or*)

(b) Sum to do the series

2 3.7 3.7.11 . . .

10. (a) (i) Show that :

$$\left(\frac{1+\sin\theta + i\cos\theta}{1+\sin\theta - i\cos\theta}\right)^n = \text{Cos}\left(\frac{n\pi}{2} - n\theta\right) + i\sin\left(\frac{n\pi}{2} - n\theta\right).$$

(ii) Show that if n is a positive integers then

$$(1+i)^n + (l-i)^n = (\sqrt{2})^{\frac{n}{4}} \text{Cos}\frac{n\pi}{4}$$

(*Or*)

(b) (i) Expand $\sin 6\theta$ in a series of cosines of multiple of θ.

(ii) Find $\underset{\theta \to 0}{\text{limit}} \frac{\tan\theta + \sec\theta - 1}{\tan\theta - \sec\theta + 1}$.

11. (a) If $y^{1/m} + y^{-1/m} = 2x$ prove that

$(x^2 - 1)\, y_{n+2} + (2n+1)x\, y_{n+1} + (n^2 - m^2)\, y_n = 0.$

(*Or*)

(b) Show that if $\vartheta = n^m$ where $n^2 = x^2 + y^2 + z^2$ then

$$\frac{\partial^2 \vartheta}{\partial x^2} + \frac{\partial^2 \vartheta}{\partial y^2} + \frac{\partial^2 \vartheta}{\partial z^2} = m(m+1)\, n^{m-2} \ .$$

12. (a) Show that $\int_0^{\pi/2} \frac{dx}{\sin x + \cos x} = \frac{1}{\sqrt{2}} \log\left(\frac{\sqrt{2}+1}{\sqrt{2}-1}\right)$.

(*Or*)

(b) Evaluate $\int \frac{2x-1}{5x^2 - x + 2}\, dx$.

13. (a) Solve $xp^2 - 2yp + x = 0$

(*Or*)

(b) Solve $x^2 (y - px) = yp^2$

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CP-2983 **1.3**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

BASIC ELECTRICITY

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. What is magnetostriction ?

2. Explain propotional current formula in parallel circuit with example.

3. What is voltage regulation ?

4. What is the principle of a DC motor ?

5. List out the characteristic of shunt motor.

6. What is mean by instantaneous value and phase difference ?

7. What is admittance ?

8. Explain Q Factor.

Part - B (5 × 12 = 60)

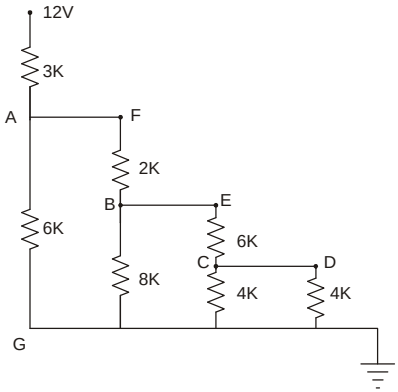
Answer **All** the questions.

9. (a) Explain any two methods to produce alternating emf with necessary diagram.

(*Or*)

(b) What do you understand by self inductance ? Describe with theory a method to determine the self inductance of a coil.

10. (a) Find current and voltage drop across each resistance in the following circuit.



(*Or*)

(b) Explain full wave bridge rectifier in detail. Find its efficiency.

11. (a) Explain the working of a dynamo with necessary diagram.

(*Or*)

(b) Write notes on

(i) Multimeter

(ii) CRO

12. (a) Derive an expression for RMS value of an alternating current.

(*Or*)

(b) Derive an expression for impedance of an AC circuit containing.

(i) Capacitance

(ii) Capacitance and inductance

13. (a) Derive an expression for current and EMF in a circuit containing.

(i) Resistance and capactance in series.

(ii) Resistance and inductance in series.

(*Or*)

(b) An alternating voltage $E_o \sin \omega t$ is applied to an LCR Circuit. Calculate the value of instantaneous current I. Discuss the condition for resonance.

——— *** ———

CP-2984 **2.1**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

PRINCIPLES OF ELECTRONICS AND ELECTRONIC CIRCUITS

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. What is mutual inductance ? Explain with unit.

2. Draw the characteristics curves of a transistor under CE configuration and identify the different regions.

3. Define β . What is the value of β when α = 1.

4. What are the differences between a JFET and a Bipolar Transistor ?

5. Explain FET acts as an analog switch.

6. Give the advantages of the push-pull amplifier.

7. Derive the Barkhausion criteria for oscillator.

8. What are the merits and demerits of phase shift oscillator ?

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) How do you select the resistors with series and parallel combination ?

(*Or*)

(b) How is the energy stored in an inductor ? What is the Q factor of a coil ?

10. (a) Describe the working of a junction diode. Explain its V-I characteristics.

(*Or*)

(b) Describe the performance of a transistor amplifier in common emitter arrangement. Also calculate the transistor parameters.

11. (a) (i) Draw the circuit diagram and describe the method to study the output characteristic of FET.

(ii) Define the FET parameters and obtain the relation connecting them.

(*Or*)

(b) Draw the V-I characteristic of an SCR and explain it.

12. (a) Draw the circuit diagram of class A amplifier and give the maximum collector efficiency of it.

(*Or*)

(b) Explain with expression for distorsion and power dissipation capability in detail.

13. (a) Explain the working of Hartley oscillator with neat circuit diagram.

(*Or*)

(b) Describe the Colpitt oscillator circuit and explain its working.

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CP-2985 **2.2**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

APPLIED PHYSICS

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. Give a short account on wedge shaped thin flim.

2. What is diffraction ? Explain.

3. Distinguish between a polarizer and an analyzer.

4. State Lonentz transformations.

5. State and explain Sabine's formula.

6. What are ultrasonic waves ?

7. Explain population inversion.

8. Define a unit cell.

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) How are Newton rings formed ? How would you determine the refrective index of a liquid using Newton rings ?

(*Or*)

(b) What is a diffraction grating ? Give its theory.

10. (a) (i) State and prove Brewster's law

(ii) Explain double refraction.

(*Or*)

(b) Give an account on

(i) Length contraction

(ii) Time dilation

11. (a) Give the reverberation theory.

(*Or*)

(b) What is echo sounder ? How is it working ?

12. (a) What is stimulated emission ? Explain the construction and working of the semi conductor laser.

(*Or*)

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

13. (a) Give an account on Bravia's lattices.

(*Or*)

(b) What is Meissner effect ? Explain

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CP-2986 **2.3**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

STRENGTH OF MATERIALS AND APPLIED MECHANICS

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. Define a rigid body ?

2. Define force. Give its unit.

3. A wire of length 1m elongates by 0.005m on the application of a stress. calculate the strain produced.

4. What are the differemt stresses ?

5. What is a load ?

6. Give a note on safety factor.

7. State the uses of rivets.

8. What is a fastener ?

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) Give an account on scalar and vector quantities with suitable examples.

(*Or*)

(b) (i) How is the resultant of a number of forces determined ?

(ii) State and explain polygon law of forces.

10. (a) (i) Define stress and strain.

(ii) Give an account on stress and strain on nuts and bolts.

(*Or*)

(b) (i) Define three elastic constants.

(ii) Derive the relation between.

11. (a) What are different types of loads ? Explain.

(*Or*)

(b) Give a detailed account on different types of trusses.

12. (a) (i) What is a bearing ?

(ii) What are the different types of bearing ? Explain.

(iii) Give the uses of bearings.

(*Or*)

(b) Give a note on :-

(i) Springs and their uses.

(ii) Thin plates.

13. (a) Explain BIS and ISO systems of threading.

(*Or*)

(b) (i) Give a detailed account on gear drive.

(ii) Compare gear drive with belt drive.

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CP-2987 **2.4**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

FUNDAMENTALS OF THERMODYNAMICS

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. Explain any two thermodynamic processes.

2. State and explain Zeroth law of thermodynamics.

3. Bring out the difference between heat and work.

4. What is Carnot's theorem.

5. Define Enthalpy. How it differ from entropy.

6. Differentiate Otto and Diesel cycle.

7. What do you mean by solid ice ? What are its uses ?

8. What is the efficiency of Broylon cycle.

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) Explain specific heat and latent heat with example. Mention its uses.

(*Or*)

(b) Explain how first law of Thermodynamics applied to flow processes.

10. (a) Discuss the compressibility properties an ideal gas.

(*Or*)

(b) (i) What is Avogadro's law ? Explain its uses.

(ii) Write short note on internal energy of a gas.

11. (a) Explain the working of multistage compression.

(*Or*)

(b) Describe the adiabatic flow properties without function to an aero foil.

12. (a) Explain the various modes of heat transfer.

(*Or*)

(b) Describe the basic principle of heat Exchanger. Explain its various types with example.

13. (a) Explain the principle and working of Rocket propulsion with neat diagrams.

(*Or*)

(b) Describe the various operating process in vapour compression refrigeration cycle.

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CP-2988 **3.1**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

MECHANICS OF FLIGHT AND AIRCRAFT PERFORMANCE

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. State and explain Bernouli's principle.

2. Explain boundary layer.

3. What is aspect ratio and how does it affect the lift ?

4. What do you mean by stability ?

5. What do you mean by ceiling ? How is it different from service ceiling ?

6. Explain steady flight and conditions of equilibrium.

7. What do you mean by 'Side Slip' ?

8. What is camber line and chord line ?

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) Explain lift produced on the aircraft on the basis of Bernoulli's principle.

(*Or*)

(b) Explain various atmospheric properties such as pressure, temperature, density, humidity. Also discuss how does these factors change with attitude

10. (a) Explain about various aerofoil Nomenclatures ? What does 'NACA 4412' indicate ?

(*Or*)

(b) What are the characterstics of ideal Aerofoil ?

11. (a) Explain about various high lift devices with a neat diagram.

(*Or*)

(b) How does the performance of a jet aircraft is varied with changes in height ?

12. (a) What is a control coloum ? Explain control coloum used in aircraft and their functions.

(*Or*)

(b) Explain about directional stability of the aircraft in detail.

13. (a) Explain the various factors affecting engine power during a flight.

(*Or*)

(b) Explain the factors affecting take off and climb ?

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CP-2989 **3.2**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

FLUID MECHANICS

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. Define specific weight and specific volume. Show that the dimension of specific volume is reciprocal of that of specific weight.

2. Explain compressibility and elasticity of fluids.

3. What are called streamlines? How are they used in explaining steady and unsteady flow of liquids ?

4. Obtain the equation of continuity for fluid at the cross-sections of two sections.

5. Explain the different type of losses in pipe lines.

6. An oil with a Kinetic viscosity of 2.8 cm^2/sec flows in a pipe 300cm in length and 15cm in diameter with a velocity 0.3 m/ sec. Density of oil is 900 kg/m^3. Find the drop in pressure due to frictional resistance.

7. How are turbines classified ?

8. Give the principle of working of hydraulic crane.

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) Explain velocity of a liquid. How is Kinematic on the flow of liquid.

(*Or*)

(b) Explain with sketches the working of U - tube manometersand differential manometer.

10. (a) A long pipe is of length *l* and has slowly tapering cross-section. It is inclined at angle α to the horizontial and water flows steadily through it from the upper to the lower end. The section at the upper end has twice the radius of the lower end. At the lower end the wataer is delivered at atmospheric pressure. If the pressure at the upper end is twice atmospheric pressure, find the velocity of delivery.

(*Or*)

(b) Find expressions for the velocity of fluid at the nozzle exit and flowrate by applying Bernoulli's equations.

11. (a) Find expressions for the power transmited through a nozzle for the flow of a liquid.

(*Or*)

(b) Calculate the minimum diameter of pipe required to supply a water turbine developing 240 hours power under the following conditions. Efficiency of turbine 80 percent, static head 800m, coeffecient of friction 0.025. The pipe is to be designed to transmit maximum power.

12. (a) Find the dynamic force of a jet on a

(i) Stationary flat plate and

(ii) Moving plate.

(*Or*)

(b) Give the principle and working of

(i) Centrifugal pump and

(ii) Reciprocating pump

13. (a) Explain the functioning of accumulator intensifier and Ram in hydraulic system.

(*Or*)

(b) Disucss hydraulic and pneumatic joints. Explain different types of valves and controls in hydraulic circuit.

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CP-2990 **3.3**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

AIRCRAFT MATERIALS AND NON DESTRUCTIVE TESTS

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. Describe property of "Ductility".

2. Describe torsion testing of a wire.

3. Describe titanium use in Aircraft manufacture.

4. Describe Alclad Aluminium Alloy.

5. Describe Carburizing of steels.

6. Describe various uses of wood in Aircraft Construction.

7. Expand the indentification details of "MS20426AD5-8" rivet.

8. Describe Demagnetization of parts after Magneflux Inspection.

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) Discuss the terms Hardness, Annealing, Elasticity and Tensile strength.

(*Or*)

(b) Discuss Hardness testing of Metal. And explain Brinell Hardness testing.

10. (a) Discuss "Monel" metal.

(*Or*)

(b) Discuss copper Alloy "Bronze".

11. (a) Discuss process of Annealing.

(*Or*)

(b) Discuss heating methods of steel in heat treatment.

12. (a) Discuss different types plywood.

(*Or*)

(b) Discuss different types Aircraft Screws.

13. (a) Discuss Eddy current inspection .

(*Or*)

(b) Discuss ultra sonic inspection.

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CP-2991 | 3.4

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

AIRFRAME STRUCTURES AND SYSTEM

Duration : 3 Hours | Maximum : 75 Marks

Instructions :- Draw suitable diagams if necessary.

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. Explain the various structural stresses acting on aircraft with example.

2. What are the purpose of landing gear ? How they are classified ?

3. What are power Assisted Controls ?

4. What is the purpose of aircraft weight and balance ?

5. What are the advantages of hydraulic system over pneumatic system ?

6. Define Ballast and its types.

7. What are the precautions to be observed to avoid aircraft fuel contamination.

8. Write the sequence of rigging checks and explain how the alignment of aircraft engine to be checked ?

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) Explain the semimonocoque fuselage construction in detail.

(*Or*)

(b) Explain Nose wheel steering system and its operation.

10. (a) Explain the operation of primary flight control surfaces.

(*Or*)

(b) What are flaps ? Explain its types.

11. (a) Explain with neat diagram, how symmettry check is carried out ? Also mention the occasions to carry out symmetry ckeck ?

(*Or*)

(b) Explain the theory of weight and balance ? What are the preparations to be carried out before weighing an aircraft.

12. (a) Describe the three principle type of hydraulic fluid used in aircraft ? Explain its characteristics of properties.

(*Or*)

(b) Explain the operation of following pneumatic components :

a) Pressure Relief valve.

13. (a) Describe light airplane Gravity feed fuel system with diagram.

(*Or*)

(b) What are the types of aircraft fuel tanks ? Explain any two of them in detail.

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CP-2992 **4.1**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

AIRFRAME STRUCTURES AND SYSTEM

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. Name various types of Aeroengine.

2. What is compression Ratio is piston engine.

3. What is detonation and causes of detonation.

4. What is the purpose of crankshaft and name the parts of crank shaft.

5. What is function of carburetor and write the essential part of float type carburetor.

6. What is the purpose of spark plug in ingnition system of piston engine and write the main parts of spark plug.

7. How the magneto's are classified.

8. Define the Geometric pitch and effective pitch of propeller.

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) What is the purpose of cylinder in internal (i) Combustion engine and Explain each components of cylinder Assembly.

(*Or*)

(b) Explain in detail (otto cycle) four stroke five event cycle with diagam.

10. (a) What is the purpose of valve operating mechanism in Reciprocuting engine and explain functions of its components.

(*Or*)

(b) Briefly explain :

(i) Mean effective pressure

(ii) Thermal efficiency

(iii) Mechanical efficiency.

11. (a) Why cooling system Required in Recirprocating engine and Explain how air cooling is done on inline and Radial engine.

(*Or*)

(b) Why exhaust system Require in Reciprocating engine and explain exhaust system of inline and Radial engine.

12. (a) Explain the operation of pressure injection type carburetor with neat sketch.

(*Or*)

(b) (i) Briefly Explain Basic induction system an components of Reciprocating engine.

(ii) What is the purpose of super charger and constructional details.

13. (a) Explain in details :

(i) Fixed pitch propeller

(ii) Constant speed propeller

(*Or*)

(b) Explain high tension magneto system (Roto Marneto) with neat sketch.

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CP-2993 4.2

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

TURBINE ENGINE

Duration : 3 Hours Maximum :75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions

1. Describe the basic operation of a turbo prop engine.

2. Describe the advantages of axial flow compressor, compared to centrifugal flow compressor.

3. Describe can-annular combustion chamber with a simple diagram.

4. Describe the effects of Altitude on thrust.

5. Describe the function of spur gear type fuel pump.

6. Describe the function of scavenge oil system.

7. Describe the function of igniter exciter unit.

8. Describe with simple diagram free turbine type power conversion in turbo prop engine.

Part - B (5 × 12 = 60)

Answer **All** questions

9. (a) Describe briefly the events of the Brayton cycle with Volume versus Pressure and Temperature vesus Pressure diagrams.

(*Or*)

(b) Describe construction and operation of a turbo fan engine.

10. (a) Describe briefly the changes in air flow through divergent and convergent ducts, supersonic air flow throught a convergent divergent nozzle.

(*Or*)

(b) Describe the construction and operation of a centrifugal flow compressor.

11. (a) Describe briefly compressor stall and stall control with diagrams.

(*Or*)

(b) Describe briefly function of the turbine nozzle diaphrgm (turbine inlet guide vanes) and method of nozzle vanes cooling.

12. (a) Describe the types of fuel used in gas turbine engines and list the qualities of fuel for gas turbine engines.

(*Or*)

(b) Describe the function of fuel system in a gas turbine engines.

13. (a) Describe the reduction gear assembly a operation of torgue meter of a turbo prop engine.

(*Or*)

(b) Describe the function of Air Turbine starters.

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CP-2994 **4.3**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

INSTRUMENTS AND COMPASS

Time : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **five** questions.

1. Explain the differences between quantitative, qualitative displays, and quote some era of instruments to which they are applied.

2. Define the following :—

   (i) Magnetic Meridian.

   (ii) Agonic Lines.

   (iii) Magnetic Variation.

3. What type of sensing elements are used for pressure measurement ?

4. What would be the effect of an "open circuit" between the sensing element and indicator of the ratiometer type of thermometer ?

5. What is the difference between "extenleads" and "Compensating leads" is a thermocouple system ?

6. What do you understand the term "gimbal lock" and "ginbal erra ?

7. Express the formulae used for the calculation of deviation coefficients A, B and C.

8. Define :

(i) Equivalent Airspeed

(ii) True Airspeed.

Part - B (5 × 12 = 60)

Answer **All** questions.

9. (a) Describe how a Wheatstone bridge circuit may be utilized for the measurement of temperature.

(*Or*)

(b) How is the gyroscope of an electrically operated gyro horizon erected to, and maintained in, its normal operating position ?

10. (a) Describe how the rate gyroscope principle is used to indicate the rates at which an aircraft turns.

(*Or*)

(b) Describe the construction and operation of a typical pneumatic type of airspeed indicator.

11. (a) With the help of a diagram, briefly explain the operation of "Float type" fuel indicating system.

(*Or*)

(b) With the aid of a simple diagram, describe the construction of a combined Pitot and static pressure sensing probe.

12. (a) Write short notes on :

(i) Attitude alerting system.

(ii) Stall warning system and

(iii) Mach warning system.

(*Or*)

(b) Define thermocouple with diagrams, explain the thermocouple and their applications in aircraft systems.

13. (a) Define the three principle 'Q' codes of an altimeter. And state the types of altimeters available in a typical aircraft and their uses.

(*Or*)

(b) Describe how rate gyroscope may be utilized to sense both banking and rate of turn.

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CP-2995 4.4

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

AIRCRAFT ELECTRICAL SYSTEM

Duration : 3 Hours Maximum :75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions

1. What are the effects of Corona discharge ?

2. Write two types of lead acid battery.

3. What is meant by thermal runaway ?

4. Write the classification of D.C.Genertors.

5. What is the purpose of armature assembly ?

6. What is toggle switch ?

7. Write the principal application of external lighting.

8. Write the power rating of the landing gear lights.

Part - B

(5 × 12 = 60)

Answer **All** questions

9. (a) Describe about the static discharger wicks.

(*Or*)

(b) Briefly explain about the electrical and Electronic symbols used in aircraft diagram.

10. (a) Describe the principal functions of battery.

(*Or*)

(b) Explain the construction features of Nickel-Cadmium battery.

11. (a) Describe about the construction features of D.C.Generator armature assembly.

(*Or*)

(b) What is fuse ? And its constructional details.

12. (a) Describe the operation of push-switches ?

(*Or*)

(b) Describe the functions of static-inverters.

13. (a) Explain about the operating principle of rotating beam light.

(*Or*)

(b) Describe the control of lighting intensity.

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CP-2996 5.1

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

FUNDAMENTALS OF COMPUTER AND OFFICE AUTOMATION

Duration : 3 Hours Maximum :75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions

1. Define Software. What are its characteristics ?

2. Perform the binary multiplication. $(100111)_2$ * $(1101)_2$.

3. What are the parts of a Word window ?

4. Write any Three standard tools in Word and its function.

5. Define the following :
   (i) Cell
   (ii) Worksheet
   (iii) Workbook.

6. Write down the steps to align text and number in a Worksheet.

7. Write down the steps to Insert slide number to a presentation

8. Define Database. What are the desirable properties of a database ?

Part - B (5 × 12 = 60)

Answer **All** the questions

9. (a) Explain any TWO Input and any TWO Out put devices and its functions.

(*Or*)

(b) Define Operating System. Explain various types of Operating System with example.

10. (a) Explain how will you enhance the appearance of a document.

(*Or*)

(b) Explain the Mail Merge feature in Word.

11. (a) Explain how will you enter, edit and copy formula in Excel.

(*Or*)

(b) Explain any TWO options available in DATA menu in Excel.

12. (a) What is presentation ? Explain the steps to Animate different parts of a slide in a presentation.

(*Or*)

(b) Write down the steps to

(i) Create.

(ii) Save.

(iii) Copy.

(iv) Delete a slide in a presentation.

13. (a) Write down the steps to create a Table using Table wizard. Write a Query to access the Table.

(*Or*)

(b) Explain the steps how will you create a Report in Access . Discuss the options available in Report.

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CP-2997 **5.2**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

AVIATION LEGISLATION - I

Time : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **five** questions.

1. Explain the characteristics of Indian Aircraft Act, 1934.

2. What are the requirements of Civil aviation ?

3. What do you know about quality control ?

4. How do you get approval for your organisation ?

5. What is a log book ?

6. Bring out the concession available for approved organisation.

7. What do you mean by "Certificate of airworthiness" ?

8. Bring out the content of the mannuals of the approved organisation.

Part - B (5 × 12 = 60)

Answer **All** questions.

9. (a) Elucidate the rules relating to the registration of aircraft.

(*Or*)

(b) Describe the rules relating to the maintenance and operation of aircraft.

10. (a) Explain the different types approval of the aircraft organisation. Enumerate its merits and demerits.

(*Or*)

(b) Discuss the procedure involved in registration of aircraft organisation.

11. (a) Explain the procedure involved for changing the ownership of the aircraft organisation.

(*Or*)

(b) Discuss the precautions and procedure of aircraft fueling.

12. (a) Outline the mechanics of quality control during storage and supply.

(*Or*)

(b) Narrate the minimum requirements for grant of approach for aircraft organisation.

13. (a) Describe the recent issues relating to aircraft organisation.

(*Or*)

(b) Explain the important provisions of the Indian Aircraft Act, 1934.

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CP-2998 **5.3**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

AVIATION MAINTENANCE PRACTICES

Time : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **five** questions.

1. Define Maintenance ?

2. Define Maintenance Mannual ?

3. What is the purpose of Landing gear ?

4. What is Antigrid system ?

5. What is magnetic plug or chip detector ?

6. What is boroscope and its uses ?

7. What is surface corrosion ?

8. Define "Fretting" ?

Part - B (5 × 12 = 60)

Answer **All** questions.

9. (a) Describe the procedure of preparation of maintenance schedules ?

(*Or*)

(b) Explain the special checks to be carried out often Heavy Landing ?

10. (a) Describe the procedure of Landing gear retraction test ?

(*Or*)

(b) Describe the Constructional features of High Pressure Brake system ?

11. (a) Explain the Blade Tracking Procedure ?

(*Or*)

(b) Describe about the Propeller suspension.

12. (a) Briefly explain the Gas turbine engine shutdown procedure ?

(*Or*)

(b) Describe the procedure of FOD checks ?

13. (a) Describe the procedure of chemical cleaning of Aluminium Alloys ?

(*Or*)

(b) List out the details for control of corrosion.

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CP-2999 5.4

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

EXECUTIVE COMMUNICATION

Duration : 3 Hours Maximum :75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions

1. What do you mean by Communication ?

2. What are the differences between verbal and non-verbal Communication ?

3. What are the merits of Sales promotion letters ?

4. Write a note on Dyadic Communication.

5. Write a note on Agenda.

6. What do you mean by formal and informal reports ?

7. What are the demerits of telephonic conversation ?

8. What do you mean by Group Discussion ?

Part - B (5 × 12 = 60)

Answer **All** questions

9. (a) Explain the norms for writing Business Letters ?

(*Or*)

(b) Explain the methods to overcome Barriers to Communication.

10. (a) Briefly explain the various principles of effective Communication.

(*Or*)

(b) Explain in detail the various kinds of Business Letters.

11. (a) Explain the different types of Reports.

(*Or*)

(b) What are the important points to be considered in writing Research Reports ?

12. (a) Write note on :
(i) Verbal Communication and
(ii) Non-verbal Communication.

(*Or*)

(b) Explain the procedure for Conducting Seminars and Conferences.

13. (a) How will you prepare agenda and minutes of meeting ? What are the differences between minutes and Agenda ?

(*Or*)

(b) Explain special hints that will guide you in Drafting a Speech.

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CP-3000 | 6.1

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

HELICOPTER CONFIGURATION AND MAINTENANCE

Duration : 3 Hours | Maximum :75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions

1. What is "Centre of pressure" ?

2. Describe collective pitch.

3. Write short note on semi rigid rotor heads.

4. What is the purpose of counter weights ?

5. Write a short note on swash plate.

6. What is a clutch unit ?

7. What are the basic components of a Turbo shaft engine ?

8. What are the main parts of a Tail rotor hub ?

Part - B (5 × 12 = 60)

Answer **All** questions

9. (a) Describe the forces acting on a rotor blade.

(*Or*)

(b) Explain the aerodynamic characteristics of a helicopter.

10. (a) Explain the fiber glass rotor blades.

(*Or*)

(b) Describe the procedure for blade alignment.

11. (a) Describe the Span wise dynamic balance of the main rotor blade.

(*Or*)

(b) Explain the Autorotation adjustments.

12. (a) Explain the pull-push tubes used in cyclic and collective controls.

(*Or*)

(b) Describe the particles separators in a turbo shaft engine.

13. (a) Describe Tail rotor system components.

(*Or*)

(b) Explain the electronic tracking method of the tail rotor.

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CP-3001 **6.2**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

COMMUNICATION AND NAVIGATION SYSTEM

Duration : 3 Hours Maximum :75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions

1. What are the frequency bands and its range of frequencies used in radio communication ?

2. Write the procedures used for testing the communication equipment.

3. What are the functions of the antennae used in the VOR ground station

4. What is ARINC ?

5. Write short notes on Radar altimeter.

6. Write short notes on ELT.

7. Write short notes on PPI display of radar ?

8. What are the different radar bands of frequencies ?

Part - B (5 × 12 = 60)

Answer **All** questions

9. (a) Describe amplitude and frequency modulations.

(*Or*)

(b) What are the categories of carrier wave propagation ? Explain with diagrams.

10. (a) What are the classification of amplifier according to operating level ? Explain with operating curve.

(*Or*)

(b) Explain tuning of receiver using LC circuits.

11. (a) Describe the operation of DME.

(*Or*)

(b) Describe the operation of Localizer.

12. (a) Describe the Marker Beacon.

(*Or*)

(b) Explain the functions of Mode A, Mode C, and Mode S transponder.

13. (a) Describe Global Positioning System.

(*Or*)

(b) Describe transmitter and receiver of Weather Radar.

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CP-3002 **6.3**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

AVIATION LEGISLATION - II

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions

1. What do you understand by Traffic Collision Avoidance System (TCAS)

2. List the minimum equipments list for aircraft operations.

3. State the qualification and experience of Pilots carrying out test flight.

4. Explain special flight permits.

5. Explain certificate of competency.

6. Explain briefly GPWS (Ground Proximity Warning System)

7. What are the requirements of exit row seating in passenger aircraft ?

8. Explain the different types of aircraft maintenance.

Part - B (5 × 12 = 60)

Answer **All** questions

9. (a) Explain the test equipments used in aircraft and their calibration requirements.

(*Or*)

(b) Explain Cockpit Voice Recorder (CVR) and Flight Data Recorder (PDR) for an aircraft.

10. (a) Explain the conditions for issue/Renewal of licence to flight engineers and their privileges.

(*Or*)

(b) Explain certificate of competency, to validity and privileges.

11. (a) Explain certificate related to different types of maintenance of an aircraft.

(*Or*)

(b) Explain weighment of aircraft and preparation of weight schedule.

12. (a) Explain test flight data and how they are used for evaluation of climb performance.

(*Or*)

(b) Explain Aerodrome and Air traffic services.

13. (a) List out crew composition for a passenger aircraft and discuss their duties.

(*Or*)

(b) Explain in detail the different documents to be carried by the crew of an aircraft.

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CP-2981 **1.1**

B.Sc. DEGREE EXAMINATION, APRIL 2010

Aircraft Maintenance Science

ENGLISH

Duration : 3 Hours Maximum : 75 Marks

Part - A (5 × 3 = 15)

Answer any **Five** questions.

1. What are the various causes of soil erosion ?

2. Show how the author concludes that cats and dogs are not enemies.

3. Describe the journey of the coach along the Corduroy road.

4. What is the thought content of the sonnet 'On this Blindness' ?

5. How does Shelley bring out the vanity of Qzymandias ?

6. Write a brief appreciation of the poem 'La Belle Dame Sans Mercy'.

7. Write a short paragraph about the battle of Waterloo.

8. Examine the conduct of the Chaplain in the play. 'The New Mangman'.

Part - B (5 × 12 = 60)

Answer **All** the questions.

9. (a) Write an essay on the means on conservation of water and its many uses.

(*Or*)

(b) Write a critical appreciation of the poem 'On his Blindness'

10. (a) How does A.G Gardiner argue for the preservation of the art of letter-writing ?

(*Or*)

(b) Compare and contrast Lomov and Natalia in the play 'The Proposal'.

11. (a) Write an essay on the character of the cat as drawn by Katharine M.Wilson.

(*Or*)

(b) Write about the development of thought in the poem 'The Solitary Reaper'.

12. (a) How do you prepare and present a technical report ?

(*Or*)

(b) Write a letter to your friend in Bangalore requesting him to arrange an accommodation for your stay in Banglore for 5 days with your friends.

13. (a) "Writing maketh an exact man"-Analyse Bacon's statement.

(*Or*)

(b) Develop the following Lints into a story.

An old lady becomes blind - calls a doctor - doctor calls daily - delays cure - steals lady's furniture - at last cures - demands his fees - lady refuses - cure incomplete - doctor saes Judge asks reason - she can not see her furniture -Judge's verdict in her favour - moral.

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