C–3793	Sub. Code
	91313

B.Sc. DEGREE EXAMINATION

AIRCRAFT MAINTENANCE SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

First Semester

MATHEMATICS

(2016 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Short answer questions with no choice.

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

2. Define partial fractions.

3. Write the statement of De Moivre's theorem.

4. Find the modulus and argument of $(1+i)^{1-i}$.

5. Define Homogeneous functions.

6. State the Leibnitz's theorem.

7. Evaluate $\int \sin(x^5)x^4 dx$.

8. Find $\int \frac{e^x}{1+e^x} dx$.

9. Define differential equation with example.

10. What is meant by solution? Write down the three kinds of solutions.

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

Brief answer with either or type.

11. (a) Find the value of $(0.999)^{1/3}$ correct to 4 decimal places.

Or

(b) Find the first four terms in the expansion of $(8-x)^{1/3}$.

12. (a) Prove that $\frac{(\cos 5\theta - i\sin 5\theta)^2(\cos 7\theta + i\sin 7\theta)^{-3}}{(\cos 4\theta - i\sin g4\theta)^9(\cos\theta + i\sin g\theta)^5} = 1$.

Or

(b) Expand $\sin^7\theta \cos^3\theta$ in a series of sines of multiples of θ.

13. (a) Evaluate $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ if $z = x^2y - x\sin xy$.

Or

(b) If $u = \sin^{-1}\frac{x^2+y^2}{x+y}$, prove that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = \tan u$.

14. (a) Evaluate $\int \frac{1}{x^2+3x+2} dx$.

Or

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

15. (a) Solve $y = px + \frac{a}{q}$.

Or

(b) Solve $p(p+y) = x(x+y)$.

Part C (3 × 10 = 30)

Essay type questions of either or type.

16. (a) When x is small show that $\sqrt{x^2+4} - \sqrt{x^2+1} = 1 - \frac{x^2}{4} + \frac{7}{64}x^4$ nearly?

Or

(b) Determine the partial fraction decomposition of $\frac{4x^2}{(x-1)(x-2)^2}$.

17. (a) Use De Moiver's theorem to solve the equation $x^4 - x^3 + x^2 - x + 1 = 0$.

Or

(b) If $Y - x^4 \cos 3x$, find Y_n.

18. (a) Evaluate $\int \frac{2x-1}{\sqrt{x^2+5x+6}}dx$.

Or

(b) Solve $x - yp = ap^2,\ 0 < p < 1$.

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B.Sc. DEGREE EXAMINATION

AIRCRAFT MAINTENANCE SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

First Semester

WORKSHOP PRACTICES

(2016 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Workshop layout?

2. What are the actions to be taken in case of Fire Exist?

3. What are the purposes of Router?

4. List out the functions Rotary Tool.

5. List out the types of Micrometers.

6. What are the uses of Slip Gauge?

7. Define Tolerance.

8. What is thread fit?

9. Define the "Turning" in Lathe.

10. List out the types of Welding Processes.

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

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

11. (a) How do you organize Hardware and Tools?

Or

(b) List out the safety aspects of Electrical Equipments.

12. (a) Write the list of different types of hand tools.

Or

(b) Write short notes on Measuring Tools.

13. (a) Write short notes on "dial Indicators".

Or

(b) Write short notes on Bevel Protractor.

14. (a) Discuss about the various types of bearing failures.

Or

(b) Write short notes on Unified Inch Screw Threads.

15. (a) Write the aims of Route turning operation.

Or

(b) Write short notes on "Arc Welding.

Part C (3 × 10 = 30)

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

16. (a) List out the precautions to be observed for Oxygen welding gas storage.

Or

(b) List out the common power tools list and its uses.

17. (a) List out the general procedure for use of electrical test.

Or

(b) How to use a Micrometer and its handling precautions?

18. (a) Describe the procedure for proper handling of Roller Bearings.

Or

(b) Describe about the Lathe Feed Mechanism.

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B.Sc. DEGREE EXAMINATION

AIRCRAFT MAINTENANCE SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

First Semester

BASIC ELECTRICITY

(2016 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Electric Current?

2. What is atomic energy level?

3. States “Ohms” law.

4. States “Thevenin’s Theorem.

5. Define “Switch”.

6. States “Lenzs Law”.

7. What are the purposes of Ammeter?

8. What is called shunt resistance?

9. What is Pitch Factor?

10. Write the importance of Aspect Ratio.

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

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

11. (a) What is quantum Mechanism and its importance?

Or

(b) List out the types of Semi-conductors.

12. (a) Write the significance of Ohm's law Triangle Technique.

Or

(b) What are the advantages of Series Connections?

13. (a) Write short notes on Rotary Switch.

Or

(b) List out the applications of Inductors.

14. (a) Why should not connect in ammeter directly across a voltage source?

Or

(b) Write short notes on Series Ohmmeter.

15. (a) Write short notes on commutators in DC generator.

Or

(b) Write the importance of Wound Field.

Part C (3 × 10 = 30)

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

16. (a) Discuss about the types of energy bands and its importance.

Or

(b) Briefly explain the measurement on magnetic field and its applications.

17. (a) List out the rules regarding series/parallel circuits.

Or

(b) Write short notes on

(i) Kirchhoff's current law

(ii) Kirchhoff's Voltage law.

18. (a) Write the procedures for uses of analog multimeter.

Or

(b) Discuss about the major parts of assembly of DC Generator.

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B.Sc. DEGREE EXAMINATION

AIRCRAFT MAINTENANCE SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Second Semester

APPLIED PHYSICS

(2016 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define thin films.

2. Why Newton's rings are circular?

3. Difference between polarizer and analayser.

4. Write down the postulates of special theory of relativity.

5. Explain about NDT.

6. What is Piezoelectric effect?

7. Give the acranym of 'LASER'.

8. Define critical angle in optical fiber.

9. What is a superconductor?

10. Define miller indices.

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

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

11. (a) Explain the interference in wedge shaped thin films.

Or

(b) Write the difference between Frensel and Fraunhofer diffraction.

12. (a) State and prove Breswter's Law.

Or

(b) Derive the length contraction in special theory relativity.

13. (a) Give the application of ultrasonics waves.

Or

(b) Discuss the properties of ultrasonics waves.

14. (a) Write a short note on Holography.

Or

(b) Give the explanation about the propagation of light through a cladded fiber.

15. (a) Explain the concept of crystal defects.

Or

(b) Explain "Messiner Effect".

Part C (3 × 10 = 30)

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

16. (a) Explain the concept of Rayleigh's resolving power.

Or

(b) Derive Galiean transformation of special theory of relativity.

17. (a) Write in brief about

(i) Time dilation

(ii) Mass energy equivalence.

Or

(b) Obtain Sabine's Reverbration formula.

18. (a) Explain the types of optical fibres and its application.

Or

(b) Write in brief about

(i) Bravais lattices

(ii) Miller indices.

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B.Sc. DEGREE EXAMINATION

AIRCRAFT MAINTENANCE SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Second Semester

PRINCIPLE OF ELECTRONICS AND ELECTRONICS CIRCUIT

(2016 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Give the difference between inductor and capacitor.

2. Why inductor is used instead of capacitor? Justify your answer.

3. Draw a neat sketch of P-type and n-type semiconductor.

4. Differentiate BJT and FET Transistor.

5. Define power amplifier efficiency.

6. Explain the distortion in power amplifier.

7. Write down Barkhausian criteria of oscillator.

8. Deuine LC-Oscillation.

9. What is scale changer?

10. Convert $(35)_{10}$ to binary number.

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

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

11. (a) Explain capacitor in parallel and series connection.

Or

(b) Write the difference between fixed and variable capacitors.

12. (a) Give the difference between Intrinsic and Extrinsic semiconductor.

Or

(b) Explain the characteristics of DIAC-VI.

13. (a) With a neat graphical representation discuss about the class A power amplifier.

Or

(b) Derive an relation between the α and β of transistor.

14. (a) Write a short note on Hartley oscillator.

Or

(b) Explain the construction and working principle of Colpitts Oscillator.

15. (a) Differentiate between amplitude and phase modulation.

Or

(b) Explain the characteristics of an OP-AMP.

Part C (3 × 10 = 30)

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

16. (a) Write in detail about the inductors and its series and parallel connections.

Or

(b) With neat diagram explain about the operation of Field effect of Transistor(FFT).

17. (a) Explain with neat diagram the operation of class B and class C power amplifier.

Or

(b) Explain neat diagram Construction working Principle of Wien bridge oscillator. And hence derive the frequency of oscillation.

18. (a) Discuss the working principle of radio, transmission and reception.

Or

(b) Explain OP-AMP as a

(i) Integrator

(ii) Differentiator.

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