A N N A M A L A I   U N I V E R S I T Y

(Accredited with 'A⁺' Grade by NAAC)

CENTRE FOR DISTANCE AND ONLINE EDUCATION

Annamalainagar – 608 002

Semester Pattern: 2025-26 - JANUARY SESSION

Instructions to submit Third Semester Assignments

1. Following the introduction of semester pattern, it becomes **mandatory for candidates to submit assignment for each course.**

2. Assignment topics for each course will be displayed in the A.U, CDOE website (**www.audde.in**).

3. Each assignment contains 5 questions and the candidate should answer all the 5 questions. Candidates should submit assignments for each course separately. (5 Questions x 5 Marks =25 marks).

4. Answer for each assignment question should not exceed 4 pages. Use only A4 sheets and write on one side only. **Write your Enrollment number on the top right corner** of all the pages.

5. Add a template / content page and provide details regarding your Name, Enrollment number, Programme name, Code and Assignment topic. Assignments without template / content page will not be accepted.

6. Assignments should be handwritten only. Typed or printed or photocopied assignments will not be accepted.

7. **Send all Third semester assignments in one envelope**. Send your assignments by Registered Post to The Director, Centre for Distance and Online Education, Annamalai University, Annamalai Nagar – 608002.

8. Write in bold letters, "ASSIGNMENTS – THIRD SEMESTER" along with PROGRAMME NAME on the top of the envelope.

9. Assignments received after the **last date with late fee** will not be evaluated.

   Date to Remember

   Last date to submit Third semester assignments   : 15.04.2026
   Last date with late fee of Rs.300 (three hundred only) : 30.04.2026

Dr. S.ARULSELVI
Director

018E2310 : COMPLEX ANALYSIS – I

(5x5=25)

1. Show that the real and imaginary parts of an analytic function are harmonic. .

2. State and Prove Luca's theorem.

3. Prove that, every rational function has a representation by partial fractions

4 Show that, every convergent sequence is a Cauchy sequence.

5. State and prove Cauchy's Theorem for a rectangle

(5x5=25)

018E2320 : SET TOPOLOGY

1. Let X be metric space. Show that, a subset G of X is open $\Leftrightarrow$ G is a union of open spheres

2. Let X be a complete metric space, and Y be a subspace of X . Prove that, Y is complete $\Leftrightarrow$ Y is closed.

3. State and Prove Baire's Theorem

4. State and Prove Lindelof's Theorem

5. a) Show that, any continuous image of a compact space is compact

   b). Prove that, every closed and bounded subspace of the real line is compact

(5x5=25)

018E2330 : GRAPH THEORY

1. Prove that The number of edges in a tree on v vertices is v-1 .

2. Prove that For a graph G with ε, = v-1, the following statements are equivalent

   1.   G is connected
   2.   G is Acyclic
   3.   G is a tree

3. State and Prove Hall's Theorem

4. State and Prove Tutte's Theorem.

 5. Prove that a bipartite graph G has a perfect matching iff $|N(S)| \geq |S|$ for all $S \subset V(G)$..

018E2340 : PROBABILITY THEORY

1. If two dice are thrown, what is the probability that the sum is
     a) Greater than 8 and
     b) neither 7 nor 11?
2. State and Prove Inversion Theorem
3. Find the mean and Variance of Bionomial Distributions from MGF.
4. Let (X,Y) be a bivariate normal rv with parameters μ_1, μ_2, σ_1^2, σ_2^2, and ρ, and let U= aX +b, a≠0, and V = cY +d, c≠0. Find the joint distribution of (U,V).
5. The regression lines of Y on X and X on Y are respectively
     Y=aX+b and X=cY+d

   Show that the ratio of the S.D's of y and X is $\sqrt{a/c}$ and the arithmetic means are

   $\overline{X} = (bc + d)/(1 - ac) \quad \overline{Y} = (ad + b)/(1 - ac)$

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