

ALAGAPPA UNIVERSTIY STUDY CENTRE TUTICORIN

2nd SEM ASSIGNMENT QUESTION

INTERNAL MARK: 25 / PER SUBJECT

MSC MATHS

31121 ALGEBRA – II

1. Establish Gram-Schmidt's orthogonalization process
2. State and prove the fundamental theorem of Galois theory
3. Show that union of two subspaces may not be a subspace
4. Construct a field of order 8 ?
5. Define orthogonal complement of a subspace W and prove that it is a subspace of V

31122 ANALYSIS – II

1. Prove that every non – constant polynomial with complex co – efficient has a complex root.
2. The Fundamental Theorem of Calculus ?
3. EGOROFF'S THEOREM – EXPLAIN
4. State and prove Weierstrass M – test.
5. State and prove bounded convergence theorem

31123 TOPOLOGY – II

1. State and prove Tietze extension theorem.
2. State and prove the classical version of Ascoli's theorem
3. Prove that every Paracompact Hausdorff space X is normal
4. Prove that every metrizable space is Paracompact
5. Show that any discrete space has dimension 0

31124 PARTIAL DIFFERENTIAL EQUATIONS

1. Find the general solution of $x^2 \frac{\partial z}{\partial x} + y^2 \frac{\partial z}{\partial y} = (x+y)z$
2. Find the orthogonal trajectories on the curve $x^2 + y^2 = z^2 \tan^2 \alpha$ of its intersections with the family of planes parallel to $z=0$
3. Find a particular integral of the equation $(D^2 - D^1)z = 2y - x^2$
4. The points of trisection of a string are pulled aside through a distance E on opposite sides of the position of equilibrium, and the string is released from rest. Derive an expression for the displacement of the string at any subsequent time and show that the mid point of the string always remains at rest.
5. Show that the equation $xpq + yq^2 = 1$ has complete integrals
 $(z + b)^2 = 4(ax+y)$