

YASHWANTRAO CHAVAN MAHARASHTRA OPEN UNIVERSITY, NASIK

HOME ASSIGNMENT

(2016-17)

M.Sc. Mathematics (V57)

Instructions for the Students:

- 1) All Questions are compulsory.
 - 2) Each Sub-question carries 5 marks.
 - 3) Each Sub-question should be answered between 75 to 100 words. Write every question's answer on separate page.
-

SEMESTER IV

Measure and integration (S24041)

- | | |
|--|----|
| Q.1 Explain Measurable Functions | 5M |
| Q.2 Explain Monotone Convergence Theorem | 5M |
| Q.3 Write note on Inner Measure | 5M |
| Q.4 Explain Holder Inequality | 5M |
-

Partial Differential Equation (S24042)

- | | |
|---|----|
| Q.1 Explain The Special Integral with example? | 5M |
| Q.2 Obtain the complete integral of the p.d.e.? | 5M |

$$z^2(1 + |p|^2 + q^2) = 1.$$

- | | |
|---|-----|
| Q.3 Write note on Jacobi's Method | 5M |
| Q.4 Explain Families of Equipotential surfaces? | 5 M |
-

Riemannian geometry I (S24043)

- Q.1 Explain Length of a curve and Magnitude of a vector ? 5M
- Q.2 Write Properties of Euclidean Space ? 5M
- Q.3 Explain and prove Riemannian co-ordinates are geodesic co-ordinates with pole at p_0 . 5M
- Q.4 If a vector u_i undergoes a parallel displacement along a curve, then show that the vector u_i has a constant magnitude along the curve. 5M
-

Riemannian Geometry II (S24044)

- Q.1 Explain Expression for Riemannian Curvature? 5M
- Q.2 Write Gauss's Formulae ,its theorem ? 5M
- Q.3 Write note on Hyperplanes and Hypersurfaces ? 5M
- Q.4 Explain Subspaces of a Riemannian Space? 5 M
-

Operation research II (S24045)

- Q.1 Explain inventory in details? 5M
- Q.2 A fertilizer company distributes its products by trucks loaded at its only loading station. Both company trucks and contractors trucks are used for this purpose. It was found out that on an average every 5 minutes one truck arrived and the average loading time was 3 minutes 40% of the trucks belong to the contractors making suitable assumptions determine (i) The probability that a truck has to wait. (ii) The waiting time of a truck that waits. 5M
- Q.3 A Barber with one-man takes exactly 25 minutes to complete one hair cut. If the customers arrive in a poisson fashion at an average rate of one every 40 minutes, having on the average must a customer wait for service ? 5M
- Q.4 Explain Time Estimates and Critical Path in Network Analysis? 5 M
-