SYLLABUS FOR TAMILNADU COMMON ENTRANCE TEST (TANCET)

PART – III

21. PRODUCTION AND INDUSTRIAL ENGINEERING

Basic Mechanisms and Elements of Design : Mechanisms, Friction, Gearing and Cams, Balancing, Vibration, Fundamentals of Design, Design of Basic Machine Elements, Design of Mechanical drives, Design of Automotive components, Recent Advances.

Casting, metal forming and metal joining processes : Casting Processes, Welding Processes, Special Casting Processes, Testing of Castings & Weldments - Fundamentals of Metal Forming, Forging and Rolling, Extrusion and Drawing Processes, Sheet Metal Forming Processes, Recent Advances, Mechanisms, Friction, Gearing and Cams, Balancing, Vibration, Fundamentals of Design, Design of Basic Machine Elements, Design of Mechanical drives, Design of Automotive components, Recent Advances.

Tool Engineering, Machine tool operation, Metrology and Inspection : Mechanics of Metal Cutting, Tool Material, Tool Wear and Tool Life, Gear Manufacture, Concept & Programming of CNC machines, Advanced CNC programming & Tooling - General Concepts of measurements, Linear and Angular measurements, Measurement of Surface Finish Measuring Machines, Metrology of Screw Thread & Gears, Computer Aided Inspection and Laser Metrology - Strength and rigidity of machine tool structures, Slideways, Spindles and spindle supports, Machine Tool Dynamics.

Engineering Materials, and Computer Aided Manufacturing : Introduction and Constitution of Alloys and Phase Diagrams, Heat Treatment, Ferrous and Non Ferrous Metals, Mechanical Properties and Testing, Welding and Foundry Metallurgy, Manufacturing Processes for Plastic, Mechanical, Chemical and Electro-chemical energy based processes, Electrical Energy based Waste Processes, Thermal Energy Process, Rapid Prototyping and Rapid Tooling – polymer Matrix Composites, Metal Matrix Composites, Ceramics Matrix Composites, Advances in Polymers & Composites.

Product and Process Design, Design of Jigs and Fixtures and Press Tools : Computer Aided Design, Computer Graphics Geometric Modelling, Product Design Concepts, Recent Advances, Process Planning, Estimating, Costing and Elements of Cost, Analysis of Overhead Expenses, Estimation of Costs for Forging, Casting and Welding, Estimation of Machining Time, Purpose Types and Functions Of Jigs and Fixtures, Jigs, Fixtures, Press working Terminologies and Elements of dies and Strip Layout, Design and Development of Dies.

Operations Research: Linear Programming, LP Extensions, Networks, Inventory Models, Dynamic Programming, Decision Analysis, Game Theory, Waiting Line Models, Markov Processes.

Operations Management : Forecasting, Aggregate Planning, Capacity Management, Production Activity Control, Estimation and Costing, Product Cost Estimation, Software Cost Estimation, Costing Methods, Cost Analysis for Planning and Control.

Quality Control Reliability and Maintenance : Quality Concepts, Statistical Process Control, Process Capability Analysis, Advanced Control Charts, Acceptance Sampling, Reliability Concepts, Failure Data Modeling, Reliability Prediction and Modeling, Reliability Management, Risk Assessment, Maintenance Concept, Maintenance Models, Maintenance Logistics, Total Production Maintenance, Fault Diagnosis.