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DEVI AHILYA VISHWAVIDYALAYA, INDORE  
INSTITUTE OF ENGINEERING & TECHNOLOGY(IET-DAVV)

SYLLABUS FOR DOCTORAL ENTRANCE TEST (DET)

**SUBJECT: MECHANICAL ENGINEERING**

(Effective from 29<sup>th</sup> July 2021)

**PART-B**

Part-B shall consist of 50 objective type compulsory questions of (01) mark each based on the syllabus of the subject as follows:

**Design Engineering:** Basic concepts of Stress & Strain, Shear Force and bending moment of beams, Torsion of shaft. Mechanical properties of materials, Heat treatment of metals and alloy. Concepts of Cams and Gearing. Single degree & Two degree freedom system of vibration, Power transmissions elements, i.e. Belt, Gears, Clutches, Rope and Chain drive, Theories of failures and their applications, Journal and rolling element bearings design.

**Thermal Engineering:** Second law of Thermo dynamics, Entropy and Thermo dynamic relations, Fluid Kinematics, Laminar and Turbulent flow, Reynolds number, Internal combustion Engine: Spark Ignition and Compression Ignition Engines. Air standard cycles, Heat Transfer through Conduction, Convection and Radiation, Turbines and Pumps, High pressure Boilers, Rankin cycle, Nozzles and Steam Turbine. Basic concepts of refrigeration and air conditioning, Vapour Compression and Vapour Absorption Refrigeration systems.

**Industrial and Production Engineering:** Different operations on Lathe and Milling machine. Drilling & Grinding operations. Fundamentals of Machine tools, Theory of Metal Cutting, Unconventional Machining Processes. Basic concepts of Productivity and Work Study, Quality, Statistical Quality Control techniques, Acceptance Sampling. Linear Programming: Problem formulation, Transportation, Assignment, Queuing Models, Game Theory. Operations Management: Demand Forecasting techniques, types of production systems and layouts. Production Planning and control. Concepts of Inventory Management, Concepts of Purchase management.

*D. Javan*  
*CDR. Ashish Tiwari*  
*29/07/2021*  
*Mehmet*  
*29/07/2021*  
*Ahmed*  
*29/07/2021*  
*Shamir*  
*29/07/21*  
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