

MME 1051: BASIC MECHANICAL ENGINEERING [3 0 0 3] (2018)

Properties of Steam and Boilers: Steam formation, Types of steam, Steam properties- Enthalpy, Simple numerical for finding enthalpy and dryness fraction. Steam Boilers: Classification, Working principle of Babcock & Wilcox Boiler. **Introduction to Boiler Mountings and Accessories.** (5)

Prime Movers: Classification of Prime movers, working principle of steam, gas and water turbines, Concept of impulse and reaction steam turbines. **Compounding of steam turbines- velocity compounding, pressure compounding and pressure – velocity compounding** (3)

Power plants: Working principle of thermal, nuclear, hydel and solar power plants (Illustration with block diagram only) (2)

Refrigeration: Principle and working of vapour compression refrigeration system, Desirable properties of an ideal refrigerant, Definition of COP, Unit of refrigeration (2)

I.C. Engines: Classification, Working of 2-stroke, 4 - stroke C.I and S.I Engines with P-V diagrams, Definitions and simple numerical for determining Indicated Power, Brake Power, Mechanical efficiency, Indicated thermal efficiency, and Brake thermal efficiency, Working of simple carburettor, Types and properties of lubricants, Splash lubrication system. (7)

Power Transmission: Definition, Belt drives- open and crossed ,Velocity ratio, Stepped cone pulley, Fast and loose pulley, Length of belt, Tension in the belt, Slip, Creep (No derivations), Introduction to rope drive and chain drives, Gear Drives-Types of gears, Velocity ratio for Gear trains, Simple and compound gear trains, Numerical on belt and gear drives. (7)

Machine Tools: Lathe - Classification, Block diagram of engine lathe, Specification of lathe, **lathe operations such as plain turning, step turning, thread cutting , knurling, facing, chamfering and taper turning. Methods of taper turning such as swivelling the compound rest and tail stock set over.** Drilling - Classification of drilling machines, Block diagram of radial drilling machine, **drilling operations such as reaming, boring, counter boring, counter sinking, spot facing and tapping.** (5)

Casting and Forging: Types of moulding sand and its desirable properties, Patterns- Single piece and split piece pattern, Pattern allowances, Steps in the preparation of two box green sand mould, Defects in casting, Introduction to forging. (3)

Welding: Classification, Principle of Resistance spot welding, Electric arc welding and oxy-acetylene gas welding, Gas flames, Introduction to soldering and brazing (2)

References: 1. K. R.Gopalakrishna, "Text book of elements of Mechanical Engineering", Subhash Publications, Bangalore, 2005.

2. Roy & Choudhury, "Elements of Mechanical Engineering", Media Promoters & Publishers Pvt. Ltd, Mumbai, 2000.

3. Mishra B.K., "Mechanical Engineering Sciences", Kumar & Kumar Publishers (P) Ltd, Bangalore, 1999.

4. Trymbaka Murthy S., "A text book of elements of Mechanical Engineering", I. K. International Publishing House Pvt. Ltd, 2010.

5. Rajput R. K., "Elements of Mechanical Engineering", Fire Wall Media, 2005. 6. B. S. Raghuwanshi, "A Course in Workshop Technology", Vol 1, Dhanpat Rai & Sons, New Delhi, 2005.

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