06 Hours

UNIT - 8

Aesthetic Concepts: Concept of unity-concept of order with variety-concept of purpose style and environment –Aesthetic expressions. Style –components of style house style, observation style in capital goods, case study.

06 Hours

TEXT BOOKS:

1. **Work study,** ILO, 3rd edition, 2006
2. **Human Factor Engineering**: Sanders & McCormick, 7th Ed., McGraw Hill Publications.

REFERENCE BOOKS:

1. **Applied Ergonomics Hand Book,** Brain Shakel, Butterworth Scientific, London 1988
2. **Introduction to Ergonomics,** R. C. Bridger, McGraw Hill Publications.
3. **Industrial Design for Engineers,** Mayall W. H. London Hiffee Books Ltd., 1988
4. **Work Study & Ergonomics,** Suresh Dalela & Saurabh, standard publishers & distributors,1999

BIOMASS ENERGY SYSTEMS

Sub Code	**: 10ME 843**	**IA Marks**	**: 25**
Hrs/week	**: 04**	**Exam Hours**	**: 03**
Total Lecture Hrs	**: 52**	**Exam Marks**	**: 100**

PART - A

UNIT - 1

Introduction: Biomass energy sources, energy content of various Bio – fuels, Energy plantation, origin of Biomass photo synthesis process, Biomass Characteristics, sustainability of Biomass.

06 Hours

UNIT - 2

Biomass Conversion Methods: Agrochemical, Thermochemical, Biochemical (flowchart) & Explanation.

06 Hours

H. O. D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Techno...
Mijar, MOODBIDRI - 574 22...

UNIT - 3

Physical & Agrochemical Conversion: Briquetting, Pelletization, Agrochemical, fuel Extraction, Thermo chemical Conversion: Direct combustion for heat, Domestic cooking & heating.

07 Hours

UNIT - 4

Biomass Gasification: Chemical reaction in gasification, Producergas& the constituents, Types of gasifiers. Fixed bed gasifiers, Fluidized bed gasifiers.Liquefaction: Liquefaction through pyrolysis & Methanol synthesis, application of producer gas in I C Engines.

07 Hours

PART - B

UNIT - 5

Bio-Methanization: Anaerobic digestion, Basic principles, factors influencing Biogas yield, classification of Biogas digester, floating gasholder & fixed dome type.(Working Principle with diagram), Calculations for sizing the Biogas plant.

06 Hours

UNIT - 6

Biogas For Power Generation: Ethanol as an automobile fuel, Ethanol production & its use in engines.

06 Hours

UNIT - 7

Bio - Diesel: Bio Diesel from edible & non-edible oils, Production of Bio diesel from Honge & Jatropha seeds, use of bio diesel in I C engines, Engine power using Bio diesel, Blending of Bio diesel, Performance analysis of diesel engines using bio diesel. Effect of use of bio diesel in I C engines.

07 Hours

UNIT - 8

Bio Power Plants: Bio Power generation routes, Basic Thermodynamic cycles in Bio power generation; Brayton cycle, Sterling cycle, Rankine cycle, Co-generation cycle. Biomass based steam power plant.

07 Hours

TEXT BOOKS:

1. **Bio Gas Technology,** B.T. Nijaguna. New Age International- New Delhi.2001-02
2. **Energy Technology,** S. Rao & B. B. Parulekar – Khanna Publishers, Delhi-1999.
3. **Non Conventional Energy Sources,** G. D. Rai - Khanna Publishers. Delhi.

H.O.D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

REFERENCE BOOKS:

1. **Greenhouse Technology for Controlled Environment,** G.N. Tiwari, Alpha Science International Ltd., Pangbourne.England.
2. **Renewable Energy Resources,** John.W.Twidell, Anthony. D. Weir, EC BG-2001.
3. **BioMass, Deglisc. X and P. Magne,** Millennium Enterprise, New Delhi.

AUTOMOTIVE ENGINEERING

Sub Code	**: 10ME 844**	**IA Marks**	**: 25**
Hrs/week	**: 04**	**Exam Hours**	**: 03**
Total Lecture Hrs	**: 52**	**Exam Marks**	**: 100**

PART - A

UNIT - 1

Engine Components And Cooling & Lubrication Systems: Spark Ignition (SI) & Compression Ignition (CI) engines, cylinder – arrangements and their relatives merits, Liners, Piston, connecting rod, crankshaft, valves, valve actuating mechanisms, valve and port timing diagrams, Types of combustion chambers for S.I.Engine and C.I.Engines, Compression ratio, methods of a Swirl generation, choice of materials for different engine components, engine positioning, cooling requirements, methods of cooling, thermostat valves, different lubrication arrangements.

07 Hours

UNIT - 2

Fuels, Fuel Supply Systems For Si And Ci Engines: Conventional fuels, alternative fuels, normal and abnormal combustion, cetane and octane numbers, Fuel mixture requirements for SI engines, types of carburetors, C.D.& C.C. carburetors, multi point and single point fuel injection systems, fuel transfer pumps, Fuel filters, fuel injection pumps and injectors.

07 Hours

UNIT - 3

Superchargers And Turbochargers: Naturally aspirated engines, Forced Induction, Types pf superchargers, Turbocharger construction and operation, Intercooler, Turbocharger lag.

06 Hours

UNIT - 4

Ignition Systems: Battery Ignition systems, magneto Ignition system, Transistor assist contacts. Electronic Ignition, Automatic Ignition advance systems.

06 Hours

H. O. D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225