SOL223:FARM MACHINERY AND POWER

L:1 T:0 P:2 Credits:2

Course Outcomes: Through this course students should be able to

CO1 :: memorize various sources of farm power and the fundamental of I.C. engines

CO2 :: explain tractor systems and farm machinery functions

CO3 :: apply knowledge of implements in tillage, sowing, and planting operations

CO4 :: analyze working principles of harvesting, threshing, and plant protection equipment

Unit I

Introduction to farm power and mechanization : farm power: status and sources, farm mechanization: objective, benefits, scope and limitations, I.C engine: terminology, working principles, two stroke & four stroke engines

Unit II

Tractors and their control systems: : tractor classifications and economics, different types of tractor control systems: air cleaning, fuel supply system, cooling system, hydraulic system, lubrication system, transmission system

Unit III

Tillage and its implements : primary tillage: objectives, advantages & disadvantage, implements, secondary tillage: objectives, advantages & disadvantage, implements for hill agriculture and intercultural operations

Unit IV

Sowing and planting machines : basics of seed metering mechanism, methods of seed sowing: components, working, advantages & disadvantages, planting and transplanting machines: components, working, advantages & disadvantages

Unit V

Plant protection equipments : sprayers: components, working, types and maintenance, dusters: components, working, types and maintenance

Unit VI

Harvesting and threshing machines : fundamentals of harvesting and types, thresher: types working and components, combine harvester and its working, numerical based on farm power and machinery

List of Practicals / Experiments:

Two stroke and four stroke engine

- To study two stroke and four stroke diesel engine

Tractor systems

- To study tractor systems

Primary and secondary tillage equipments

- To study mould board plough and disc harrow
- To study rotavator and its working principle
- To calculate power requirement of tillage implements

Sowing and Planting equipments

- To study seed drill and its calibration
- To study potato planter
- To study paddy transplanter

Plant protection equipment

- To study sprayer and dusters

Harvesting and threshing equipments

- To study working principle and functioning of threshers and winnowers
- To study working principle and functioning of combine harvester

Tractor driving

- To study tractor driving

Text Books:

1. ELEMENTS OF AGRICULTURAL ENGINEERING by DR. JAGDESHWAR SAHAY, STANDARD PUBLISHERS & DISTRIBUTORS

References:

1. PRINCIPLES OF AGRICULTURAL ENGINEERING VOLUME 1 by MICHAEL AND OJHA, JAIN BROTHERS