

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS FOR COMPETITIVE EXAMINATION FOR THE POST OF ASSISTANT PROFESSOR IN AGRICULTURAL ENGINEERING FOR COLLEGE EDUCATION DEPARTMENT

PAPER – II

Unit 1: Farm Power

Sources of farm power, Status of farm mechanization in India. Thermodynamic principles of I.C. engines; I.C. engine cycles; Engine components, diesel vs petrol ignition engines, two stroke & four stroke engines, various systems of diesel and petrol engines– fuel supply, cooling, lubrication, ignition and power transmission. Clutch & Breaks. Calculation of power, Torque heat load & power losses. Power tiller, farm tractors and types, design, mechanical and power steering, tractor chassis mechanics, hitching systems and hydraulic control, for tractors, automatic position control, draft control system used in tractors, types of dynamometers, tractor testing.

Unit 2: Farm Machinery

Animal and power operated equipments – (design, construction, operation & maintenance) of tillage, seeding, land development, sowing, calibration of seed drills, zero ferti-drills, intercultivation, planters – corn planters, potato planters, sugarcane planters, rice transplanters, vegetable transplanters, Plant protection equipment – manual and power operated sprayers and dusters, calibration of sprayers, harvesting equipment – mower, reaper, combine harvester, potato harvester, thresher- different types, installation, operation and safety considerations, calculation of field capacity, field efficiency and cost analysis of implements.

Unit 3: Renewable Energy

Classification of energy sources, contribution of these sources in agricultural sector, biomass, types of biogas plants – design, construction, operation and maintenance; gasifiers, biogas, bio alcohol, biodiesel and bio oil production and their utilization, Briquetting. Introduction of solar energy, collection and their application, solar energy gadgets: solar cooker, solar

water heater, application of solar energy: solar drying, solar pond, solar distillation, solar photovoltaic system and their applications. Solar radiation and its measurements. Introduction of wind energy and their applications. Construction and working of wind mill, applications of wind energy in irrigation.

Unit 4: Surveying and Leveling

Measurement of distance and area; instruments for surveying and leveling; chain surveying, Compass Survey, methods of traversing; measurement of angles and bearings, plane table surveying; Leveling; theodolite, traversing; contouring; total station, introduction to GPS survey.

Unit 5: Computer Application in Agriculture engineering-

Application of microprocessors in data acquisition and control of agricultural engineering processes. Computer introduction, input / output devices, central processing unit, memory devices, operating systems, processors, keyboards and printers. Use of ICT in agricultural engineering, Drone operated aerial spray.

Note: - Pattern of Question Paper

1. Objective type paper
2. Maximum Marks: 75
3. Number of Questions: 150
4. Duration of Paper: Three Hours
5. All Questions carry equal marks.
6. Medium of Competitive Exam: Bilingual in English & Hindi
7. There will be Negative Marking.