

SRM VALLIAMMAI ENGINEERING COLLEGE
(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF AGRICULTURE ENGINEERING

QUESTION BANK



V SEMESTER

AG3562 Farm Machinery and Equipment
Regulation -2023

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Prepare by

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DEPARTMENT OF AGRICULTURE ENGINEERING QUESTION BANK

SUBJECT: FARM MACHINERY AND EQUIPMENT

SEM / YEAR : 05 / III

UNIT-I: FARM MECHANIZATION

Farm mechanization - objectives. Tillage - objectives - methods - primary tillage implements - secondary tillage implements - animal drawn ploughs - construction. Types of farm implements - trailed, mounted. Field capacity - forces acting on tillage tool.

PART - A

Q.N O	QUESTIONS	BT LEVEL	COMPETENCE
1.	What is Farm Mechanization?	BT-1	Remembering
2.	List out the benefits of Farm Mechanization	BT-2	Understanding
3.	Define tillage.	BT-1	Remembering
4.	What are the Objectives of tillage?	BT-2	Understanding
5.	What are the objectives of farm mechanization?	BT-1	Remembering
6.	Distinguish benefits and limitations of farm mechanization	BT-3	Applying
7.	What are the different sources of farm power?	BT-2	Understanding
8.	List out the scope of farm mechanization?	BT-1	Remembering
9.	Define tillage?	BT-1	Remembering
10.	Classify farm machines.	BT-3	Applying
11.	List out the primary Tillage implements	BT-1	Remembering
12.	Write down the parts of indigenous plough.	BT-3	Applying
13.	What are the secondary tillage implements?	BT-2	Understanding
14.	What is primary tillage?	BT-1	Remembering
15.	Define secondary tillage.	BT-1	Remembering
16.	What are the forces acting on tillage implements?	BT-2	Understanding
17.	Define Field Capacity.	BT-2	Understanding
18.	List out the factors affecting tillage implements forces.	BT-1	Remembering
19.	Write down the formula for field capacity.	BT-2	Understanding
20.	Define field efficiency of a farm implement.	BT-1	Remembering
21.	What is machinery?	BT-3	Applying
22.	Write the difference between tools and implement.	BT-2	Understanding
23.	List out the trailed farm implements.	BT-3	Applying
24.	Differentiate trailed and mounted implement.	BT-3	Applying

25.	Write down the limitations of Farm mechanization	BT-2	Understanding
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PART – B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	What do you mean by draft? Write formula for calculation of draft.	BT-3	Applying
2.	Illustrate primary tillage practices.	BT-4	Analysing
3.	Detail the tillage methods.	BT-3	Applying
4.	Brief about secondary tillage and its implements.	BT-3	Applying
5.	Explain in briefly about classification and types of tillage.	BT-5	Evaluating
6.	Differentiate primary and secondary tillage.	BT-5	Evaluating
7.	Brief about the factors affecting draft?	BT-1	Remembering
8.	Draw animal drawn mouldboard plough with neat sketch.	BT-5	Evaluating
9.	Discuss about conservation tillage.	BT-4	Analysing
10.	Detail about bottlenecks in Indian Farm Mechanization.	BT-4	Analysing
11.	Brief about types of farm implements.	BT-4	Analysing
12.	How will you calculate the forces acting on tillage implements?	BT-5	Evaluating
13.	Differentiate animal drawn indigenous and animal drawn mouldboard plough.	BT-4	Analysing
14.	Give your inputs to improve farm mechanization in India.	BT-3	Applying
15.	Detail about furrow parts with neat sketch.	BT-3	Applying
16.	Determine TFC for a machine that travels at 5.0 kmph and has an operating width of 20 m.	BT-5	Evaluating
17.	Summarize the terms related to field performance of machines	BT-3	Applying

PART-C

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Criticize different sources of farm power in India.	BT-5	Evaluating
2.	Illustrate pattern of methods of ploughing.	BT-5	Evaluating
3.	Explain indigenous plough and its construction.	BT-3	Applying
4.	Discuss the forces acting on tillage tool	BT-5	Evaluating
5.	A farmer purchased a 35 hp wheel type tractor at a total cost of Rs. 1,50,000/- and three bottom plough with 30 cm bottom width at Rs. 6000/-. The fuel consumption of tractor was 6 l/h at plough speed of 5 km/h.	BT-5	Evaluating

UNIT-II: PRIMARY AND SECONDARY TILLAGE IMPLEMENTS

Mould board plough- attachments - mould board shapes and types. Disc plough - force representation on disc - Types of disc ploughs –Subsoiler plough - Rotary plough. Cultivators - types - construction. Disc harrows - Bund former – ridger- leveller. Basinlister-Wetland preparation implements.

PART- A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	What is mouldboard plough?	BT-1	Remembering
2.	List out the types of disc plough.	BT-3	Applying
3.	Write down the functions of cultivators.	BT-1	Remembering
4.	What is the purpose of basinlister?	BT-1	Remembering
5.	Sub divide the mouldboard types.	BT-3	Applying
6.	Write the classification of MB plough.	BT-2	Understanding
7.	What are the types of disc harrows?	BT-2	Understanding
8.	Write about subsoiler plough	BT-3	Applying
9.	Define tilt angle.	BT-1	Remembering
10.	Write the uses of blade harrow.	BT-3	Applying
11.	List the MB plough accessories.	BT-2	Understanding
12.	Write down the uses of bund former.	BT-1	Remembering
13.	What are the Forces acting on disc plough?	BT-1	Remembering
14.	What is disc angle?	BT-2	Understanding
15.	List out the importance of levellers.	BT-2	Understanding
16.	List out the types of shares in MB plough.	BT-2	Understanding
17.	Write down the wetland implements.	BT-1	Remembering
18.	What are the cultivator components?	BT-1	Remembering
19.	Give importance of share.	BT-2	Understanding
20.	Write down the parts of mouldboard bottom.	BT-3	Applying
21.	What are the functions of cultivator?	BT-2	Understanding
22.	Draw share part and label it.	BT-3	Applying
23.	Write the merits of MB plough.	BT-2	Understanding
24.	Why do we need intercultural implements?	BT-3	Applying
25.	What HP is necessary for pulling a harrow with 50 tynes each giving a resistance of 1 Kg. when speed of harrow is 5 km/hr.	BT-3	Applying

PART – B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Discuss about spring tooth harrow and spike tooth harrow?	BT-4	Analysing
2.	Distinguish between mould board plough and disc plough with neat sketches	BT-5	Evaluating
3.	Where do you use disc harrow? Explain about different types of disc harrow.	BT-4	Analysing
4.	Discuss about jointer.	BT-4	Analysing
5.	Explain in briefly about accessories of mould board plough.	BT-4	Analysing

6.	Illustrate about advantage and disadvantages of disc plough?	BT-3	Applying
7.	Describe different parts of MB Plough with the help of neat sketch.	BT-4	Understanding
8.	Distinguish between standard disc plough and vertical disc plough.	BT-5	Evaluating
9.	Write short notes on Coulter.	BT-2	Understanding
10.	Detail the plough accessories.	BT-5	Evaluating
11.	Draw a neat sketch of cultivator and name it.	BT-2	Understanding
12.	Brief about intercultural implements.	BT-4	Analysing
13.	Discuss about MB plough adjustments.	BT-3	Applying
14.	Write short notes on chisel plough.	BT-2	Understanding
15.	Compare and contrast different types of mouldboard with neat sketch.	BT-3	Analysing
16.	Explain different types of share with neat sketch.	BT-4	Analysing
17.	Describe the various parts of disc harrows.	BT-4	Understanding

PART-C

Q.N O	QUESTIONS	BT LEVEL	COMPETENCE
1.	Detail about the types of disc plough.	BT-5	Understanding
2.	Explain about components of Mould board plough with the help of a diagram.	BT-3	Applying
3.	Discuss about cultivator types and construction.	BT-4	Analysing
4.	Detail about subsoiler and rotary plough.	BT-5	Evaluating
5.	Elaborate different types of harrows with neat sketch.	BT-2	Understanding

UNIT-III: SOWING AND FERTILIZING EQUIPMENT

Crop planting - methods - row crop planting systems - Devices for metering seeds – furrow openers – furrow closers- types – Types of seed drills and planters – calibration- fertilizer metering devices - seed cum fertilizer drills – paddy transplanters – nursery tray machines.

PART - A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	What are the different types of furrow openers used in a seed planter?	BT-2	Understanding
2.	Define calibration of seeddrill.	BT-1	Remembering
3.	Write the commonly used fertilizer metering mechanisms?	BT-2	Understanding
4.	What do you mean by check row planting?	BT-1	Remembering
5.	List out the advantages of transplanting.	BT-2	Understanding
6.	Mention the main components of a seed cum fertilizer drill.	BT-2	Understanding

7.	How will you make adjustments in the seed drills?	BT-2	Understanding
8.	Brief some commonly used fertilizer metering mechanisms?	BT-2	Understanding
9.	Write the function of crop planting?	BT-3	Applying
10.	Explain the need for calibration of seed drill?	BT-1	Remembering
11.	State different methods of sowing?	BT-2	Understanding
12.	How drilling can be done in field?	BT-2	Understanding
13.	What do you mean by lister planting?	BT-1	Understanding
14.	Write the components of seed drill?	BT-1	Remembering
15.	Categorize seed metering mechanisms.	BT-1	Remembering
16.	What are the parts of furrow opener?	BT-1	Remembering
17.	Summarize the objectives of planting?	BT-3	Applying
18.	Demonstrate the functions of seed planter.	BT-2	Understanding
19.	Define precision planting.	BT-1	Remembering
20.	Give formula for width of seed drill.	BT-1	Remembering
21.	What are components of Chinese Rice transplanter.	BT-3	Applying
22.	Write the various types of paddy transplanter.	BT-1	Remembering
23.	State the purpose of transplanter?	BT-3	Applying
24.	Write the effect of planter on emergence factors.	BT-3	Applying
25.	List out the factors affecting germination.	BT-2	Understanding

PART – B

Q.N O	QUESTIONS	BT LEVEL	COMPETEN CE
1.	What is a seed drill? What are its functions?	BT-2	Understanding
2.	Explain about the steps to be followed for calibration of seed drill or seed-cum fertilizer drill.	BT-5	Evaluating
3.	With neat sketch explain about manual operated paddy transplanter.	BT-4	Analysing
4.	Briefly explain about bucket type sprayer with the help of a diagram	BT-6	Creating
5.	Brief about fluted feed type metering mechanism?	BT-3	Applying
6.	Explain in briefly about different types of seedling mat transplanter.	BT-4	Analysing
7.	Distinguish between seed drill and seed cum fertilizer drill	BT-3	Analysing
8.	What are the functions of furrow openers in seed drill? Explain in briefly about different types of furrow openers	BT-5	Evaluating
9.	Explain about seed cum fertilizer drill	BT-4	Analysing
10.	List out the steps involved in preparing mat nursery.	BT-4	Analysing
11.	Explain the working principle and adjustments in transplanter	BT-2	Understanding
12.	Write about paddy transplanter components and function.	BT-4	Analysing

13.	Brief about the devices for metering single seeds.	BT-3	Applying
14.	Discuss briefly about any two types of furrow openers with the help of diagrams.	BT-2	Understanding
15.	Summarize Japanese paddy transplanter components and its function.	BT-3	Applying
16.	Detail potato planter functions with neat sketch.	BT-3	Applying
17.	Calculate the cost of sowing one hectare of land with a bullock drawn seed drill of size 5 x 22 cm. The speed of bullocks is 3 km/hr. Hire charge for bullocks is Rs.100/- per pair/ day, hire charge for seed drill is Rs.50 /- per day and wages for operator is Rs.100/- per day of 8 hours.	BT-3	Applying

PART-C

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Explain the various methods of sowing? Explain it.	BT-2	Understanding
2.	Explain the working principle and adjustments in power operated paddy transplanter.	BT-4	Analysing
3.	Explain about different types of transplanters used for paddy transplanting.	BT-3	Applying
4.	The following results were obtained while calibrating a seed drill. Calculate the seed rate per hectare. (i) No. of furrows = 10 (ii) Spacing between furrows = 20 cm (iii) Diameter of drive wheel = 1.5 meter (iv) RPM = 500 (v) seed collected = 20 kg.	BT-3	Applying
5.	Calculate the seed rate of a 7 x 17 cm seed drill whose main drive wheel diameter is 124 cm and total weight of grain collected in 20 revolutions is 0.423 kg.	BT-3	Applying

UNIT-IV: WEEDING AND PLANT PROTECTION EQUIPMENT

Weeding equipment – hand hoe – long handled weeding tools – dry land star weeder – wetland conoweeder and rotary weeder – Engine operated and tractor weeders Sprayers –types-classification – methods of atomization, spray application rate, droplet size determination – volume median diameter, numerical median diameter – drift control.

PART – A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1	Name the equipment used for weeding?	BT-1	Remembering
2	List out engine operated weeders	BT-1	Remembering
3	State the term droplet size.	BT-2	Understanding

4	Define drift.	BT-4	Analysing
5	How will you classify tractor operated weeders?	BT-4	Analysing
6	What are the components of conoweeder	BT-1	Remembering
7	Categorize weeders.	BT-4	Analysing
8	Define spray application rate of a sprayer.	BT-2	Understanding
9	List out the methods for controlling weeds.	BT-2	Understanding
10	Draw a neat sketch of dryland weeder.	BT-2	Understanding
11	What are the types of sprayers?	BT-4	Analysing
12	State any three uses of sprayers.	BT-1	Remembering
13	Describe functions of sprayer?	BT-3	Applying
14	Demonstrate the principle of atomizing device.	BT-4	Analysing
15	Classify sprayers according to volume.	BT-2	Understanding
16	Explain about centrifugal atomization.	BT-2	Understanding
17	Define the term volume median diameter (VMD).	BT-4	Analysing
18	List out the factors affecting drift.	BT-5	Evaluating
19	Write down the nozzle parts.	BT-2	Understand
20	What do you understand about boom?	BT-1	Remembering
21	Give the functions of spray gun.	BT-1	Remembering
22	Criticize the factors to identify the good quality sprayer.	BT-2	Understanding
23	List out the functions of weeders.	BT-5	Evaluating
24	What are the chemical herbicides used for weeding?	BT-1	Remembering
25	Write basic components of sprayer.	BT-4	Analysing

PART B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1	What are the functions of sprayers? Explain its application.	BT-5	Evaluating
2	Discuss about nozzle component of sprayer with neat sketch.	BT-1	Remembering
3	Explain about basic components of sprayer.	BT-2	Understanding
4	Differentiate knapsack sprayer and power sprayer.	BT-2	Understanding
5	Explain any five types of weeders and its uses	BT-4	Analysing
6	Brief about different types of fertilizer application equipment.	BT-1	Remembering
7	Demonstrate various fertilizer metering mechanisms.	BT-2	Understanding
8	Explain any five types of sprayers and its uses.	BT-3	Applying
9	Categorize and explain types of sprayers with respect to volume.	BT-5	Evaluating
10	Mention the important components of a power knapsack sprayer	BT-5	Evaluating
11	Why petrol engines are used in power knapsack sprayers?	BT-4	Analysing
12	Brief the particle size in relation to effectiveness of drift.	BT-4	Analysing
13	Distinguish spring loaded tynes and rigid tynes.	BT-4	Analysing

14	Explain about duck-foot cultivator.	BT-1	Remembering
15	Write short notes on atomization and its types.	BT-1	Remembering
16	Brief about hydraulic jet atomizer with neat sketch.	BT-4	Analysing
17	Detail calibration procedure for sprayers.	BT-3	Applying

PART – C

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1	Elaborate the different types of sprayers in detail with sketch.	BT-2	Understanding
2	Explain the working principles of a knapsack power operated sprayer	BT-3	Applying
3	Detail the components of power sprayer.	BT-5	Evaluating
4.	Discuss the factors affecting drift.	BT-4	Analysing
5	Brief about centrifugal atomizer types, components and its functions.	BT-4	Analysing

UNIT-V: HARVESTING MACHINERY

Principles of cutting crop, types of harvesting machinery, vertical conveyor reaper and binder combine harvesters, balers, threshers, tractor on top combine harvester, combine losses.

PART – A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1	What is harvesting Machinery?	BT-1	Remembering
2	How reaper binder is different from vertical conveyor reaper explain?	BT-3	Applying
3	Discuss about adjustments of shear and impact cutting mechanism	BT-2	Understanding
4	What are the advantages and disadvantages of combines over threshing?	BT-2	Understand
5	What are the factors affecting thresher performance.	BT-6	Creating
6	Mention the operations carried out by a combine harvester.	BT-6	Creating
7	What are the principles of cutting crop?	BT-4	Analysing
8	Write down the different types of threshers.	BT-2	Understanding
9	List out the types of harvesting machinery.	BT-4	Analysing
10	What are the losses involved in combine harvester?	BT-4	Analysing
11	What are the care and maintenance in case of reapers?	BT-1	Remembering
12	List out the types of threshing cylinders.	BT-2	Understanding
13	What is combine loss?	BT-3	Applying
14	Write the purpose of balers.	BT-1	Remembering
15	Write the functions of tractor on top combine harvester	BT-2	Understanding
16	In what ways harvesting can be done?	BT-1	Remembering

17	Write the types of reaper	BT-1	Remembering
18	What are the components of reapers?	BT-3	Applying
19	Define sieve loss	BT-3	Applying
20	Write the reel adjustment requirement.	BT-2	Understanding
21	What is header loss?	BT-2	Understanding
22	Write the formula for grain crackage.	BT-1	Remembering
23	List out the range for different combine losses.	BT-2	Understanding
24	What are the actions involved in cutting of plant.	BT-3	Applying
25	List out the parts of combine harvester.	BT-1	Remembering

PART-B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1	Explain impact type cutters and flail mowers.	BT-2	Understanding
2	What is earth moving machine? Write its applications in agriculture?	BT-2	Understanding
3	How reaper binder is different from vertical conveyor reaper explain?	BT-1	Remembering
4	What are the functional components of a combine? Explain about separation and cleaning unit.	BT-2	Understanding
5	Detail about different types of threshing cylinders.	BT-2	Understanding
6.	Explain the different types of machinery used in horticultural and agro-forestry operations	BT-1	Remembering
7	Discuss about the functions of binders.	BT-1	Remembering
8	Describe the various methods and machinery used for the haulage of agricultural and forest produce.	BT-3	Applying
9	Briefly discuss about different combine losses.	BT-3	Applying
10	Discuss about thresher components and its function.	BT-3	Applying
11	Explain about combine harvester function and its uses.	BT-2	Understanding
12	Detail about threshing losses.	BT-2	Understanding
13	Brief about vertical conveyor reaper.	BT-1	Remembering
14	Discuss binder types, functions, and its uses.	BT-3	Applying
15	Discuss the components involved in the cost estimation of farm operations.	BT-1	Remembering
16	Criticize cutting speed requirement for reapers.	BT-5	Evaluating
17	Mention ideal requirements and constraints of combine harvester.	BT-1	Remembering

PART – C

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Explain the working principle of groundnut harvester with neat diagram.	BT-3	Applying
2.	What are the factors affecting mechanical cotton harvesting? How do they affect them?	BT-2	Understanding
3	Explain different types of threshing cylinders.	BT-2	Understanding
4.	Detail about tractor top combine harvester with neat sketch.	BT-1	Remembering
5	<p>A combine was tested for harvesting jowar and following observations were recorded:</p> <ul style="list-style-type: none"> • Total area harvested = 78 sq. m. • Total time required = 65 seconds. • Total material left over the rack = 18 kg. • Free seed over the rack = 150 gms. • Unthreshed seed • Free seed over th • Unthreshed seed • Total material left • Net grain collected <p><u>Calculate:</u></p> <ol style="list-style-type: none"> 1. Seed yield and t 2. Cylinder loss, rac percent of total y 3. Total feed rate in 4. Rates of straw an kg/hr. 5 Percentage of straw and chaff retained by rack. 	BT-3	Applying

