

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS)**

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**QUESTION BANK (DESCRIPTIVE)****Subject with Code: Farm Machinery & Equipment-I (20AG0704)****Course & Branch: B.Tech-AGE****Year & Sem: II Year & II Sem****Regulation: R20****UNIT –I****FARM MECHANIZATION; MATERIALS OF CONSTRUCTION AND HEAT TREATMENT**

<b>1</b>	<b>a)</b>	Define farm mechanization and what are the objectives of it?	[L1][CO1]	<b>[6M]</b>
	<b>b)</b>	Discuss about scope of mechanization and farm mechanization.	[L2][CO1]	<b>[6M]</b>
<b>2</b>	<b>a)</b>	Discuss about the bottlenecks in Indian farm mechanization system.	[L2][CO1]	<b>[6M]</b>
	<b>b)</b>	Discuss about Present status of farm mechanization.	[L2][CO1]	<b>[6M]</b>
<b>3</b>	<b>a)</b>	What are the benefits of farm mechanization?	[L1][CO1]	<b>[6M]</b>
	<b>b)</b>	What are the constraints or limiting factors of farm mechanization?	[L1][CO1]	<b>[6M]</b>
<b>4</b>	<b>a)</b>	List out and explain different sources of farm power.	[L2][CO1]	<b>[8M]</b>
	<b>b)</b>	Give the classification of farm machines.	[L2][CO1]	<b>[4M]</b>
<b>5</b>	<b>a)</b>	Explain the merits and demerits of different farm power sources?	[L2][CO1]	<b>[8M]</b>
	<b>b)</b>	Describe the selection criteria of a Tractor.	[L2][CO1]	<b>[4M]</b>
<b>6</b>		Discuss about different case hardening methods.	[L2][CO1]	<b>[12M]</b>
<b>7</b>	<b>a)</b>	What is cast iron and write about general types of cast iron.	[L1][CO1]	<b>[6M]</b>
	<b>b)</b>	Write the classification of materials.	[L1][CO1]	<b>[6M]</b>
<b>8</b>		Define heat treatment and list out the methods of heat treatments. Explain case hardening heat treatment process.	[L2][CO1]	<b>[12M]</b>
<b>9</b>		Explain hardening, tempering and annealing heat treatment methods.	[L2][CO1]	<b>[12M]</b>
<b>10</b>		Describe the selection criteria for the machines.	[L2][CO1]	<b>[12M]</b>

**UNIT –II**  
**TILLAGE**

<b>1</b>	<b>a)</b>	Explain about indigenous plough and mould board plough with neat sketch.	[L2][CO2]	[8M]
	<b>b)</b>	A 4 bottom 40 cm mould board plough is operating at 5.5 km/h speed with 75 % field efficiency. Calculate the rate of doing work in hectares per hour.	[L4][CO2]	[4M]
<b>2</b>	<b>a)</b>	Listout and explain the different types of tillage.	[L2][CO2]	[8M]
	<b>b)</b>	A 3 x 30 cm plough is moving at a speed of 4 km/h. calculate how much time it take to plough 500 x 500 m field when the field efficiency is 70 %.	[L4][CO2]	[4M]
<b>3</b>	<b>a)</b>	Listout and discuss about different types of mouldboard with neat sketch.	[L2][CO2]	[6M]
	<b>b)</b>	Explain the components of disc plough with neat sketch.	[L2][CO2]	[6M]
<b>4</b>	<b>a)</b>	Illustrate the forces acting on tillage tool.	[L2][CO3]	[6M]
	<b>b)</b>	What are the different parts of disc harrow?	[L1][CO2]	[6M]
<b>5</b>	<b>a)</b>	Illustrate continuous ploughing method with neat sketch.	[L3][CO2]	[8M]
	<b>b)</b>	A tractor operating at a speed of 4 km per hour develops a drawbar pull of 1000 kg. Calculate i) drawbar power and ii) change in speed required to increase the drawbar to 15 kW.	[L4][CO2]	[4M]
<b>6</b>	<b>a)</b>	A three bottom 40 cm MB plough has a working depth of 15 cm and draft is 1600 kg. field efficiency is 70% and working speed is 4 km/h. Find i) Unit draft ii) Power required iii) Actual field capacity.	[L3][CO2]	[6M]
	<b>b)</b>	A tractor is attached with a 9 tine cultivator. While field testing, drawbar dynamometer shows an average pull of 14000 N. The speed of tractor is 6 km per hour. Find the power of the tractor.	[L4][CO2]	[6M]
<b>7</b>		A farmer purchased a tractor of 35 kW power at a total cost of Rs. 500000 and a three bottom plough of 30 cm bottom width at Rs. 30000/- only. The fuel consumption of the tractor was 6 ltr/h at the ploughing speed of 5 km/h. Calculate the area ploughed per hour and determine the cost of ploughing per ha. Make necessary assumptions if any.	[L4][CO2]	[12M]
<b>8</b>	<b>a)</b>	Explain about different types of disc harrow with neat sketch.	[L2][CO2]	[8M]
	<b>b)</b>	Explain the various attachments used in MB plough.	[L2][CO2]	[4M]
<b>9</b>		Calculate the energy in kg-metre required to prepare one hectare of seed bed with following implements. i) An indigenous plough cuts 10 cm deep and 20 cm wide triangular furrow and the unit draft is 0.5 kg/sq cm of furrow c/s. two ploughings are required. ii) Harrowing twice with 60 cm wide blade harrow having unit draft of 90 kg/m width of harrow. iii) Levelling twice with a wooden leveller 3 metre long having draft of 40 kg/m width.	[L4][CO2]	[12M]
<b>10</b>	<b>a)</b>	Calculate the total width of a single acting disc harrow, having gang angle 30°, total number of disks 14, disk spacing and disc diameter values of 200 mm and 510 mm respectively. If the depth of operation is 100 mm, calculate the volume of soil handled per hectare by the harrow at a working speed of 3.5 km/h.	[L4][CO2]	[6M]
	<b>b)</b>	What power is necessary for pulling a harrow with 50 tines, each giving a resistance of 1 kg, when the speed of harrow is 5 km/hr.	[L1][CO2]	[6M]

**UNIT-III**  
**EARTH MOVING EQUIPMENT**

<b>1</b>	<b>a)</b>	Define earth moving operation and list out the machines commonly used for earthmoving job.	[L1][CO3]	[4M]
	<b>b)</b>	Classify the different earth moving machineries.	[L2][CO3]	[4M]
	<b>c)</b>	List out the importance of earth moving equipment's.	[L1][CO3]	[4M]
<b>2</b>		Explain about different types of scrapers.	[L2][CO3]	[12M]
<b>3</b>		Explain wheel type and ladder type trenchers.	[L2][CO3]	[12M]
<b>4</b>		How do you differ excaloader and bulldozer? Explain about shovels?	[L2][CO3]	[12M]
<b>5</b>	<b>a)</b>	List out the different types of bulldozers and blades used in bulldozers.	[L1][CO3]	[4M]
	<b>b)</b>	Explain briefly about crawler and wheel type bulldozers.	[L2][CO3]	[8M]
<b>6</b>	<b>a)</b>	Discuss about Hitching System.	[L2][CO3]	[4M]
	<b>b)</b>	Explain Horizontal and vertical hitching of pull type Implement.	[L2][CO3]	[8M]
<b>7</b>		Explain about any four types of blades used in bulldozers.	[L2][CO3]	[12M]
<b>8</b>		The following results were obtained while calibrating a seed drill. i) Number of furrows =10; ii) Spacing between furrows=20 cm; iii) Diameter of drive wheel = 1.5 m; iv) Speed = 500 rev/min; v) Seed collected = 20 kg. Calculate the seed rate per hectare.	[L3][CO4]	[12M]
<b>9</b>		Explain briefly about history of scraper and their importance.	[L2][CO3]	[12M]
<b>10</b>		Explain about Excavators, Bulldozers and Trenches.	[L1][CO3]	[12M]

**UNIT-IV**  
**SEEDING METHOD**

<b>1</b>	<b>a)</b>	Define sowing?	[L1][CO4]	[2M]
	<b>b)</b>	List the various seeding methods.	[L1][CO4]	[2M]
	<b>c)</b>	Classify the different seed metering mechanism.	[L2][CO4]	[2M]
	<b>d)</b>	What is broadcasting?	[L1][CO4]	[2M]
	<b>e)</b>	Define seed drill.	[L1][CO4]	[2M]
	<b>f)</b>	Define Seed cum fertilizer drill.	[L1][CO4]	[2M]
<b>2</b>	<b>a)</b>	Explain in briefly about fluted feed type seed metering mechanism with neat sketch.	[L2][CO4]	[6M]
	<b>b)</b>	List out the different types of furrow closers and explain about the seed metering device in planter.	[L1][CO4]	[6M]
<b>3</b>		Explain in briefly about different types of seed metering mechanism.	[L2][CO4]	[12M]
<b>4</b>		Explain the different types of sowing methods briefly.	[L2][CO4]	[12M]
<b>5</b>	<b>a)</b>	Explain briefly about seed cum fertilizer drill.	[L2][CO4]	[8M]
	<b>b)</b>	What are the major functions of seed cum fertilizer drill?	[L1][CO4]	[4M]
<b>6</b>	<b>a)</b>	Define calibration of seed drill?	[L1][CO4]	[2M]
	<b>b)</b>	Explain in briefly about steps involved in calibration of seed drill.	[L2][CO4]	[10M]
<b>7</b>	<b>a)</b>	Explain about parts of furrow opener in seed drill.	[L2][CO4]	[6M]
	<b>b)</b>	Explain in briefly about different types of furrow openers.	[L2][CO4]	[6M]
<b>8</b>		Illustrate about different intercultural equipment's.	[L2][CO4]	[12M]
<b>9</b>	<b>a)</b>	What is planter where it is used? Explain knock out mechanism in planter?	[L2][CO6]	[4M]
	<b>b)</b>	Define functions of planter and Seed cut-off mechanism in planter	[L1][CO6]	[4M]
	<b>c)</b>	List out the components of planter	[L1][CO6]	[4M]
<b>10</b>	<b>a)</b>	Define Transplanter. Give the classification of paddy transplanters. Explain Manual Rice Transplanter	[L2][CO6]	[8M]
	<b>b)</b>	Listout the parts in Japanese or Chinese Rice Transplanter.	[L1][CO6]	[4M]

**UNIT-V**  
**PLANT PROTECTING EQUIPMENT**

<b>1</b>	<b>a)</b>	Define sprayer? List out the different types of sprayers.	[L1][CO5]	[4M]
	<b>b)</b>	What is duster? Classify the different types of duster.	[L1][CO5]	[4M]
	<b>c)</b>	Define power duster.	[L1][CO5]	[4M]
<b>2</b>	<b>a)</b>	What is calibration in sprayer?	[L1][CO5]	[4M]
	<b>b)</b>	What are the steps involved in calibration of sprayer?	[L1][CO5]	[8M]
<b>3</b>	<b>a)</b>	Explain briefly about knapsack sprayer with neat sketch.	[L2][CO5]	[6M]
	<b>b)</b>	Explain briefly about components of power sprayer.	[L2][CO5]	[6M]
<b>4</b>	<b>a)</b>	Explain Drop-type or full-width-feed broadcasters.	[L2][CO5]	[4M]
	<b>b)</b>	Explain Centrifugal fertilizer broadcasters.	[L2][CO5]	[4M]
	<b>c)</b>	Explain Fertilizers are broadcasted by aircraft.	[L3][CO5]	[4M]
<b>5</b>	<b>a)</b>	List out the types of fertilizer metering mechanisms.	[L1][CO5]	[6M]
	<b>b)</b>	Explain any three fertilizer metering mechanisms briefly.	[L2][CO5]	[6M]
<b>6</b>	<b>a)</b>	Explain about Bucket type sprayer.	[L2][CO5]	[4M]
	<b>b)</b>	Explain about Knapsack sprayer.	[L2][CO5]	[4M]
	<b>c)</b>	Explain about Foot - operated sprayer.	[L2][CO5]	[4M]
<b>7</b>		Discuss about various spray nozzles.	[L2][CO5]	[12M]
<b>8</b>	<b>a)</b>	What are the functions and applications of sprayer?	[L1][CO5]	[4M]
	<b>b)</b>	Describe the desirable quality of sprayer.	[L2][CO5]	[4M]
	<b>c)</b>	What are the benefits in calibration of sprayer?	[L1][CO5]	[4M]
<b>9</b>		Explain about tractor mounted boom sprayer with constructional lay out.	[L2][CO5]	[12M]
<b>10</b>	<b>a)</b>	Explain working principle of foot-operated sprayer with neat diagram.	[L2][CO5]	[6M]
	<b>b)</b>	Explain working principle of rocking sprayer with neat diagram.	[L2][CO5]	[6M]

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