

Question Bank

1. What is a harrow? Write down different types of harrow. Explain briefly
2. What are the different angles used in disc plough? Write in short.
3. Write down the different clearance used in case of MB plough?
4. What are the different factors affecting draft in MB plough?
5. What are the advantage and disadvantage of disc plough over MB plough?
6. What are the different adjustments used in MB plough that affect the depth of penetration and width of cut?
7. Write briefly about subsoiler.
8. What is tillage? Write down different types of tillage. Explain briefly
9. What are the criteria for farm machinery selection?
10. Write down the function of MB plough and its different parts.
11. What is Field Efficiency?
12. What are different methods of cost analysis? Write down short note on fixed and variable cost.
13. What are the different accessories used in MB plough and write its Function?
14. Determine the power required to pull a four bottom 30 cm plough, working to a depth of 15 cm. The tractor is operating at a speed of 6 km per hour. The soil resistance is 0.7 kg/cm^2 .
15. Write down different parts and function of disc plough? What are the different adjustments used in disc plough that affect the depth of penetration?
16. A four bottom 40 cm M.B. plough has a working depth of 15 cm and draft of 1600 kg. It is working at a speed of 5 km/h with field efficiency of 70%.
Find i) Unit draft
ii) Drawbar power
iii) Field capacity(Actual)
17. A farmer purchased a tractor of 35 hp tractor at a cost of 500000/- and a three bottom plough of 30cm bottom width at a cost of 35000/- only. The fuel consumption of the tractor was 6 litres per hour. Determine the cost of ploughing per hp-hr. Assume necessary data.
18. A 3 bottom 30cm MB plough was operated in a field size of 50m long and 30m width. The speed of operation was 5.5 km/h. During operation, there was an average overlap of 5cm. The turning loss was found to be 5s/turn. The time lost in adjustment and repair was 50min/ha. Calculate the field efficiency.
19. What is farm mechanization and its advantage and disadvantage? Give current status of farm mechanization in India and its future scope

20. A three bottom 40 cm M.B plough is working at a speed of 4 km/h . Calculate the effective field capacity if the field efficiency is 80 percent.
21. A four bottom 30 cm M.B plough is working at a speed of 4.5 km/h. Calculate the actual field capacity if the field efficiency is 70 percent.
22. List the animal drawn primary tillage implements .
23. Define Theoretical field capacity.
24. Define Effective field capacity.
25. Define field efficiency
26. List the objectives of Tillage
27. Differentiate casting and gathering.
28. With neat diagram mention the furrow terminologies
29. What do you mean by soil pulverization?
30. Define conservation tillage
31. Define mulch tillage
32. List the types of mould boards and mention their advantages.
33. Mention the advantages of mould board plough over country plough.
34. Define horizontal suction.
35. Define draft.
36. Define side draft
37. List types of share and their applicability
38. Differentiate turn wrest plough and reversible plough.
39. Mention the components of mould board plough with a neat sketch and
40. explain their importance
41. What do you mean by unit draft.
42. Explain different types of disc ploughs
43. List the advantages of disc plough over mould board plough
44. Mention the conditions where in you will use disc plough
45. Define disc angle.
46. Define tilt angle.
47. Define concavity
48. List the types of disc plough
49. Differentiate disc and tilt angles.
50. Mention the components of disc plough with a neat sketch and explain their Importance.
51. Explain about construction , use and advantage of rotary tiller
52. Explain about construction , use and advantage of chisel plough
53. Explain about construction , use and advantage of subsoiler
54. List the advantages of chisel plough
55. Mention the conditions where in you will use sob soil plough
56. List the types of rotary blades.

57. A country plough cuts a trapezoidal furrow having 8 cm top width and 3 cm bottom width. The depth of furrow is 8 cm. assume average soil resistance to be 0.6 kg/cm^2 . Calculate the pull exerted by the bullocks if the chain forms an angle of 30° with horizontal
58. Two bullocks weighing 400 kg each are pulling an implement with a speed of 3 km/h. The depth of furrow is 8 cm. Assume soil resistance to be 0.6 kg/cm^2 .
59. Calculate the pull exerted by bullocks if the chain forms an angle of 30° with the horizontal
60. State the requirements of perfect sowing
61. Compare broadcasting with drill sowing
62. Compare check row planting with transplanting
63. What are the functions of a seed drill?
64. State the advantages of using seed drills.
65. List the types of seed metering mechanisms
66. Mention the components of a seed drill with a neat sketch and explain their importance
67. importance
68. Differentiate seed drill and seed planter.
69. Mention the different types of furrow openers and their uses.
70. What is calibration of seed drill
71. The following observations are recorded while calibrating the seed drill.
 - Number of furrows = 10
 - Spacing between the furrows = 20 cm
 - Diameter of the ground wheel = 1.5 m
 - Speed of rotation of ground wheel = 500
 - Weight of seed collected = 20 kg.
 Calculate the seed rate

List the types of mould boards and mention their advantages.

Mention the advantages of mould board plough over country plough.

Define horizontal suction.

Define draft.

Define side draft

List types of share and their applicability

Differentiate turn wrest plough and reversible plough.

Mention the components of mould board plough with a neat sketch and

1. explain their importance
2. What do you mean by unit draft.
11. Explain different types of disc ploughs
12. List the advantages of disc plough over mould board plough
13. Mention the conditions where in you will use disc plough
14. Define disc angle.
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20. Importance
21. Explain about construction , use and advantage of rotary tiller
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23. Explain about construction , use and advantage of subsoiler
24. List the advantages of chisel plough
25. List the advantages of chisel plough
26. List the advantages of chisel plough
27. Mention the conditions where in you will use sob soil plough
28. List the types of rotary blades
29. Mention the components of tractor drawn rotary tiller with a neat sketch and explain their importance

OBJECTIVE TYPE QUESTIONS

1. Land side helps to resist side pressure exerted by furrow slice
11 on the mould board plough True / False
- 12 In mould board plough land side helps to resist side pressure
2. exerted by furrow slice True / False
3. Which one of the following is an accessory to mould board plough?
4. a. Share b. mould board c. frog d. jointer
5. Horizontal suction allowed in mould board plough is
6. a. 5 mm b. 10-12 mm c. 15 mm d. 20 mm
7. Horizontal component of pull is called
8. a. Pull b. draft c. unit draft d. None
9. Total draft of a 4 bottom mould board plough is 1600 kg. What is the draft
of a single bottom
a. 1600 kg b. 1200 kg c. 800 kg d. 400 kg
- In disc ploughs tilt angle varies between
10. a. 15-25° b. 25-35° c. 35-45° d. 45-50°
- 11 Width of operation of a 2 x 30 cm disc plough is
11. a. 30 cm b. 60 cm c. 90cm d. 120 cm
- 11 Disc angle in a standard disc plough varies from
12. a. 25-35 ° b. 40-45 ° c. 45-55 ° d. 55-65 °

13. 13. In stony and rocky fields mould board plough works better
11 than disc plough true/false
14. A disc plough can be forced to penetrate into the soil which is too hard
15. 15. and dry for working with a mouldboard plough. true/false
16. 16. Disc plough leaves the soil in rough and more cloddy condition than that
of mouldboard plough. true/false
17. Differentiate rotary tiller and chisel plough.
18. A levelling board is attached to the rear side of the unit for levelling the tilled soil.
True / False
19. Deep tillage shatters compacted sub soil layers and aids in better infiltration and
storage of rainwater in the crop root zone. True / False
20. Chisel ploughing
reduces the bulk density of soil True / False
21. Rotary tiller combines both primary and secondary tillage Operations
True / False
22. Rotavator combines primary and secondary tillage operations
i. True / False
23. Compacted areas prevent the natural drainage of the soil and also inhibit the
passage of air and nutrients through the soil structure True / False
29. A country plough cuts a trapezoidal furrow having 8 cm top width and 3 cm
bottom width. The depth of furrow is 8 cm. assume average soil resistance to be
0.6 kg/cm²/. Calculate the pull exerted by the bullocks if the chain forms an angle
of 30° with horizontal
25. Two bullocks weighing 400 kg each are pulling an implement with a speed of 3

km/h. The depth of furrow is 8 cm.. Assume soil resistance to be 0.6 kg/cm². Calculate the pull exerted by bullocks if the chain forms an angle of 30° with the horizontal

26. A three bottom 40 cm mouldboard plough has a working depth of 15 cm, draft is 1200 kg, fuel efficiency is 80 5, and working speed is 4 km/h. calculate

- a) Unit draft
- b) Power required

Problem.1. A 5 x 20 cm double action disc harrow is operated by a tractor having a speed of 5 km/h. Calculate the actual field capacity , assuming the field efficiency of 80 percent.

Solution:

$$\begin{aligned}
 \text{Size of the harrow (width)} &= 5 \times 20 = 100 \text{ cm} \\
 \text{Area of coverage} &= \frac{S \times W}{10} \times \frac{E}{100} \\
 &= (1 \times 5 \times 80) / 1000 \\
 &= 0.4 \text{ ha/h}
 \end{aligned}$$

Problem 2. 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 %.

Solution :

$$\begin{aligned}
 \text{Width of the plough} &= 3 \times 30 = 90 \text{ cm} = 0.9 \text{ m} \\
 \text{Effective field capacity} &= (0.9 \times 4 \times 70) / 1000 \\
 &= 0.25 \text{ ha/h} = 2500 \text{ m}^2/\text{h} \\
 \text{Time required} &= \mathbf{500 \times 500 / 2500} \\
 &= 100 \text{ h}
 \end{aligned}$$

Problem.3. A 4 bottom 40 cm mould board plough is operating at 5.5 km/h speed with 75 % field efficiency . Calculate what is the rate of doing work in hectares per hour.

Solution :

$$\begin{aligned}
 \text{Width of the plough} &= 4 \times 40 = 160 \text{ cm} = 1.6 \text{ m} \\
 \text{Area covered} &= 1.6 \times 5.5 \times 75/1000
 \end{aligned}$$

$$= 0.66 \text{ ha/h}$$

Problem. 4. An indigenous plough has a 20 cm wide furrow at the top and 10 cm depth. Calculate the volume of soil handled per day 8 hours if the speed of working is 2.5 km/h.

Solution:

$$\begin{aligned} \text{Furrow cross section} &= 10 \times 20/2 \\ &= 100 \text{ cm}^2 \end{aligned}$$

$$\text{Distance traveled in 8 hours} = 8 \times 2.5 \times 1000 = 20,000 \text{ m}$$

$$\begin{aligned} \text{Volume of soil handled} &= 20000 \times 100/ 10000 \\ &= 200 \text{ m}^3 \end{aligned}$$

Model questions

1. A three bottom 40 cm M.B plough is working at a speed of 4 km/h . Calculate the effective field capacity if the field efficiency is 80 percent.
2. A four bottom 30 cm M.B plough is working at a speed of 4.5 km/h. Calculate the actual field capacity if the field efficiency is 70 percent.

MODEL QUESTIONS

- i. List the animal drawn primary tillage implements .
 - iii. Define Theoretical field capacity.
 - iv. Define Effective field capacity.
 - v. Define field efficiency
 - vi. List the objectives of Tillage

 - vi. Differentiate casting and gathering.
 - vii. With neat diagram mention the furrow terminologies
 - viii. What do you mean by soil pulverization?
 - ix. Define conservation tillage
 - x. Define mulch tillage
1. Preparation of soil in such a way that crop residues and other mulching materials are left on the surface is called
 - a. minimum tillage
 - b. strip tillage
 - c. rotary tillage
 - d. mulch tillage

2. The open trench left in between two adjacent strips of land after finishing the ploughing is called
- a. dead furrow b. back furrow c. head land d. crown
3. Theoretical field capacity of a double action disc harrow is 1.0 ha/h. Field efficiency is 80 %. What is the actual field capacity?
- a. 1.0 ha/h b. 1.5 ha/h c. 0.5 ha/h d. 0.8 ha/h
4. Soil tillage consists of breaking compact surface of soil to certain depth and loosening the soil
- True / False