

B. TECH.
(SEM-III) THEORY EXAMINATION 2019-20
FARM MACHINERY

Time: 3 Hours**Total Marks: 100****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief. 2 x 10 = 20**

- a. Write down the benefits and limitations of farm mechanization.
- b. What is the different type of seed metering mechanism used?
- c. Define the tilt angle and disc angle.
- d. What are the different types of harrow?
- e. Define the dead furrow and back furrow.
- f. What do you mean by reel index of combine harvester?
- g. Write the advantage of mower.
- h. Write the function of combine harvester.
- i. What are the types of spray pattern on the basis of volume?
- j. What do you mean by agitator?

SECTION B**2. Attempt any three of the following: 10 x 3 = 30**

- a. Define the Calibration. Discuss various steps of calibration of seed drill.
- b. Explain the earth moving implement for the agricultural purpose.
- c. With neat sketch diagram explain the various forces acting on tillage implement.
- d. Total draft four bottom, 40 cm MB Plough when ploughing 15 cm deep at 6 kmph speed, 1800 kg
 - (i) Calculate unit draft kg/cm²,
 - (ii) Actual power requirement,
 - (iii) If field efficiency is 80%, what is the rate doing work in ha/hr?
- e. Describe the working principle of combine harvester. Name the different losses in the combine harvester.

SECTION C**3. Attempt any one part of the following: 10 x 1 = 10**

- (a) Describe hydraulic and strain gauge type dynamometer.
- (b) Calculate the seed rate of the seed drill :
 - (i) Number of furrow openers = 8
 - (ii) Spacing between two furrow openers = 15 cm
 - (iii) Ground wheel dia = 120 cm
 - (iv) Number of revolutions = 550
 - (v) Seed collected = 25 kg.

4. Attempt any one part of the following: 10 x 1 = 10

- (a) Write short notes on the following :
 - (i) Case hardening and annealing
 - (ii) Furrow openers and covering devices
 - (iii) Impact type cutting mechanism.
- (b) Explain the type thresher on the basis of threshing cylinder and also explain the power thresher components.

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5. Attempt any *one* part of the following: **10 x 1 = 10**
- (a) Explain the type of sprayer on the basis of volume spraying.
 - (b) Calculate the area covered per day of 8 hr by a tractor drawn four bottom 35 cm plough. If the speed of ploughing is 6 km/h and time lost in turning is 6%.
6. Attempt any *one* part of the following: **10 x 1 = 10**
- (a) Discuss in detail construction and various adjustments of moldboard plough.
 - (b) What power is required to pull 1.2 metre mower working at a speed of 4.8 km/hr ;if there is a load of 50 kg per metre length of mower and mechanical efficiency is 80%.
7. Attempt any *one* part of the following: **10 x 1 = 10**
- (a) Briefly explain the following farm machineries :
 - (i) Reaper binder
 - (ii) Wind rowers
 - (b) Define duster. Describe all types of duster in details