

BTECH
(SEM IV) THEORY EXAMINATION 2018-19
FARM MACHINERY AND EQUIPMENT-I

Time: 3 Hours

Total Marks: 70

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14
- a. Define farm mechanization and its objectives
 - b. What is the tilt angle and disc angle of disc plough?
 - c. What power is required for pulling a harrow with 50 tines of 1kg, when the speed of harrow is 5km/hr?
 - d. Define dead furrow?
 - e. What is Depreciation?
 - f. What are the function of mould board plough ?
 - g. Describe the unit operation?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21
- a. How can you adjust the depth of ploughing and explain the various factor affecting the draft of a plough?
 - b. What are the function of : (a) gang angle (b) gang axle (c) spool (d) Bearing (e) scraper of a disc.
 - c. How a disc plough differs with mouldboard plough in principle? What are the advantage And disadvantage of a disc plough?
 - d. What are the different arrangements of gang in disc harrow? what is offset.
 - e. Write the custom hiring and its advantage in agricultural sector?

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7
- (a) A five tine cultivator having tine spacing 7 cm , working depth of 4 cm and speed 4 km/hr Turning loss is 10%. Soil resistance is 0.65 kg/cm². Width of each furrow is 5 cm. calculate (i) Time to cover one hectare (ii) maximum draft (iii) required power.
 - (b) Describe the force acting when an indigenous plough is pulled in different soil condition?
4. Attempt any *one* part of the following: 7 x 1 = 7
- (a) what are the different type of steel ? what do you understand by soft center steel and tool steel?
 - (b) Describe the process of calibration of seed drill? What is a pneumatic seed drill? how it work.
5. Attempt any *one* part of the following: 7 x 1 = 7
- (a) How spring loaded type cultivators differ with rigid tined cultivator in working? Describe with neat sketch?
 - (b) What are the limitations of using tractor and tractor drawn weeding implements for machines for intercultural operation?
6. Attempt any *one* part of the following: 7 x 1 = 7
- (a) Explain the various heat treatment process?
 - (b) What are the different types of seed and fertilizer metering mechanism?
7. Attempt any *one* part of the following: 7 x 1 = 7
- (a) Describe the working principal of cultivator?
 - (b) Explain the working of potato planter and sugarcane planter?