MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Tech. (Agril. Engg.)

Semester	: V (New)	**Term** : I	**Academic Year** : 2012-13
Course No.	: FMP 359	**Title** :	**Farm Machinery and Equipment –II**
Credits	: 2(1+1)		
Day & Date	: Saturday, 27.10.2012	**Time** : 14.00 to 16.00	**Total Marks** : 40

Note :
1. Solve **ANY EIGHT** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 Explain the construction of conventional mower cutter bar with the help of neat diagram.

Q.2 Explain the effects of operating conditions upon cylinder loss and seed damage in case of thresher.

Q.3 Explain the working of self propelled combine harvester.

Q.4 A combine having 2 meter cutter bar is operating at a speed of 3.5 km/hr. Calculate the area harvested by the combine in 10 hrs, if 15% time is being lost in turning, loading, unloading.

Q.5 Write short note on shear bar type field choppers.

Q.6 Write short note on potato harvester.

Q.7 What is difference in cotton picker and cotton stripper? Explain working of drum type spindle cotton picker.

Q.8 Explain procedure for computation of horsepower range of tractor required for field operation.

Q.9 Explain different types of threshing cylinder.

Q.10 Write short notes on:

1) Alignment of mower 2) Registration of mower

SECTION "B"

Q.11 State True or False.

1) High speed swinging blades are used on flail mowers.
2) Seed cotton consists of cotton seed surrounded by lint, as produced within the shell of the bolls.
3) In case of rasp bar type threshing cylinder pegs are fixed on cylinder surface.
4) Loop type threshing cylinder is mostly used for paddy crop threshing.

Q.12 Fill in the blanks.

1) In a combine harvester, the ratio of reel peripheral speed to forward speed is known as _____.
2) _____ is the portion of the knife which is connected to the pitman.
3) In case of flail shredders peripheral speed of flails ranges between _____.
4) _____ is used for leaf shedding before operation pf cotton picker.

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Tech. (Agril. Engg.)

Semester	: **V (New)**	**Term**	: **I**	**Academic Year**	: **2016-17**
Course No.	: FMP 359	**Title**	: **Farm Machinery and Equipment –II**		
Credits	: 2(1+1)				
Day & Date	: Monday, 21.11.2016	**Time**	: 14.00 to 16.00	**Total Marks**	: **40**

Note :
1. Solve **ANY EIGHT** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 a) Give different liquid formulations used for plant protection.

b) Describe calibration of manually operated hydraulic energy sprayer.

Q.2 a) What is the difference between reaper windrower and reaper binder?

b) What is the requirement of field and crops for mechanized reaper windrower?

Q.3 a) Give principle of cutting crop.

b) Enlist the basic operations required to perform in a harvesting combine.

Q.4 a) Enlist different type of reapers.

b) What power is required to pull 1.2 m mower working at a speed of 4.8 km/hr, if there is a load of 50 kg/m length of mower and mechanical efficiency is 80%.

Q.5 a) Give different types of chaff cutters.

b) Explain each in one line about the dropping position type of chaff cutters.

Q.6 a) Enlist the different types of mower.

b) Give parts of conventional mower with their function.

Q.7 a) Give the types of cotton harvesters.

b) Explain the principle of operation of spindle in cotton picker.

Q.8 How to measure 1) Operating speed of tractor 2) Fuel consumption of tractor.

Q.9 a) Enlist the points considered to compute the suitable horse power of the tractor.

b) Give considerations for selection of better tractor after computing the horse power.

Q.10 Write short notes on.

1) Knapsack sprayer 2 Rotary type hand duster

(P.T.O.)

SECTION "B"

Q.11 State True or False.

1) Wearing plate is a hardened steel plate attached to the finger bar to form a bearing surface for the back of the knife.

2) Windrow is a row of material formed by combining two or more swaths.

3) Pitman is a type of connecting rod which is pinned to the crankshaft with the help of a pin, which transmits reciprocating motion to a knife.

4) All the bolls whether open or closed are removed from the cotton plant in cotton picker.

Q.12 Fill in the blanks.

1) The spraying liquid to be delivered is done by using _____ energy where air is commonly used.

2) The rasp bar cylinder consists of number of _____ steel plates mounted axially on the periphery of the cylinder.

3) Knife is a reciprocating part of the_____, comprising of knife head, knife back and knife section.

4) The efficiency of harvesting combine is judged by its _____.

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Tech. (Agril. Engg.)

Semester	: V (Old)	**Term**	: I	**Academic Year**	: 2018-19
Course No.	: FMP 359				
Credits	: 2(1+1)	**Title**	: **Farm Machinery and Equipment –II**		
Day & Date	: Wednesday, 14.11.2018	**Time**	: 14.00 to 16.00	**Total Marks**	: 40

Note :
1. Solve **ANY EIGHT** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 Classify different types of chaff cutter? Explain flywheel type chaff cutter?

Q.2 Write the functions of nozzles and classify different sprayer nozzles.

Q.3 Classify threshing cylinders of power thresher. Explain in brief construction features of thresher.

Q.4 A bullock drawn mower has a drive wheel 90 cm in diameter. The power to drive the knife is transmitted to the crank wheel though a transmission gear train. The first step consists of a 120 tooth gear on main axle, driving 20 tooth gears on a countershaft. The second step consists of a 60 tooth bevel pinion on the crankshaft. The guards are spaced 8 cm apart with knife stroke 8 cm.

Calculate:
a) The number of strokes, the knife will make per minute when the Mower is pulled at 4 km per hour speed and driven gear =15 tooth.
b) The total length of knife stroke per minute in cm.

Q.5 What are the adjustments to be done in thresher with respect to cylinder speed, concave clearance, blower speed and sieve size?

Q.6 Write the functional units of Mechanical Pickers? Explain different types of Mechanical Strippers?

Q.7 Explain the parameters required for selection of plant protection equipment.

Q.8 a) Explain in brief constructional features of shear bar type field chopper.

b) A chaff cutter having two knives cut dry hay at 6 rev/min giving 480 kg per hour. If the throat size is 18 cm x 6 cm, find the effective density of dry hay for a theoretical length of cut of 2.5 cm.

Q.9 a) Calculate the total time required to harvest 2.5 ha of grass by means of a 2 meter mower being operated at 4km/hr. Take field efficiency of mower as 80%.

b) A mower has drive wheel of 60cm diameter. The crank of the mower makes 600 rev/min. when it is driven by a tractor moving at a speed of 2.3 km/hr. If the speed ratio between the crank wheel and land wheel is changed to 27:1, Calculate the increase in speed of mower to maintain same speed of the crank.

(P.T.O.)

Q.10 Write short note.

a) Cylinder type Maize Sheller

b) Tractor drawn one row potato digger

SECTION "B"

Q.11 Write the function of following parts.

1) Rear Beater

2) Shoe

3) Strainer

4) Pitman

Q.12 Choose the correct answer.

1) The pressure developed by the knapsack sprayer generally varies from_____.

a) 3-12 kg/cm^2

b) 11-21 kg/cm^2

c) 22-32 kg/cm^2

d) 33-41 kg/cm^2

2) The operating speed of the combine harvester at field varies from_____.

a) 1-3 km/h

b) 4-6 km/h

c) 8-10 km/h

d) 12-14 km/h

3) An average _____% cutting efficiency is lost with blunt ledger plate in harvesting equipment.

a) 10%

b) 20%

c) 30%

d) 40%

4) The optimum value of reel index should be _____ for minimum cutter bar loss.

a) 0.05 to 0.90%

b) 1.1 to 1.25%

c) 1.5 to 1.85%

d) 1.85 to 2.05%

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