

Roll No.

--	--	--	--	--	--

Candidate should write his/her Roll No. here.

Total No. of Questions : 03

No. of Printed Pages : 4

M-SFS-II-2017 (16)
AGRICULTURAL ENGINEERING
(Optional Subject)
Second Paper

Time : 3 Hours]

[Total Marks : 200

Instructions to the candidates :

1. This question paper consists of **three** questions and all questions are compulsory.
2. Marks for each question have been indicated on the right hand margin.
3. There is no internal choice in Question No. 1, remaining questions carry internal choice.
4. The first question is of very short-answer type consisting of **15** compulsory questions. Each one is to be answered in one or two lines. Question No. 2 is short answer type, word limit is **100**. Question No. 3 is long answer/Essay type, word limit is **300**.
5. Wherever word limit has been given, it must be followed to.
6. Question should be answered exactly in the order same as mentioned in the question paper. Answer to the various parts of the same question should be written together compulsorily and no answer of the other question should be inserted between them.

M-SFS-II-2017 (16)

P.T.O.

1. Questions carry equal marks. Write short answer not exceeding 15 words each.

(Write in two or three lines)

15 × 4 = 60

- (A) Differentiate between tappet clearance and ground clearance.
- (B) Differentiate between offset disc harrow and tandem disc harrow.
- (C) Differentiate between single axis hitch and double axis hitch.
- (D) Difference between clutch plate and cell plate.
- (E) Difference between anaerobic process and anaerobic process.
- (F) Differentiate between longitude and latitude.
- (G) Differentiate between gauge wheels and fly wheel.
- (H) Differentiate between hollow cone nozzle and solid cone nozzle.
- (I) What is the role of Agricultural Engineering in national economy ?
- (J) Explain centrifugation.
- (K) Write the purpose of drying in food processing.
- (L) Explain Emulsification.
- (M) Write in short the process of homogenization and sterilization.
- (N) Write basic principle of food preservation by freezing.
- (O) Explain photometric shorting.

2. Questions carry equal marks. Answer the following, not exceeding 100 words for each answer.

$10 \times 8 = 80$

- (A) Compare biogas and LPG on the basis of their production process, composition, heat value and application.
- (B) Write four major differences between a water cooling and air cooling system in a tractor.
- (C) Name the different units of a self-propelled and describe their functions.
- (D) List the major energy sources used in production agriculture system and discuss various equipment used in reducing energy requirement in tillage operation for cultivation of wheat crop.
- (E) Describe the basic method of force measurement.
- (F) What do you understand by membrane separation ?
- (G) What do you understand by extraction ?
- (H) What is blanching and why is it carried out ?
- (I) Write the principle of crystallization in manufacturing of food products.
- (J) What are heat processing operations ? How is heat applied to food ?

3. Questions carry equal marks. Answer the following, not exceeding **300** words for each answer. (Attempt any **three**.) **3 × 20 = 60**

- (A) A sprayer having 0.4 μm nozzle discharge rate with 50 cm width of coverage is required to apply 0.8 kg of active ingredient per hectare. If 1 kg of active ingredient is contained in 120 l of spray solution, determine the speed of travel of sprayer.
- (B) What are the desired performance objectives of a grain drying system and the major indicators of its performance ?
- (C) Write short notes on :
- (i) Slider crank mechanism
 - (ii) In line FI pump
 - (iii) Photovoltaic cells
 - (iv) Horizontal axis wind turbine
- (D) What is water harvesting ? Discuss the common techniques adopted for water harvesting. Write the limitation of water harvesting system.
- (E) Write the functions and characteristics of food packaging. Types of packaging and also explain about recent advances in packaging.
-