

FS – 6 / 15-16
Agricultural Engineering
Paper – II

Time : 3 hours

Full Marks : 200

The figures in the right-hand margin indicate marks.

*Candidates should attempt Q. No. 1 from Section – A and Q.No. 5 from Section – B which are compulsory and any **three** of the remaining questions, selecting at least **one** from each Section.*

SECTION – A

1. Answer any **two** of the following out of (a), (b) and (c) : 20×2 = 40
- (a) Compare two and four stroke-cycle engines on the basis of efficiency, power, utility and simplicity in design.
- (b) Calculate the weight of fuel per kW-h of a diesel engine that has the following specification :
- (i) Compression ratio = 14 : 1

- (ii) Fuel is cut off at 0.08 of the stroke
 - (iii) Relative efficiency = 52%
 - (iv) Calorific value of fuel = 10,000 kcal/kg
- (c) What are the factors affecting traction ?
Define traction efficiency, coefficient of traction, rolling resistance, slip and rim pull.
2. (a) Compare different harvesting methods/
machines indicating brief description,
advantages and disadvantages. 20
- (b) What are the different types of sprayers ?
Describe the working of Knapsack type
sprayer with the help of a neat sketch. 20
3. (a) Give an account of energy requirements of
agricultural operations including agro-
processing. 20
- (b) Explain the selection, installation, safety and
maintenance of electric motors used in
agriculture. 20
4. (a) What are the advantages and salient features
of *Pneumatic Seed Drill* and *Zero Till Seed
Cum Fertilizer Drill* over the conventional
seed drill ? 20

(b) Differentiate between the following :

4×5 = 20

- (i) Primary and Secondary tillage tools
- (ii) Trailed, Semi-mounted and Mounted implements
- (iii) Fixed type M. B. plough and Turn wrest plough
- (iv) Disc plough and M.B. plough
- (v) Spring loaded cultivator and Rigid tined cultivator

SECTION – B

5. Answer any **two** questions of the following :

20×2 = 40

- (a) Describe various unit operations in Agricultural Processing.
 - (b) Explain the main features and important components of seed processing plant.
 - (c) Explain the various engineering properties of agricultural produces and by-products, affecting its handling and processing.
6. (a) What are the important considerations in processing of milk and dairy products ?
Explain in detail. 20

- (b) What is Homogenization and Sterilization ?
Describe the purpose and methods of homogenization in brief. 20
7. (a) Differentiate between sequential and combinational circuits with an example. 20
- (b) Explain, in brief, different types of sensors/ transducers used for measurement of temperature. 20
8. (a) Explain primary and secondary memory devices in detail. 20
- (b) Write short notes on any **four** of the following : 5×4 = 20
- (i) Flow Chart
 - (ii) Multimedia
 - (iii) Hardware and Software
 - (iv) Computer Networks
 - (v) Applications of Computer

