B.Tech Even Semester (CBCS) Exam., April—2017

AGRICULTURAL ENGINEERING

(4th Semester)

Course No. : AE–CC–13

(Farm Power)

Full Marks : 50
Pass Marks : 15

Time : 2 hours

Note : 1. Attempt *any* **five** questions.

2. Begin each answer in a new page.

3. Answer parts of a question at a place.

4. Assume reasonable data wherever required.

5. The figures in the margin indicate full marks for the questions.

1. *(a)* Explain the working of a 4-stroke cycle diesel engine. 5

(b) A four-cylinder four-stroke engine having cylinder bore 7·5 cm and stroke length 10 cm develops 15 kW at 1650 r.p.m. Assuming a mechanical efficiency of 85%, find indicated power and mean effective pressure. 5

(2)

2. *(a)* Explain the working of a 2-stroke cycle petrol engine. 5

(b) Calculate the brake power of a 2-cylinder 4-stroke cycle IC engine of 12 15 cm size. The mean effective pressure is 700 kPa. The speed of the engine is 1200 r.p.m. and mechanical efficiency is 75%. 5

3. Explain the different components of tractor engine with neat sketch. 10

4. *(a)* With proper diagram, discuss the cooling system of a 35 HP tractor. 5

(b) Discuss the advantages and dis-advantages of air- and water-cooling system. 5

5. *(a)* Draw a neat diagram of fuel supply system of petrol engine. 5

(b) What precautions are considered while handling fuel system? 5

6. Find the cost of using a tractor per hp-hr when the cost of 35 hp tractor is ₹ 6,00,000, life of tractor is 10 years, rate of interest is 10% and working hours per year is 1000 hours. Make necessary assumptions if any. 10

7. Write short notes on the following :   10

   (a)   Brake horsepower

   (b)   Mechanical efficiency

   (c)   Volumetric efficiency

   (d)   Compression ratio

   (e)   Stroke and Bore

8. Discuss the following :   10

   (a)   Otto cycle

   (b)   Carnot cycle

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