

# ENGG-232

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*Collected from previous year question paper By, Miss. Raksha Anil Hingankar.*

## Section A

- 1) What is farm mechanization? Give its benefits and limitations.
- 2) What are the important adjustment of a Mould board plough? What are the effect of vertical section and horizontal section in Mould board plough? Explain with neat labelled diagram.
- 3) What are the different types of seed metering mechanism? Explain the working of type with diagram.
- 4) What is Harrow? Describe in detail the working of a tractor drawn off-set disc Harrow?
- 5) What is tillage? What are the main objectives of tillage?
- 6) Enlist different types of sprayers. Write advantages and disadvantages of spraying.
- 7) What is the purpose of engine cooling? What are the different methods of engine cooling? What are advantages and disadvantages of air cooled engine?
- 8) Differentiate between two stroke and four stroke engine on Four Points.
- 9) Explain the working of 2 stroke engine with neat sketch.
- 10) Classify the plant protection equipment. Write the function and purpose of sprayer.
- 11) Differentiate diesel engine and petrol engine on the basis of thermal efficiency, compression ratio and body weight and

Compression pressure inside the cylinder.

### Numerical:

- 1) A four cylinder four stroke engine has cylinder diameter of 25cm, stroke bore ratio is 1:8, clearance volume  $4500 \text{ cm}^3$  engine speed 240 Revolution per minute, mean effective pressure 700 kmpa and mechanical efficiency is 75% Calculate i) Ip ii) BP iii)compression ratio iv) swept volume.
- 2) A two stroke 4 cylinder engine had cylinders of 28 cm diameter, stroke bore ratio as 1.7 clearance volume as  $2200 \text{ cm}^3$ , engine speed 300 Revolution per minute, mean effective pressure  $7 \text{ kg/cm}^2$  and mechanical efficiency is 80%. Calculate a) IHP b) BHP c) Swept volume d) compression ratio.
- 3) A five tine cultivator having spacing 8 cm, working depth of 5cm and speed is 3 kilometer per hour. Turning loss is 10%. Soil resistance is  $0.6 \text{ kg/cm}^3$ . Width of each is 5 cm. Calculate 1) Time to cover one hectare, 2)Maximum draft, 3)Required power.
- 4) Calculate time to cover 1 hectare, maximum draught, required power. Calculate the total time required to harvest 88 hectares of grass by means of 2.5 meter wide more operated at 3.5 kilometer per hour assuming the field efficiency is 85%.
- 5) Calculate the cost of seeding 1 hectare area of land with bullock drawn seed drill of 5 X 22 cm size. The speed of bullock is 3 kilometer per hour. Hire charges of bullocks is Rs. 500 per pair per day, hire charges of seed drill is Rs.300 per days and wages of operator is Rs. 300 per day of 8 hours.

- 6) Find the operating cost in Rs. per hour of a tractor purchase at Rs.8, 80,000/-. Fuel consumption of tractor is 6 liter per hour. Cost of fuel is Rs. 65 per liter and wages of driver is Rs. 480 per day of 8 hours. Assume the life of tractor as 10 years with 1000 hours annual use and interest rate as 13.5% .Make necessary assumptions.

### Section B

#### Que. 1) Fill in the blanks:

- 1) \_\_\_\_\_ is a machine to cut herbage crops and leave them in sweat.
- 2) \_\_\_\_\_ is a manual pull type hoe suitable for weeding and inter culture of upland row crops in black cotton soil regions.
- 3) \_\_\_\_\_ is an Assembly of concave discs mounted on a common shaft with spods in between.
- 4) \_\_\_\_\_ type tractor are best suited for fram operations like ploughing, harrowing etc.
- 5) A \_\_\_\_\_ is provided at one of the crankshaft for smoothing the uneven torque produced by the engine.
- 6) \_\_\_\_\_ plough is very useful for ploughing along Hillside where it is necessary to turn all furrows down hill due to slope of land.
- 7) \_\_\_\_\_ is opening the upper crust of the soil, inversion of soil and breaking the clods.
- 8) \_\_\_\_\_ is walking type tractor.

#### Que.2) Define the following terms:

- 1) Stroke
- 2) Four stroke cycle engine
- 3) Tilt angle
- 4) Vertical clearance
- 5) Tappet clearance
- 6) Firing interval
- 7) Cetane number
- 8) Stroke

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