MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Hons.) Agriculture

Semester	: III (New)	Term	: I	Academic Year : 2018-19
Course No.	: ENGG 232	Title	: Farm Machinery and Power	
Credits	: 2 (1+1)			
Day & Date	: Thursday, 22.11.2018	Time	: 9.00 to 11.00	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   Define farm mechanization. Write its benefits and limitations.

Q.2   Differentiate between two stroke and four stroke engine on any four points.

Q.3   Explain the working of two stroke engine with neat sketch.

Q.4   Calculate the cost of seeding one hectare area of land with bullock drawn seed drill of 5 x 22 cm size. The speed of the bullock is 3 km/hr. Hire charges of bullocks is Rs. 500 per pair per day, hire charges of seed drill is Rs. 300 per day and wages of operator is Rs. 300 per day of 8 hours.

Q.5   Classify the plant protection equipments. Write the functions and purpose of sprayer.

Q.6   Calculate the total time required to harvest 8 hectares of grass by means of 2.5 m wide mower operated at 3.5 km/h assuming the field efficiency is 85 %.

Q.7   A two stroke four cylinder engine has cylinders of 28 cm diameter, stroke bore ratio as 1.7, clearance volume as 2200 cm^3, engine speed 300 rpm, mean effective pressure 7 kg/cm^2 and mechanical efficiency is 80%. Calculate: a) IHP   b) BHP   c) Swept volume and d) Compression ratio.

Q.8   Find the operating cost in Rs per hour of a tractor purchased at Rs 8,80,000/-. Fuel consumption of tractor is 6 litter per hour. Cost of fuel is Rs 65/lit 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 per cent. Make necessary assumptions.

Q.9   Differentiate diesel engine and petrol engine on the basis of thermal efficiency, compression ratio and body weight and compression pressure inside the cylinder.

Q.10   What is the purpose of engine cooling? What are the different methods of engine cooling?

(P.T.O.)

Q.11   Define the following terms.

1) Stroke
2) Four stroke cycle engine
3) Tilt angle
4) Vertical clearance

Q.12   Fill in the blanks.

1) A _____ is provided at one end of the crankshaft for smothering the uneven torque produced by the engine.

2) _____ plough is very useful for ploughing along hillsides where it is necessary to turn all furrows down hill due to slope of land.

3) _____ is opening the upper crust of the soil, inversion of soil and breaking the clods.

4) _____ is walking type tractor.

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