B. Tech.
(SEM. VI) EXAMINATION, 2006-07
FARM POWER

Time : 3 Hours] [Total Marks : 100

Notes : (1) Attempt all questions.
(2) All questions carry equal marks.
(3) In case of numerical problem assume data wherever not provided.
(4) Use of calculator is permitted.
(5) Be precise in your answer.

1. Attempt any four parts of the following : 5×4=20
(a) Describe the working principle of internal combustion engines.
(b) What are the jobs of a camshaft has to perform? Where is the camshaft driven from?
(c) Enumerate the functions of gudgeon pin and connecting rod in an internal combustion engines.
(d) What are the functions of transmission system of a tractor?
(e) Write the short note on the following :
   (i) P.T.O (Power Take Off)
   (ii) Detonation

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2. Attempt any **four** parts of the following :  \[5 \times 4 = 20\]

(a) What is the difference between “Stroke-Bone ratio” and “compression ratio”? 

(b) With the help of a diagram show the working of a carburettor of tractor.

(c) Briefly describe the functions of fuel nozzles.

(d) What is the function of lubricating oil used in lubrication system of a tractor?

(e) Differentiate between the compression rings and oil rings.

3. Attempt any **two** parts of the following :  \[10 \times 2 = 20\]

(a) Differentiate between the general purpose tractors and power fillers. Enumerate the makes, horse power and name of manufacturer based in India.

(b) Determine the hourly cost of operation of a diesel tractor costing Rs.2,45,000/-. The tractor is owned by a farmer and expected to have useful service life of 12 years when operated about 1000 hours every year. The tractor develops 35 B.H.P, consumes 8 litres of fuel per hour at 3/4th load. The weight of tractor is 1600 Kg. There is no overhead charges on the tractor. Assume the necessary data.

(c) Why are the tractors provided with very large rear wheels? What is the inflation pressure in pneumatic wheels of a tractor. Describe also the various points from where the tractor power is taken for useful work?
4. Attempt any two parts of the following: 10x2=20

(a) What are the sources of farm power in India? Mention the advantages and disadvantages of any three source. What is the importance of human power in Indian farming in reference to its availability, cost of use, adoptibility and horse power development?

(b) With the help of value timing diagram of a four stroke cycle engine, explain about the value timings.

(c) With the help of a neat and labelled sketch describe the value systems of an internal combustion engine. Explain the ‘L’ and ‘I’ shaped value functioning also.

5. Attempt any two parts of the following: 10x2=20

(a) Describe the points to be considered in the selection of tractors and other farm equipments. Explain in detail.

(b) What are the functions of lubricants? Explain forced feed lubrication system with the help of a neat sketch.

(c) Enumerate the essential tests which are conducted by tractor testing centres? What tests for the main power take off is carried out. Explain in detail.