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Daffodil International University

Department of Agricultural Science

Faculty of Health and Life Sciences

Final Examination of FPM 253 (A, B, C)

B Sc Agricultural Science, L-1 T-2 / Spring 2026

Course Code : 0819 1103 Teacher's Initial : DAR + DWA

Course Title : Farm Power and Machinery (Theory) Marks : 40 Time : 2 Hrs

Answer any eight questions, split answering is strictly prohibited

Sl	Questions	CLO	Marks
1.	Define farm mechanization. What are the areas of knowledge included in agricultural mechanization? Explain briefly the two challenges/constrains of mechanization with possible solutions as the context of BD mechanization.	CLO1	1+1.5+2.5
2.	What are the objectives of cooling system of an engine? How does the operating temperature maintain in a tractor? Explain with suitable diagram.	CLO2	1+2+2
3.	Briefly explain how air and fuel are mixed in a carburetor. Differentiate between CI and SI engine.	CLO2	3+2
4.	What are the cost items required to determine the operating cost of a machine. State the equation with the notations. How do you determine the operating cost in Taka/ha for a combine harvester?	CLO3	2+1+2
5.	Explain different methods of crop planting. What are the functions of a disc harrow? What are the conditions when the disc plough is better than the moldboard plough?	CLO4	2+1.5+1.5
6.	Write short notes on: (a) Centrifugal pump, (b) Rice transplanter, (c) Knapsack sprayer, (d) Combine harvester and (e) 2WD and 4WD tractors	CLO6	5×1
7.	Calculate the mechanical efficiency of a single cylinder engine developing 37.5 bhp with the following observations: bore 20cm, stroke 28cm, IMEP 7.2 kg/cm^2 and the speed of the engine is 480 rpm.	CLO2	5
8.	Calculate the effective field time in hr/ha of a 3-bottom 42 cm mould board plough when operated by a tractor at a forward speed of 6.4 km/hr to cultivate 4 ha land. Consider 20% time is lost during tillage. If the tractor hiring cost with labour and implements is Tk 200 per hour, what will the cost of tillage for this land be?	CLO4	3+2
9.	A farmer desires to irrigate a field which is 12 meters wide and 150 meters long. He wants to apply an average of 75-millimeters of water to the field with a stream of 60 liters per second. How long will it take him to irrigate this field?	CLO5	5