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B.E. / B.Tech. (Full Time) DEGREE ARREAR EXAMINATIONS, NOV / DEC 2013

AGRICULTURAL AND IRRIGATION ENGINEERING BRANCH

Sixth Semester

AI 9029 – POST HARVESTING TECHNOLOGY

(Regulation 2008)

Time: 3 hours

Answer ALL Questions

Max Marks: 100

Part – A (10 x 2 = 20 Marks)

- 1) Define angle of repose and its importance in post harvest technology.
- 2) How is the terminal velocity of a grain determined and where is this property applied?
- 3) What is Heat Utilisation Factor?
- 4) 600 kg of paddy at 20% m.c. (wb) is dried to 12% m.c. (wb) for milling. Calculate the amount of moisture removed in drying.
- 5) List out the properties by which a mixture of grains / solid materials be separated.
- 6) What is the function of a debearder?
- 7) What is steamed rice and how is it got?
- 8) A grain of groundnut with zero initial velocity has travelled 65 cm in a metal plane with coefficient of friction 0.55 inclined at 21°. Find the velocity of the grain.
- 9) Write a note on pestle and mortar method of milling.
- 10) What is the use of diatomite in grain storage?

Part – B (5 x 16 = 80 Marks)

- 11) i) List out the various heat transfer processes in agricultural processing activities with examples.
Also, derive an expression for heat conduction through a hollow sphere. (8)
 - ii) Discuss the losses in a food pipeline with respect to Indian scenario. (8)
 - 12) a) i) Explain the destructive methods of determination of moisture. (8)
 - ii) Discuss the drying curve in detail. Also derive an expression for thin layer drying. (8)
- (or)
- b) i) List out the factors responsible for selection of method to determine the moisture content of grains. Explain the non-destructive methods of determination of moisture. (10)
 - ii) The relationship between moisture content (M) of paddy and period of maturity (N) is given

as $M = 35 - 0.2 N$ where $15 \leq N \leq 45$ and yield (Y) and period of maturity (N) as $Y = -500 + 350N - 5 N^2$ where $15 \leq N \leq 45$. Estimate the optimum stage of harvest for maximum yield and what is the maximum yield? Also find out the moisture content of paddy grain at the time of harvest. (6)

13) a) i) With a neat sketch, explain the working of a maize sheller. (8)

ii) What are separators? Explain the electronic colour separator. (8)

(or)

b) i) Explain the groundnut decorticator with a neat sketch. (8)

ii) Explain in detail how the layout of a seed processing unit is carried out. (8)

14) a) i) Discuss the advantages and disadvantages of parboiling paddy. (8)

ii) Explain the process of making puffed rice and beaten rice. (8)

(or)

b) i) Classify the grinding machinery with sketches according to the grinding mechanism. (8)

ii) Explain the various processes involved in flour milling. (8)

15) a) i) What are the requirements for a good storage system? Discuss the parameters to be evaluated for the same. (8)

ii) What are the common pests that affect the stored grains and how are they managed? (8)

(or)

b) What are the factors to be considered while choosing a material handling equipment? Discuss any one material handling equipment with a neat sketch and derive an expression to calculate the HP required for the same. (16)