

Code No: RT31353

R13**SET - 1**

III B. Tech I Semester Supplementary Examinations, October/November - 2018
AGRICULTURAL PROCESS ENGINEERING
(Agricultural Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

PART -A

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|---|--|------|
| 1 | a) With a neat sketch describe the working principle of a ball mill. | [4M] |
| | b) Write down different mixers used for dry powder and particulate food. | [3M] |
| | c) Describe the working principle of Air screen grain cleaner. | [4M] |
| | d) With a neat sketch describe the working principle of rotary dryer. | [4M] |
| | e) Write down the advantage of paddy parboiling. | [3M] |
| | f) Describe the working principle of bucket elevator. | [4M] |

PART -B

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|---|---|------|
| 2 | a) Define crushing efficiency. | [4M] |
| | b) Describe Bond's law of size reduction and work index. | [6M] |
| | c) What would be the critical speed and operating speed of a ball mill having 200 cm diameter charged with 10 cm balls to grind viscous suspension. | [6M] |
| 3 | a) Define power number. What are the factors responsible for the power requirement of fluid mixing? | [8M] |
| | b) Describe the working principle of kneader mixer in detail. | [8M] |
| 4 | a) Derive an expression for terminal velocity of spherical particle in gravitational field. | [9M] |
| | b) What are the design considerations for air screen cleaner? | [7M] |
| 5 | a) What is hysteresis effect? | [5M] |
| | b) Describe free moisture, bound and unbound moisture. | [5M] |
| | c) Two tonnes of paddy at 40 % initial moisture content (d.b.) is dried in a dryer to a final moisture content of 20 % (d.b.) in 4 hours. Calculate the average rate of moisture removal. | [6M] |

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