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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations December-2021
AGRICULTURAL PROCESS ENGINEERING
(Agricultural Engineering)

Time: 3 hours

Max. Marks: 60

PART-A

(Answer all the Questions 5 x 2 = 10 Marks)

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|---|---|---|----|----|
| 1 | a | Write the classification of Physical & Mechanical properties of biological materials. | L1 | 2M |
| | b | Define static and kinetic friction. | L2 | 2M |
| | c | Define Grading and Separation. | L2 | 2M |
| | d | Define size reduction. | L1 | 2M |
| | e | What are the main objectives of paddy parboiling? | L2 | 2M |

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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|---|---|--|----|----|
| 2 | a | Briefly explain the importance of engineering properties of biomaterial materials. | L2 | 5M |
| | b | Explain roundness, roundness ratio and sphericity with suitable equations and neat sketch. | L2 | 5M |

OR

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|---|---|---|----|----|
| 3 | a | Explain the platform scale for measurement of volume, density and specific gravity of large objects with neat sketch. | L2 | 5M |
| | b | List out the rheological models and explain kelvin model. | L2 | 5M |

UNIT-II

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|---|---|--|----|----|
| 4 | a | Explain Amontons laws of friction. | L2 | 5M |
| | b | Define terminal velocity and derive equation for terminal velocity of a fluid. | L3 | 5M |

OR

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|---|---|---|----|----|
| 5 | a | Explain Rolling resistance with neat sketch. | L2 | 5M |
| | b | Explain and derive equations for Frictional drag. | L3 | 5M |

UNIT-III

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|---|---|--|----|----|
| 6 | a | A screen is used to separate two components (A and B) from a feed where F, O and U are taken as mass flow rates of feed, overflow and underflow streams, respectively. The corresponding mass fraction of the oversize component A in these streams is XF, Xo and Xu. Derive an expression for overall effectiveness of this screen. | L3 | 5M |
| | b | Explain working principle specific gravity separator with neat sketch. | L2 | 5M |

OR

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|---|---|---|----|----|
| 7 | a | Explain Ideal and Actual screens and also explain different types of screens with neat sketch | L2 | 6M |
| | b | Explain Design consideration of an air-screen grain cleaner with neat sketch | L2 | 4M |

UNIT-IV

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|---|---|---|----|----|
| 8 | a | Explain present status and importance of food processing. | L2 | 6M |
| | b | Write the classification of size reduction equipment. | L2 | 4M |

OR

- 9 a Explain working principle of Hammer mill with neat sketch. L2 5M
- b Explain the energy requirement of size deduction. L2 5M

UNIT-V

- 10 a Explain the working principle of rubber roll Sheller. L2 5M
- b Write the importance of oil seed processing. L2 5M

OR

- 11 a Explain constant rate filtration and constant-pressure filtration. L2 5M
- b Explain centrifugal filters with neat sketch. L2 5M

END