Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2023

Course: Post-Harvest Engineering **Semester : 3rd**

Program: B.Tech (Food Technology) **Duration: 3 Hours**

Course Code: HSFT2001 **Max. Marks: 100**

Instructions: Attend all the sections.

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1			
1	**Angle between the horizontal and inclination of heap is called _____.** (A) Angle of repose (B) Angle of internal friction (C) Angle of external friction (D) Angle of friction	1.5	CO 1
2	**Rheological properties of material can be described by which property.** (A) Elasticity (B) Plasticity (C) Viscosity (D) All of the above	1.5	CO 1
3	**Angle of repose --------- with the increase of increase content of material.** (A) Increase (B) Decrease (C) Constant (D) None of these	1.5	CO 1
4	**Thermal diffusivity can be expressed as** (A) UAΔT (B)-KA/(ΔT/ΔX) (C) mCpΔT (D) K/ρCp	1.5	CO 1
5	**Unit of specific heat is** (A) kJ/kg K (B) W/mk (C) W/m2k (D) kg/kJ m	1.5	CO 1
6	**Latent heat is a ……..properties** (A) Thermal (B) Electrical (C) Biological (D) Physical	1.5	CO 1
7	**Units for thermal conductivity** (A) J/kg.K (B) J/mol.K (C) J.ohm/sec.K2 (D) W/m.K	1.5	CO 2
8	**Specific gravity of grains is determined by _____.** (A) Pycnometer (B) Toluene displacement method (C) Refract meter (D) None of these	1.5	CO 2
9	**Moisture content dry basis is _____.** (A) M db= (Ww/Wd) *100 (B) M wb= (Ww/Wd) *100 (C)Mwb=(Ww/Ww+Wd) *100 (D) M db=(Ww/Ww+Wd) *100	1.5	CO 2
10	**For a black body the transmissivity is _____.** (A) Zero (B) One (C) Nil (D) Above one	1.5	CO 2
11	**Define EMC.**	1.5	CO 2

12	**What is hysteresis effect?**	**1.5**	**CO 2**
13	**What is dry basis and wet basis moisture content?**	**1.5**	**CO 2**
14	**Define degree of grinding?**	**1.5**	**CO 3**
15	**Differentiate between head rice and broken rice.**	**1.5**	**CO 3**
16	**For grain conveying, the belt speed of _____ m/s is recommended.**	**1.5**	**CO 3**
17	**What do you mean by psychrometric chart?**	**1.5**	**CO 3**
18	**In deep bed dryer, the layer of grains is more than _____ cm.**	**1.5**	**CO 3**
19	**In CFTRI rice parboiling method, the paddy is soaked at ____ C for _____ time.**	**1.5**	**CO 3**
20	**What is the role of rubber-roll sheller?**	**1.5**	**CO 3**
Section B (4Qx5M=20 Marks)			
Q 1			
1	**What is terminal velocity? Derive expression for terminal velocity?**	**5**	**CO 1**
2	**Discuss the types of air flow in mechanical drying system.**	**5**	**CO 2**
3	**Differentiate between crushing efficiency and milling efficiency.**	**5**	**CO 3**
4	**Discuss the process of parboiling. Enlist the advantages of parboiling.**	**5**	**CO 3**
Section C (2Qx15M=30 Marks)			
Q 1			
1	**Discuss the following drying equipment in details. (Any three)** **(a) Freeze dryer** **(b) Rotary Dryer** **(c) LSU dryer** **(d) Fluidized dryer**	**15**	**CO 4**
2	**Discuss the working operation of the following conveying equipment. (Any three)** **(a) Bucket elevator** **(b) Belt conveyor** **(c) Screw conveyor** **(d) Pneumatic conveyor**	**15**	**CO 5**
Section D (2Qx10M=20 Marks)			
Q 1			
1	**Discuss the following Laws used in size reduction principle.** **(a) Rittinger's law** **(b) Kick's Law** **(c) Bond's Law**	**10**	**CO 4**
2	**What is the role of rice polishers. Discuss about vertical polisher and horizontal polisher with a net diagram.**	**10**	**CO 5**