SRM VALLIAMMAI ENGINEERING COLLEGE
(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF AGRICULTURAL ENGINEERING

QUESTION BANK

V SEMESTER

AG3563 POST HARVEST TECHNOLOGY
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Prepared by

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SUBJECT: POST HARVEST TECHNOLOGY

SEM / YEAR: 05 /III

UNIT-I FUNDAMENTALS OF POST – HARVESTING 9

Post-harvest technology – introduction –objectives –post harvest losses of cereals, pulses and oilseeds importance - optimum stage of harvest. Threshing – traditional methods- mechanical threshers – types- principles and operation-moisture content – measurement –direct and indirect methods – moisture meters – equilibrium moisture content.

PART - A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Define post-harvest technology.	BT-1	Remembering
2.	What are the objectives of post-harvest technology?	BT-2	Understanding
3.	Expand the following terms GAP, GMP, HACCP.	BT-1	Remembering
4.	List out the factors influencing deteriorative changes during storage.	BT-1	Remembering
5.	Explain the storage systems in post harvest management.	BT-2	Understanding
6.	Define Hygrometer.	BT-1	Remembering
7.	What are the criteria for harvesting Rice?	BT-2	Understanding
8.	Why there is no uniform maturity in pulses?	BT-2	Understanding
9.	Give two precautions while handling threshers.	BT-1	Remembering
10.	What are the stages of post harvest loss?	BT-1	Remembering
11.	Define cylinder loss.	BT-1	Remembering
12.	Draw the flowchart of different harvesting system.	BT-2	Understanding
13.	Write about the storage pest in stored grains.	BT-2	Understanding
14.	Expand the following institutions with its location NIFTEM, CIPHET, IGMRI.	BT-1	Remembering
15.	What is concave clearance?	BT-1	Remembering
16.	Define threshing and list out the three mechanism.	BT-1	Remembering
17.	Compare harvesting maturity and storage maturity.	BT-2	Understanding
18.	How the threshers are classified?	BT-2	Understanding
19.	Write the components of the power thresher.	BT-1	Remembering
20.	Define equilibrium moisture content.	BT-1	Remembering

21.	How is Moisture content determined?	BT-2	Understanding
22.	List out the five types of threshing cylinder.	BT-1	Remembering
23.	Explain about threshing efficiency with its formula.	BT-2	Understanding
24.	What are the different parts of Olpad thresher?	BT-1	Remembering
25.	Draw the neat sketch of peg tooth cylinder.	BT-2	Understanding

PART – B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	i. Define Post Harvest Technology. ii. Describe the post harvest technology process with neat flow chart.	BT-3	Applying
2.	i. What are the three mechanism of threshing? ii. List the factors affecting threshing efficiency. iii. Illustrate about olpad thresher working principle with near sketch.	BT-4	Analysing
3.	i. Define Moisture content. ii. What are the Direct methods of measurement of Moisture Content? iii. Discuss moisture content measurement by oven method.	BT-5	Evaluating
4.	i. What are the Indirect methods of measurement of Moisture Content? ii. Explain the functions of moisture meter with neat sketch.	BT-3	Applying
5.	i. Define threshing and its types. ii. Brief about pedal operated thresher working principle with neat sketch.	BT-4	Analysing
6.	i. Explain the importance of optimum stage of harvest. ii. Distinguish between harvesting maturity and physiological maturity. iii. Describe the harvesting maturity symptoms of Groundnut.	BT-4	Analysing
7.	i. Brief about the hygrometer method of moisture content estimation with neat sketch. ii. Discuss about the chemical method of moisture content estimation.	BT-4	Analysing
8.	i. What are the primary losses during post harvest processing? ii. Discuss about principal causes for the post harvest losses and poor quality in root vegetables and leafy vegetables.	BT-3	Applying
9.	i. Compare about moisture content measurement by electrical resistance method and dielectric method. ii. Detail about the infrared methods.	BT-3	Applying
10.	Illustrate about Brown duvel fractional distillation method with neat sketch.	BT-4	Analysing

11.	i. Discuss about the different types of cylinder ii. Explain about the hammer mill cylinder with neat sketch. iii. Write down the precautions in operation of threshers.	BT-3	Applying
12.	Write down the criteria for harvesting rice, sorghum, redgram, soyabean, groundnut, sesame.	BT-3	Applying
13.	i. Brief about the objectives of post harvest technology. ii. Give the importance of post harvest technology.	BT-4	Analysing
14.	Calculate the amount of moisture evaporated from 100 kg of grain for drying it from an initial moisture content of 25 % to a final moisture of 13 % on wet basis.	BT-4	Analysing
15.	Elaborate about the working principle, components and procedure of all crop thresher with a neat diagram.	BT-3	Applying
16.	Summarize about power operated thresher component, principle and procedure with neat sketch.	BT-4	Analysing
17.	i. What is Post Harvest Loss? ii. How the postharvest losses in crops can be managed?	BT-4	Analysing

UNIT-II PSYCHROMETRY AND DRYING 9

Psychrometry – importance – Psychrometric charts and its uses – Drying – principles and theory of drying – thin layer and deep bed drying – Hot air drying – methods of producing hot air – Types of grain dryers – selection – construction, operation and maintenance of dryers — Design of dryers.

PART - A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	What is psychrometry?	BT-2	Understanding
2.	List the properties of psychrometry.	BT-1	Remembering
3.	Define dew point temperature.	BT-1	Remembering
4.	What is relative humidity?	BT-2	Understanding
5.	Define dry-bulb temperature.	BT-1	Remembering
6.	Write a formula for humidity ratio.	BT-1	Remembering
7.	Classify drying rate period.	BT-2	Understanding
8.	What are the disadvantages of deep bed drying?	BT-2	Understanding
9.	List out the types of dryers.	BT-1	Remembering
10.	What is psychrometric chart?	BT-1	Remembering
11.	How is psychrometric process taking place?	BT-2	Understanding
12.	What is humidifying?	BT-2	Understanding
13.	List out the application of psychrometric charts.	BT-1	Remembering
14.	What are the uses of psychrometer?	BT-2	Understanding
15.	Define adiabatic saturation.	BT-1	Remembering
16.	Give two advantages of LSU dryer.	BT-1	Remembering
17.	Categorize drying processes.	BT-2	Understanding
18.	Write down the application of drying.	BT-1	Remembering

19.	What are the principles of drying?	BT-2	Understanding
20.	Why continuous mixed dryer called as LSU dryer?	BT-4	Analysing
21.	What are the disadvantages of open sun drying?	BT-1	Remembering
22.	Write the parts of solar dryers.	BT-1	Remembering
23.	Define wet-bulb temperature.	BT-1	Remembering
24.	What are the types of fluidized bed dryers?	BT-2	Understanding
25.	Define theory of drying.	BT-1	Remembering

PART – B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Describe about any six psychrometric properties of air.	BT-3	Applying
2.	i. Brief about the principles and theory of drying. ii. Explain thin layer drying with a neat sketch.	BT-4	Analysing
3.	Illustrate about the Psychrometric chart and its uses.	BT-4	Analysing
4.	Brief about the methods of producing hot air.	BT-4	Analysing
5.	i. Elaborate about any three psychrometric processes. ii. Detail about the psychrometric chart and its application.	BT-3	Applying
6.	Brief fluidized bed dryer with merits and demerits.	BT-4	Analysing
7.	i. What is drying? ii. Explain the mechanism of the drying process.	BT-4	Analysing
8.	Differentiate deep bed drying and thin layer drying with diagram.	BT-4	Analysing
9.	Brief about continuous mixed flow dryer with neat sketch.	BT-4	Analysing
10.	Explain about sun drying. Discuss the merits and demerits of sun drying.	BT-3	Applying
11.	Illustrate briefly about freeze dryer with neat sketch.	BT-4	Analysing
12.	i. What are the points to be remembered while operating dryers? ii. Explain continuous flow dryer with diagram.	BT-4	Analysing
13.	i. List out the dryers. ii. Brief note on the selection of dryers. iii. How the dryers are maintained?	BT-3	Applying
14.	Illustrate the rotary and tray dryer with neat sketch.	BT-4	Analysing
15.	Explain about LSU dryer with its components, working principle with neat sketch.	BT-3	Applying
16.	Compare continuous flow dryer mixing type and non mixing type. Discuss the advantages and disadvantages of L.S.U dryer.	BT-4	Analysing
17.	Elaborate about Pneumatic dryer with neat sketch.	BT-3	Applying

UNIT-III CLEANING AND GRADING 9

Principles - air screen cleaners — adjustments - cylinder separator - spiral separator — magnetic separator - colour sorter - inclined belt separator — length separators - effectiveness of separation and performance index.

PART - A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Distinguish cleaning and grading of grains.	BT-2	Understanding
2.	List out the factors influencing the effectiveness of hand grading.	BT-1	Remembering
3.	What are the factors influencing cleaning and sorting of grains?	BT-2	Understanding
4.	Illustrate objectives of cleaning.	BT-1	Remembering
5.	Define sorting.	BT-1	Remembering
6.	Write down the types of air screen cleaner.	BT-1	Remembering
7.	Give any two examples of sorter based on their grading principle	BT-2	Understanding
8.	How will you adjust the air screen cleaner?	BT-2	Understanding
10.	What are the factors affecting the screening efficiency?	BT-1	Remembering
11.	Illustrate the possibility of particle facing screen aperture?	BT-2	Understanding
12.	Compare cylinder and spiral separator.	BT-2	Understanding
13.	How will you evaluate the magnetic separator?	BT-2	Understanding
14.	Explain the working principle of colour sorter.	BT-2	Understanding
15.	Draw the components of the length separator.	BT-1	Remembering
16.	Explain the uses of spiral separators.	BT-2	Understanding
17.	Define screen dam.	BT-1	Remembering
18.	Give examples of grains which are processed by colour sorter.	BT-2	Understanding
19.	List out the different parts of the air screen cleaner.	BT-1	Remembering
20.	What is theory of separation?	BT-1	Remembering
21.	Evaluate the function of a specific gravity separator.	BT-2	Understanding
22.	Define performance index.	BT-1	Remembering
23.	How the indented cylinder separator will be adjusted?	BT-2	Understanding
24.	How will you assess the effectiveness of separation?	BT-2	Understanding
25.	Why is water sprayed on the screw conveyor of the magnetic separator?	BT-2	Understanding

PART – B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Describe the principles of cleaning and grading.	BT-3	Applying
2.	Write short notes on the air screen cleaner.	BT-4	Analysing
3.	Explain colour sorter with neat sketch.	BT-4	Analysing
4.	Describe the cylinder separator with neat sketch.	BT-3	Applying

5.	Brief about effectiveness of screen.	BT-3	Applying
6.	Explain any 5 criteria for sorting of materials.	BT-4	Analysing
7.	Criticize the different types of separators based on its working principle.	BT-3	Applying
8.	Explain about magnetic separators with a neat sketch.	BT-4	Analysing
9.	Detail about length separator with its working principle.	BT-4	Analysing
10.	i. Illustrate functions of spiral separators. ii. Discuss the properties of various types of separator.	BT-4	Analysing
11.	Brief about performance index of separators.	BT-4	Analysing
12.	Differentiate magnetic and spiral separator.	BT-4	Analysing
13.	i. Detail about theory of separation and influencing factors. ii. Classify graders based on the grading principles	BT-3	Applying
14.	Criticize the working principle of inclined draper and length separator.	BT-3	Applying
15.	i. Write down the difference between air screen cleaners and separators ii. Differentiate cylinder and length separator.	BT-4	Analysing
16.	Elaborate about air screen cleaner working principle, components with neat sketch.	BT-3	Applying
17.	Discuss about the specific gravity separator with neat sketch.	BT-4	Analysing

UNIT-IV SHELLING AND HANDLING 9

Principles and operation – maize sheller, husker sheller for maize – groundnut decorticator – castor sheller – material handling – belt conveyor –screw conveyor – chain conveyor – bucket elevators – pneumatic conveying.

PART – A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	List out the components of the domestic maize sheller.	BT-1	Remembering
2.	Define shelling.	BT-1	Remembering
3.	Which principle is suitable for maize sheller?	BT-2	Understanding
4.	Compare two types of power operated maize sheller?	BT-2	Understanding
5.	Explain the working principle of groundnut decorticator?	BT-2	Understanding
6.	Illustrate the components of the castor sheller.	BT-1	Remembering
7.	Differentiate shelling and decortications.	BT-2	Understanding
8.	What is the role of blower in maize sheller?	BT-2	Understanding
9.	Criticize the purpose of the conveyor.	BT-2	Understanding
10.	What is material handling?	BT-2	Understanding
11.	Discuss the adjustments should be made in maize Sheller.	BT-2	Understanding
12.	Write down the purpose of the conveyor.	BT-1	Remembering
13.	List out the types of bucket elevators.	BT-1	Remembering

14.	Criticize the factors involved in selection of conveyors.	BT-2	Understanding
15.	Define pneumatic conveying.	BT-1	Remembering
16.	Write the belt conveyor and label the parts.	BT-1	Remembering
17.	List the various parts of the bucket elevator.	BT-1	Remembering
18.	Explain screw conveyor working principle.	BT-2	Understanding
19.	Differentiate pneumatic and belt conveying.	BT-2	Understanding
20.	What is fabric filter in the cyclone of pneumatic conveyor?	BT-2	Understanding
21.	What are the benefits of using a conveyor?	BT-1	Remembering
22.	List the factors influencing shelling efficiency.	BT-2	Understanding
23.	How will you calculate shelling efficiency?	BT-2	Understanding
24.	Define grain damage.	BT-1	Remembering
25.	Write down the components of groundnut decorticator.	BT-1	Remembering

PART B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Elaborate bucket elevator working principle with neat sketch.	BT-3	Applying
2.	Discuss the operation of maize husker sheller PAU model with a neat sketch and label the parts.	BT-4	Analysing
3.	Explain about the castor sheller with a neat sketch.	BT-3	Applying
4.	Brief about chain conveyor operation with a neat sketch.	BT-3	Applying
5.	i. Write short notes on material handling. ii. Differentiate belt conveyor and screw conveyor.	BT-4	Analysing
6.	Detail about the TNAU model of maize husker sheller operation with a neat sketch.	BT-4	Analysing
7.	i. Brief about dehusking and shelling principles and operation. ii. Describe the specifications of Castor Sheller	BT-3	Applying
8.	i. Illustrate the advantages of chain conveyors over screw conveyors. ii. Describe the merits and demerits of shellers.	BT-4	Analysing
9.	How will you evaluate the performances of bucket elevator and screw conveyor?	BT-4	Analysing
10.	How will you determine the capacity of belt conveyor?	BT-3	Applying
11.	Differentiate chain conveyor and bucket elevator	BT-4	Analysing
12.	Briefly explain the principles of pneumatic conveying	BT-3	Applying
13.	i. Elaborate about different types of sheller and its operation. ii. What is shelling efficiency? How to calculate shelling efficiency.	BT-5	Evaluating
14.	Detail about groundnut decorticator working principle, components, merits and demerits.	BT-3	Applying
15.	Describe screw conveyor and belt conveyor working	BT-4	Analysing

	principle, components with neat sketch.		
16.	Compare the types of conveyors which are mainly used in Post harvesting Technology.	BT-3	Applying
17.	Describe chain conveyor and bucket elevator working principle, components with neat sketch.	BT-4	Analysing

UNIT-V CROP PROCESSING 9

Paddy processing – parboiling of paddy – methods - merits and demerits - dehusking of paddy - methods merits and demerits – rice polishers –types - constructional details – polishing -layout of modern rice mill - wheat milling – pulse milling methods- oil seed processing – millets processing.

PART – A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Define parboiling	BT-1	Remembering
2.	Differentiate whitener and grader.	BT-2	Understanding
3.	List out the protein present in Rice, Wheat, Maize	BT-2	Understanding
4.	Differentiate parboiling and polishing.	BT-2	Understanding
5.	What is the role of aspirator in rice milling unit?	BT-2	Understanding
6.	Brief about the two steps in processing of pulses.	BT-2	Understanding
7.	What are the merits of parboiling paddy?	BT-2	Understanding
8.	Explain the flowchart of rice processing.	BT-2	Understanding
9.	List out the constructional details required for polishers.	BT-1	Remembering
10.	Give the specifications to get good quality paddy.	BT-1	Remembering
11.	What is milling quality?	BT-2	Understanding
12.	List out the grain quality indicators in rice.	BT-1	Remembering
13.	Compare the types of rice milling process.	BT-2	Understanding
14.	Write the steps involved in multistage milling of rice.	BT-1	Remembering
15.	What is mobile rice mills? Give example.	BT-2	Understanding
16.	List the types of rice polishers.	BT-1	Remembering
17.	Define Wintering in oil refining process.	BT-1	Remembering
18.	Expand CFTRI, PPRC.	BT-1	Remembering
19.	What are the objectives of conditioning in corn milling process?	BT-2	Understanding
20.	Define Pulse splitting.	BT-1	Remembering
21.	Why oil is used in the dry milling of pulses?	BT-2	Understanding
22.	How polishing is done in pulses?	BT-2	Understanding
23.	Criticize the 3 ways of degerming and hulling.	BT-2	Understanding
24.	List out the types of oil seed extraction methods.	BT-1	Remembering
25.	What are the byproducts while processing brown rice?	BT-1	Remembering

PART-B

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Explain in detail about the steps involved in parboiling of paddy.	BT-3	Applying
2.	Describe about the dry milling during corn processing.	BT-4	Analysing
3.	Differentiate CFTRI parboiling and PPRC barboiling method.	BT-4	Analysing
4.	Detail on the modern milling of wheat.	BT-4	Analysing
5.	Describe mechanical expression of oil seed processing.	BT-4	Analysing
6.	i. Criticize about different types of rice polishers. ii. Brief about dehusking of paddy.	BT-4	Analysing
7.	Explain about the rice bran oil processing.	BT-3	Applying
8.	Demonstrate millet processing technology.	BT-3	Applying
9.	Detail about pulse milling process.	BT-4	Analysing
10.	i. Explain oil seed processing with flow chart. ii. Enumerate the process of oil refining.	BT-3	Applying
11.	Discuss dry milling and wet milling method of pulses with a flowchart.	BT-3	Applying
12.	Explain the improved parboiling method and milling of paddy using flowchart.	BT-3	Applying
13.	Detail notes on different oil extraction methods.	BT-4	Analysing
14.	Explain in detail about the modern rice mill process with a neat layout.	BT-3	Applying
15.	Write the critical comments on parboiling of paddy process with its merits and demerits.	BT-4	Analysing
16.	Compare and contrast the processing methods of pulses and oil seed.	BT-4	Analysing
17.	Write about the dehusking of paddy, types, merits and demerits.	BT-3	Applying