SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF AGRICULTURAL ENGINEERING

QUESTION BANK

V SEMESTER

AG3561–Agricultural Structures

Regulations – 2023

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Prepared by

Mr. T.R. BANU CHANDER
ASSISTANT PROFESSOR
DEPARTMENT OF AGRICULTURAL ENGINEERING

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SUBJECT CODE/NAME: AG3561–AGRICULTURAL STRUCTURES
SEM/YEAR: V / III

UNIT I – INTRODUCTION			
Definition – Types of Agricultural Structures- Farmstead planning- introduction, location, size and arrangement - Requirements of farm house - Defects in traditional houses.			
PART A			
Q.NO	**QUESTIONS**	**BT LEVEL**	**COMPETENCE**
1.	What are agricultural structures?	BT-1	Remember
2.	Name any two types of agricultural structures.	BT-1	Remember
3.	What is a farmstead?	BT-1	Remember
4.	Mention two advantages of proper farmstead planning.	BT-2	Understand
5.	List two essential components of a farmstead.	BT-1	Remember
6.	What are storage structures?	BT-1	Remember
7.	Give two examples of animal housing structures.	BT-1	Remember
8.	What is a greenhouse used for?	BT-2	Understand
9.	Name two temporary agricultural structures.	BT-2	Understand
10.	What are processing structures in agriculture?	BT-2	Understand
11.	What is the objective of farmstead planning?	BT-2	Understand
12.	What factors influence the location of a farmstead?	BT-2	Understand
13.	Why is site selection important in farmstead planning?	BT-3	Apply
14.	Mention two criteria for selecting the size of a farmstead.	BT-2	Understand
15.	What is meant by the arrangement in farmstead planning?	BT-1	Remember
16.	What is a farm house?	BT-1	Remember
17.	List two basic requirements of a farm house.	BT-2	Understand
18.	Why should a farmhouse have good sanitation facilities?	BT-3	Apply
19.	What construction materials are preferred for a farmhouse?	BT-3	Apply
20.	How does orientation of the farm house affect comfort?	BT-1	Remember
21.	Mention one common defect in traditional houses.	BT-1	Remember
22.	Why are traditional houses prone to pest infestation?	BT-2	Understand
23.	What is the major disadvantage of using mud in traditional construction?	BT-1	Remember
24.	How do traditional houses fail in weather resistance?	BT-2	Understand
25.	Why traditional houses are considered structurally weak?	BT-1	Remember
PART B			
1.	Define agricultural structures. Explain their classification with examples.	BT-3	Apply

2.	Describe the objectives and principles of farmstead planning.	BT-3	Apply
3.	Explain the factors affecting the location of a farmstead.	BT-3	Apply
4.	What are the major types of storage structures? Describe each with uses.	BT-3	Apply
5.	What are the essential requirements of an ideal farmhouse?	BT-3	Apply
6.	Discuss the defects commonly found in traditional rural houses.	BT-3	Apply
7.	Write about different animal housing structures and their design considerations.	BT-3	Apply
8.	Compare modern farm houses with traditional rural homes.	BT-3	Apply
9.	Describe the functional layout of a well-planned farmstead.	BT-3	Apply
10.	Explain the role of drainage and waste disposal in farmstead planning.	BT-3	Apply
11.	What are protective structures? Give types and applications.	BT-3	Apply
12.	Explain the importance of proper orientation in farmstead structures.	BT-3	Apply
13.	Discuss the importance of rural housing improvement in agriculture.	BT-3	Apply
14.	Describe the role of government schemes in improving rural housing.	BT-4	Analyse
15.	What are the economic benefits of scientific farmstead planning?	BT-4	Analyse
16.	Explain the importance of material selection in agricultural structures.	BT-4	Analyse
17.	Discuss advantages and limitations of underground storage structures.	BT-4	Analyse
18.	Describe the essential features of a good grain storage structure.	BT-3	Apply

UNIT II – DESIGN REQUIREMENTS OF FARM STRUCTURES

Site selection - materials of construction – quality – types of masonry basement and super structure – types of roofs – building plan and estimation.

PART A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	What are the important factors for selecting a site for a farm structure?	BT-1	Remember
2.	Name any four materials commonly used in farm structure construction.	BT-2	Understand
3.	What is the importance of soil testing before site selection?	BT-3	Apply
4.	Define the term "superstructure" in building construction.	BT-1	Remember
5.	Mention two qualities of good building materials.	BT-1	Remember
6.	What is the function of a basement in a farm building?	BT-2	Understand
7.	Name two types of masonry used in farm construction.	BT-1	Remember
8.	What is the difference between load-bearing and framed structures?	BT-3	Apply
9.	List two advantages of using RCC (Reinforced Cement Concrete).	BT-2	Understand
10.	Define 'plinth level'.	BT-3	Apply
11.	What are the common types of roofing used in farm buildings?	BT-3	Apply
12.	Mention two advantages of sloped roofs.	BT-2	Understand
13.	What is a building plan?	BT-3	Apply

14.	What is the purpose of estimation in construction?	BT-3	Apply
15.	Define the term 'mortar'.	BT-2	Understand
16.	What is the role of a foundation in farm structures?	BT-2	Understand
17.	Name any two quality checks during construction.	BT-3	Apply
18.	What are the common materials used for roofing in farm buildings?	BT-3	Apply
19.	State two criteria for selecting roofing material.	BT-2	Understand
20.	Why is ventilation important in farm structures?	BT-1	Remember
21.	List methods of determining land capability.	BT-1	Remember
22.	Differentiate geological map and forest inventory map.	BT-2	Understand
23.	Define vegetation and land use map.	BT-1	Remember
24.	Differentiate aerial photography and remote sensing.	BT-2	Understand
25.	Define preparation of mapping legend.	BT-1	Remember
PART B			
1.	Explain key considerations for site selection in farm building construction.	BT-3	Apply
2.	Discuss the criteria for selection of construction materials in farm structures.	BT-3	Apply
3.	Explain the importance of material quality control during construction.	BT-3	Apply
4.	Differentiate between load-bearing and framed-type masonry structures.	BT-3	Apply
5.	Describe types of masonry commonly used for foundations and basements.	BT-3	Apply
6.	Explain types of superstructure walls and their application.		
7.	Compare different types of roof structures used in farm buildings.	BT-3	Apply
8.	Discuss roofing materials suitable for various farm structures.	BT-4	Analyze
9.	Explain how building plans are prepared for farm structures.	BT-3	Apply
10.	Outline the steps involved in cost estimation for a farm building.	BT-3	Apply
11.	Discuss foundation design considerations for farm structures.	BT-3	Apply
12.	Explain how roofing systems influence building microclimate.	BT-3	Apply
13.	Discuss the differences in masonry quality between farm and residential structures.	BT-3	Apply
14.	Explain building lifespan and maintenance planning in agricultural structures.	BT-3	Apply
15.	Evaluate benefits of RCC vs steel vs masonry superstructures.	BT-3	Apply
16.	Design considerations for multi-span farm sheds.	BT-4	Analyze
17.	Outline the process for preparing a bill of quantities in farm structure estimation.	BT-3	Apply
18.	Discuss sustainable and eco- friendly design elements in farm buildings.	BT-4	Analyze
UNIT III - DESIGN OF FARM STRUCTURES			
Threshing floor - Drying floor - Poultry house - Dairy farm - Rat Proof godown and Farm roads - construction			

procedure. Structures for plant environment - Green houses – Polyhouses – Shadenets – Construction and Utilisation			
PART A			
Q.NO	**QUESTIONS**	**BT LEVEL**	**COMPETENCE**
1.	What is the purpose of a threshing floor?	BT-1	Remember
2.	List two desirable features of a good threshing floor.	BT-2	Understand
3.	What is a drying floor used for?	BT-2	Understand
4.	Mention two construction materials used for drying floors.	BT-1	Remember
5.	What are the key components of a poultry house?	BT-1	Remember
6.	What is the ideal orientation for a poultry house in India?	BT-1	Remember
7.	Name two essential features of a dairy farm building.	BT-1	Remember
8.	What is the minimum space requirement per cow in a dairy shed?	BT-2	Understand
9.	Define a rat-proof godown.	BT-2	Understand
10.	Mention two methods to make a godown rat-proof.	BT-2	Understand
11.	What is the importance of farm roads?	BT-2	Understand
12.	Name two types of farm roads.	BT-1	Remember
13.	What are the steps in constructing a farm road?	BT-2	Understand
14.	What is a greenhouse?	BT-2	Understand
15.	Mention two advantages of greenhouses.	BT-2	Understand
16.	What is a polyhouse?	BT-2	Understand
17.	State two advantages of polyhouses over open-field cultivation.	BT-2	Understand
18.	What is a shadenet house?	BT-1	Remember
19.	Mention one major use of a shadenet house.	BT-2	Understand
20.	List two construction materials commonly used in greenhouses and polyhouses.	BT-3	Apply
21.	Define Poultry House.	BT-3	Apply
22.	Define Dairy Farm	BT-3	Apply
23.	List the uses of Rat-Proof Godown	BT-3	Apply
24.	Write a note on Farm Roads	BT-3	Apply
25.	What is effect of Greenhouses in farmshed?	BT-3	Apply
PART B			
1.	Describe construction and design considerations for a threshing floor.	BT-3	Apply
2.	Explain the design features of a drying floor and its construction procedure.	BT-3	Apply
3.	Analyze the structural layout and environmental controls of a model poultry house.	BT-3	Apply
4.	Discuss key components in designing a dairy farm structure.	BT-3	Apply
5.	Explain construction principles of a rat- proof godown.	BT-4	Analyze
6.	Outline construction procedure for farm roads and their functional requirements.	BT-4	Analyze
7.	Describe the structural design and utilization of greenhouses.	BT-4	Analyze
8.	Discuss polyhouse construction principles and crop advantages.	BT-4	Analyze

9.	Explain how shadenets are constructed and their purpose.	BT-4	Analyze
10.	Compare greenhouses, polyhouses, and shadenets based on design and use.	BT-4	Analyze
11.	Explain thermal and light considerations in greenhouse design.	BT-4	Analyze
12.	Highlight biosecurity and hygiene features in farm structural design.	BT-4	Analyze
13.	Propose a combined structure layout featuring poultry house, dairy, and feed/godown.	BT-3	Apply
14.	Explain choice of flooring materials in farm structures and their relative merits.	BT-3	Apply
15.	Discuss maintenance schedules for the described structures.	BT-4	Analyze
16.	Evaluate sustainable considerations in farm structure design.	BT-3	Apply
17.	Analyze cost–benefit of upgrading from traditional to modern plant environment structures.	BT-3	Apply
18.	Explain how farm structure orientation impacts performance.	BT-4	Analyze

UNIT IV - GRAIN STORAGE STRUCTURES

Feed storage - Existing grain storage methods - Requirements of good storage structures - Bag storage structures -Indigenous storage structures - Bukhari, Morai and Kothar; Grain bins- Cylindrical, rectangular and Pusa bin.

PART A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	What is the main purpose of feed storage on a farm?	BT-1	Remember
2.	Name two common materials used for constructing feed storage structures.	BT-2	Understand
3.	What are two traditional grain storage methods used in rural areas?	BT-2	Understand
4.	List two essential requirements of a good grain storage structure.	BT-2	Understand
5.	Why is aeration important in grain storage?	BT-2	Understand
6.	What is bag storage in grain management?	BT-2	Understand
7.	Mention one advantage of bag storage.	BT-1	Remember
8.	Name two indigenous grain storage structures.	BT-1	Remember
9.	What is a Bukhari in grain storage?	BT-1	Remember
10.	How is a Morai constructed?	BT-1	Remember
11.	What is a Kothar used for?	BT-1	Remember
12.	State one limitation of indigenous storage structures.	BT-1	Remember
13.	What is a grain bin?	BT-1	Remember
14.	Give two types of grain bins based on shape.	BT-2	Understand
15.	What is a Pusa bin?	BT-2	Understand
16.	What material is used in constructing Pusa bins?	BT-2	Understand
17.	What is the capacity range of Pusa bins?	BT-3	Apply
18.	Name one advantage of Pusa bins.	BT-3	Apply

19.	Why are cylindrical grain bins preferred?	BT-3	Apply
20.	What is fumigation in grain storage?	BT-3	Apply
21.	Describe the traditional storage structures with their importance.	BT-3	Apply
22.	What are the storage requirements of agricultural produce?	BT-3	Apply
23.	What are factors governing the correct storage technique?	BT-3	Apply
24.	List the different types of storages.	BT-3	Apply
25.	What are the different traditional storage structures?	BT-3	Apply
PART B			
1.	Discuss the importance and design considerations of feed storage on farms.	BT-4	Analyze
2.	Compare and contrast existing traditional and modern grain storage methods, including advantages and disadvantages.	BT-4	Analyze
3.	Describe the functional and structural requirements of good grain storage structures.	BT-4	Analyze
4.	Elaborate on bag storage structures: design, use, and best practices.	BT-4	Analyze
5.	Explain indigenous storage structures—Bukhari, Morai, and Kothar—their construction and storage performance.	BT-4	Analyze
6.	Compare Bukhari, Morai, and Kothar in terms of capacity, durability, and protection.	BT-3	Apply
7.	What are grain bins? Classify them and describe typical materials and functions.	BT-3	Apply
8.	Discuss design, construction stages, and operational protocol for cylindrical grain bins.	BT-3	Apply
9.	Explain advantages and constraints of rectangular grain bins vs cylindrical ones.	BT-4	Analyze
10.	Detail the Pusa bin: its origin, construction, capacity, and unique features.	BT-3	Apply
11.	Compare modern grain bins (cylindrical, rectangular, Pusa) in technical and economic terms.	BT-3	Apply
12.	Outline operational management for grain bins to preserve quality.	BT-4	Analyze
13.	Detail cost–benefit considerations when transitioning from traditional stores to modern bins.	BT-4	Analyze
14.	How do moisture and pest control integrate in storage design? Give technical measures.	BT-4	Analyze
15.	Design a small farm's grain storage plan combining bag structures and a Pusa bin for 10 T capacity.	BT-4	Analyze
16.	Explain necessary laboratory and field trials validating Pusa bin effectiveness.	BT-4	Analyze
17.	What innovations improve impermeability and pest resistance in storage structures?	BT-3	Apply
18.	Propose a community-level storage facility using modern bins—policy, economics, and maintenance strategy.	BT-3	Apply
UNIT 5- VENTILATION OF AGRICULTURAL STRUCTURES			
Quantity of air flow for livestock ventilation – fundamental equations - moisture balance - selection of values -Problems on minimum, medium and maximum ventilation rate.			

PART A			
Q.NO	**QUESTIONS**	**BT LEVEL**	**COMPETENCE**
1.	What is the main purpose of ventilation in livestock buildings?	BT-1	Remember
2.	Name two gases that must be removed through ventilation in animal houses.	BT-1	Remember
3.	What are the types of ventilation systems used in livestock housing?	BT-2	Understand
4.	Define minimum ventilation rate.	BT-2	Understand
5.	Define maximum ventilation rate.	BT-1	Remember
6.	Write the fundamental equation for ventilation rate in terms of heat balance.	BT-2	Understand
7.	What does the term “moisture balance” mean in ventilation?	BT-2	Understand
8.	What is the recommended minimum ventilation rate for dairy cattle?	BT-2	Understand
9.	What is the maximum ventilation rate for pigs in summer?	BT-3	Apply
10.	What factors affect the ventilation requirements of livestock?	BT-2	Understand
11.	What is the role of temperature difference (ΔT) in ventilation calculations?	BT-2	Understand
12.	Name one method of achieving natural ventilation.	BT-1	Remember
13.	Why is excessive ventilation during winter harmful?	BT-3	Apply
14.	How is moisture production by animals estimated for ventilation design?		
15.	State one advantage of mechanical ventilation.	BT-1	Remember
16.	What is the typical relative humidity range maintained in animal houses?	BT-1	Remember
17.	Write the equation for moisture balance in a ventilated animal building.	BT-3	Apply
18.	What unit is used to express airflow in ventilation problems?	BT-3	Apply
19.	How much moisture does a dairy cow produce per day approximately?	BT-2	Understand
20.	What is the recommended medium ventilation rate for poultry?	BT-2	Understand
21.	Why is it necessary to vary ventilation rate with seasons?	BT-2	Understand
22.	What is the typical temperature rise allowed in winter for livestock buildings?	BT-1	Remember
23.	What is the meaning of air exchange rate?	BT-3	Apply
24.	How can airflow rate be increased in mechanical ventilation?	BT-2	Understand
25.	Give one reason for calculating minimum, medium, and maximum ventilation rates.	BT-2	Understand
PART B			
1.	Explain the purpose and objectives of livestock ventilation systems.	BT-3	Apply
2.	Derive and explain the fundamental heat-balance equation for ventilation rate calculation.	BT-3	Apply
3.	Explain the moisture-balance equation and its practical application.	BT-3	Apply
4.	Discuss how to select design values (temperature, humidity, ΔT) for ventilation systems across seasons.	BT-3	Apply
5.	Calculate min, med, and max ventilation rates for a 500 kg dairy cow under specific conditions.	BT-3	Apply
6.	Identify factors affecting ventilation rate design in livestock housing.	BT-3	Apply
7.	Compare natural and mechanical ventilation: pros, cons, and applications.	BT-3	Apply
8.	Outline procedure to estimate moisture production by typical livestock types.	BT-4	Analyze
9.	Explain the concept of air exchange rate and its relevance.	BT-3	Apply

10.	Describe how controlled ventilation adapts to changing weather during a day.	BT-3	Apply
11.	Discuss energy and cost considerations in mechanical ventilation systems.	BT-3	Apply
12.	Design a ventilation system for 100 layer hens in a tropical climate.	BT-3	Apply
13.	How do bedding and manure moisture affect ventilation needs?	BT-4	Analyze
14.	Explain limitations and safety issues in livestock ventilation design.	BT-4	Analyze
15.	Evaluate advanced ventilation aids: sensors and automation.	BT-4	Analyze
16.	Calculate ventilation rate when only moisture data is available (animal moisture + bedding).	BT-3	Apply
17.	Analyze seasonal ventilation management for pig fattening unit in temperate region.	BT-4	Analyze
18.	Propose a veterinary monitoring plan tied to ventilation performance.	BT-4	Analyze