Maharashtra Agricultural Universities Examination Board, Parbhani
Semester End Examination
B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: IDE-ELE-471	Title	: Rural Water Supply and Sanitation.
Credits	: 3 (1+2)	Total Marks	: 40
Day and Date	: Wednesday, 20.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any FIVE questions from SECTION 'A'
2) All questions from SECTION 'B' are compulsory
3) All questions carry equal marks
4) Draw neat diagrams wherever necessary.

SECTION 'A'

Q.1 Enlist different waste water treatments for domestic/industrial effluents. Describe any one in detail. (5)

Q.2 Explain in detail about theory of sedimentation. (5)

Q.3 Define aeration. Explain types of aerators. (5)

Q.4 Describe in brief rapid sand Filters. (5)

Q.5 Enlist various types of settling of basins. Explain spiractor. (5)

Q.6 Describe in detail the water quality standards for potable water. (5)

Q.7 Explain in brief disinfection of water and role of chlorine and chloramines. (5)

SECTION 'B'

Q.8 Define the following. (5)
1) Flocculation 2) Filtration 3) Adsorption
4) Sedimentation 5) Chlorination.

Q.9 State True or False. (5)
a) The presence of harmful bacteria in raw water is far more serious than silt.
b) Iron in excess of 0.3 mg/lit and manganese in excess of 0.1 mg/lit are objectionable in water.
c) Most people believe that long narrow basin performs better than square basin.
d) There is theoretical difference between the operation of rapid gravity filter and pressure type filter.
e) The final process of water engineering is disinfection.

Q.10 Fill in the blanks. (5)
a) The Reynolds number is ---------- related to kinematic viscosity.
b) Filter sand has grain size ---------- mm.
c) In rapid gravity filters the depth of water above a filter bed is generally about ---------- .
d) Sludge can be defined as a highly concentrated suspension of ---------- in a liquid.
e) Practically all natural ground water contains ---------- .

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Maharashtra Agricultural Universities Examination Board, Parbhani
Semester End Examination
B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: ELE-SWCE-471	Title	: Small Dams and Reservoirs.
Credits	: 3 (1+2)	Total Marks	: 40
Day and Date	: Wednesday, 20.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any FIVE questions from SECTION 'A'
2) All questions from SECTION 'B' are compulsory
3) All questions carry equal marks
4) Draw neat diagrams wherever necessary.

SECTION 'A'

Q.1 What are the types of reservoirs ? State the purposes served by each type. (5)

Q.2 Explain in detail unit hydrograph method of estimating design flood. (5)

Q.3 Estimate the peak flow, in a flood created by 8 hours storm of 2.5 cm during first 4 hours and 3.75 cm during second 4 hours, from 4 hours unit triangular hydrograph. The catchment area and its time of concentration are 537 ha and 7.5 hours respectively. (5)

Q.4 What are the types of earthen dam ? State their specific suitability. (5)

Q.5 What is rockfill dam ? What are their advantages over earthen dam ? (5)

Q.6 Explain in brief with neat sketches the different forces acting on gravity dam. (5)

Q.7 What is meant by the elementary profile of a gravity dam and how is it deduced ? (5)

SECTION 'B'

Q.8 Define following terms. (5)
a) Standard project flood.
b) Pore water pressure.
c) Uplift pressure.
d) Gravity dam.
e) Dead storage.

Q.9 Fill in the blanks. (5)
a) Low frequency flood determination can be made easily and correctly by ---------- .
b) The average yield of reservoir is the arithmetic average of ---------- yield and ---------- yield.
c) Approximate reservoir capacity may be obtained graphically with the help of ---------- .
d) ---------- is provided in order to relieve the uplift pressure exerted by the seeping water.
e) ---------- dams have characteristics lying between gravity dams and earthen dams.

Q.10 State True or False. (5)
a) Unit hydrograph method of flood determination is suitable for smaller basins.
b) In retarding reservoirs as reservoir elevation increases, outflow discharge increases.
c) Gravity dams can be constructed almost on any type of foundations.
d) Rockfill dams are very useful in seismic regions.
e) A homogeneous section of earthen dam is used for levees and low dams.

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Maharashtra Agricultural Universities Examination Board, Parbhani
Semester End Examination
B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: FMP-ELE-471/472	Title	: Farm Power and Machinery Management.
Credits	: 3 (1+2)	Total Marks	: 40
Day and Date	: Wednesday, 20.11.2002	Time	: 15.00 to 17.00 hrs.

NOTE :
1. Solve ANY FIVE questions from Section 'A'
2. All questions from Section 'B' are compulsory
3. All questions carry equal marks.
4. Draw neat diagram wherever necessary

SECTION 'A'

Q.1 a) Enlist the guiding principles involved in development of a cycle diagram for a farm machinery system.

b) What are the definite steps followed in the development of a cycle diagram of farm machinery operation.

Q.2 Enlist the different factors affecting the field efficiency and explain any two.

Q.3 What are the various common field machine patterns for rectangular fields with neat sketches.

Q.4 a) What are the variables considered in the selection of field machinery ?
b) What are the time elements considered for computing the capacity or cost of the farm machinery ?

Q.5 a) How is the periodic maintenance of the tractor carried out to give trouble free service throughout the working season ?
b) Enlist the types of scheduling of operations on which the total timliness cost depend.

Q.6 Calculate the cost of operation of a tractor in Rs/hr for the following data :

Purchase price,	Rs. 3.50 lakh
Interest,	12 p.c.p.a.
Taxes & Insurance	4 p.c.p.a.
Fuel consumption	6 lph

Assume other necessary data, if required.

(P.T.O.)

Q.7 a) A 5 m width of cut of combine is travelling at 1.5 m/s. In one minute time 50 kg of grain is collected in the grain tank and 60 kg of material is discharged out to rear machine.

Calculate :
1. Machine capacity
2. Material capacity
3. Through put capacity

b) Write short notes (Any two)
1. Headland pattern
2. Circuitrus pattern
3. Alternation pattern

SECTION 'B'

Q.8 *Match the following :*

'A'	'B'
1. Circuitrus pattern	Lead
2. Head land pattern	Field stoppage
3. Breakdown	Combine
4. Mower cutter bar	Support time
5. Zig zag line	m.b.plough

Q.9 *Fill in the blanks :*

1. _____is the radius of the circle within which the vehicle can make its shortest run.
2. _____is a half round or the travel from one end of the field to the other.
3. Theyield of a field affects the _____of the harvesting machine
4. The efficiency of the continuous pattern depends greatly on _____time at the head lands.
5. A_____indicate the activity of the whole machine system.

Q.10 *State TRUE or FALSE*

1. A cycle diagram aids in field machinery system analysis.
2. Turn strips are unprocessed areas that provide room for making turns.
3. Large fields do not necessarily have smaller field efficiency than small fields.
4. A line with super imposed circles in a cycle diagram indicates the working time.
5. The quality of a machine's performance is described by the efficiency with which it handles material.

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Maharashtra Agricultural Universities Examination Board, Parbhani
Semester End Examination
B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: IDE-ELE-471	Title	: Rural Water Supply and Sanitation.
Credits	: 3 (1+2)	Total Marks	: 40
Day and Date	: Wednesday, 20.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any FIVE questions from SECTION 'A'
2) All questions from SECTION 'B' are compulsory
3) All questions carry equal marks
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SECTION 'A'

Q.1 Enlist different waste water treatments for domestic/industrial effluents. Describe any one in detail. (5)

Q.2 Explain in detail about theory of sedimentation. (5)

Q.3 Define aeration. Explain types of aerators. (5)

Q.4 Describe in brief rapid sand Filters. (5)

Q.5 Enlist various types of settling of basins. Explain spiractor. (5)

Q.6 Describe in detail the water quality standards for potable water. (5)

Q.7 Explain in brief disinfection of water and role of chlorine and chloramines. (5)

SECTION 'B'

Q.8 Define the following. (5)
1) Flocculation 2) Filtration 3) Adsorption
4) Sedimentation 5) Chlorination.

Q.9 State True or False. (5)
a) The presence of harmful bacteria in raw water is far more serious than silt.
b) Iron in excess of 0.3 mg/lit and manganese in excess of 0.1 mg/lit are objectionable in water.
c) Most people believe that long narrow basin performs better than square basin.
d) There is theoretical difference between the operation of rapid gravity filter and pressure type filter.
e) The final process of water engineering is disinfection.

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a) The Reynolds number is --------- related to kinematic viscosity.
b) Filter sand has grain size --------- mm.
c) In rapid gravity filters the depth of water above a filter bed is generally about --------- .
d) Sludge can be defined as a highly concentrated suspension of --------- in a liquid.
e) Practically all natural ground water contains --------- .

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MAHARASHTRA AGRICULTURAL UNIVESITIES EXAMINATION BOARD
PARBHANI
SEMESTER END COMPARTMENT EXAMINTION
•B.Tech. (Agril. Engg.)

emester	: VII (New)	Academic Year	: 2002-2003
ourse No.	: IDE-474	Title	: Drainage Engineering
redits	: 3(2+1)	Total Marks	: 80
Day & Date	: Wednesday, 30.07.2003	Time	: 15.00 to 17.00

NOTE :
1. Solve ANY FIVE questions from section "A".
2. All questions from section "B" are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q. 1 A)	Explain control of water logging through irrigation control	(4.00)
B)	Explain formulation of drainage criteria	(3.00)
C)	Enumerate procedure for drainage installation	(3.00)
Q.2 A)	Explain modified Glover-Dumm equation for drainage computation	(3.00)
B)	Differentiate between the following 1. Bedding drainage system and parallel field drain system 2. Gridiron and herringbone type of sub-surface systems	(5.00)
C)	What are the causes of waterlogging?	(2.00)
Q. 3 A)	List out the factors on which leaching efficiency depends.	(3.00)
B)	Determine the change in salinity level of the soil due to evaporation of groundwater over a period of four months, when the depth of groundwater evaporated is 11 cm and its electrical conductivity is 10 mmhos/cm. The depth of soil influenced by salt accumulated is 30 cm. The bulk density and saturation percentage of soil are 1.4 gm/cc and 53, respectively. Density of water is assumed as 1.00 gm/cc.	(3.00)
C)	Write a short note on drainage materials used in drain pipes.	(4.00)
Q. 4 A)	Derive Hooghoudt's equation for spacing of drains	(6.00)
B)	What size tile is required to remove the surface inlet, if the runoff accumulates from 14.4 ha of land and the slope in the tile line is 0.4%? Drainage coefficient of the land may be assumed as 1.5 cm.	(4.00)
Q. 5 A)	Design a drainage canal to drain 550 ha of land having drainage coefficient of 2.5 cm. The soil is silt loam. Maximum permissible slope of channel bed is 0.1 per cent.	(3.00)
B)	Explain, how reclamation of alkali soil is done	(4.00)
C)	Write a short note on quality of irrigation water.	(3.00)
Q. 6 A)	Derive an expression for Leaching Requirement	(4.00)
B)	List out procedures for permanent reclamation of salt affected soils.	(3.00)
C)	Determine the size of tile required at the end of a 500 m long tile line, if the drainage coefficient is 1 cm, grade is 0.3 per cent and tile spacing is 50 m.	(3.00)
Q. 7 A)	The drainage coefficient of a land is 10 mm. Calculate the capacity required at the outlet end of the drainage ditch draining a watershed of 300 hectares.	(3.00)
B)	How drainage computation is done based on dynamic equilibrium concept.	(3.00)
C)	Write briefly about the land forming for surface drainage	(4.00)

PTO.

SECTION "B"

Q. 8 Fill in the blanks (10.00)

1. Allowable velocity in open ditch for sandy clay loam soil is _____ m/sec.
2. Recommended side slope for drain ditch is _____ for silt loam soil and _____ for loose sand soil.
3. Cross-slope ditch system is a _____ type terrace.
4. If number and diameter of pores present in soil are uniformly distributed, oil is said to be _____ and in the soils when hydraulic conductivity is same in all directions, the soil is said to be _____.
5. In flat areas, lack of sufficient slope is a limitation, while in steep areas, main limitation is the risk of _____.
6. _____ of a soil represents its average water transmitting properties.
7. In bedding system, the recommended bed width for land with very slow internal drainage is _____ m.
8. Parallel field drains usually have side slope of 8:1 to 10:1, minimum depth of 25 cm and minimum cross sectional area of _____ m^2.

Q. 9 Define the following (10.00)

a. Hydraulic conductivity
b. Drainage coefficient
c. Saline soil
d. Interceptor drain
e. Leaching requirement
f. Gypsum requirement
g. Drainable pore space
h. Random ditch system

Q. 10 Write notes on the following (**ANY FOUR**) (10.00)

1. Drainage envelope / covering material
2. Reuse of drainage water
3. Drainage of heavy clay soils
4. Surface water inlet
5. Benefits of drainage

Maharashtra Agric[illegible]ral Universities Examination Board, Parbhani
[illegible]emester End Examination

B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: IDE-474	Title	: Drainage Engineering.
Credits	: 3 (2+1)	Total Marks	: 80
Day and Date	: Friday, 15.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any five questions from Section 'A'.
2) All questions from Section 'B' are compulsory.
3) All questions carry equal marks.
4) Draw neat sketches wherever necessary

Section 'A'

Q.1(A) What are the various methods of surface drainage ? Give details of bedding system of drainage. (7)

(B) Explain the concept of leaching requirement. (3)

Q.2(A) Enlist the various investigations to be done while planning a drainage project ? (4)

(B) What are the benefits of surface and subsurface drainage ? (6)

Q.3 What is meant by waterlogging ? What are the causes of waterlogging ? What are the prevention measures for waterlogging ? (10)

Q.4 A flat area is drained by parallel open ditch drains spaced 25 m apart and 300 m long where drainage coefficient is 4 cm. Design the most economical trapezoidal section when drains are to be laid along a gradient of 1.5 per cent and side slopes are to be kept as 1:1. Take Manning's 'n' as 0.04. (10)

Q.5(A) Determine the change in salinity level of the soil due to the evaporation of groundwater over a period of four months, when the depth of ground water evaporated is 11 cm and its electrical conductivity is 10 mmhos/cm. The depth of soil influenced by slat accumulation is 30 cm. The bulk density and saturation percentage of the soil are 1.4 gm/cu.cm and 63%, respectively. The density of water is assumed to be 1.0 gm/cu.cm. (5)

(B) Write short note on drainage properties of soils (5)

Q.6(A) When do the soils need surface drainage ? (3)

(B) Explain in detail the reclamation of saline, alkali and saline-alkali soils ? (7)

Q.7 What are the assumptions made by Houghoudt for deriving the drain spacing Equation ? Derive Houghoudt's equation for the water table in equilibrium with rainfall or irrigation water. (10)

(P.T.O.)

SECTION-B

Q.8 Fill in the blanks (10)

1. Gypsum is added to reclaim ---------- soils.
2. Water table within ---------- m is usually not desirable.
3. For drainage ---------- structure of soil is desirable.
4. Leaching requirement is ---------- of irrigation water added to leach the salts.
5. Drainage coefficient is depth of water removed in ---------- hours.
6. Dryness of drainage area is indicated by ----------
7. Drain spacing is directly proportional to the square root of ----------
8. Exchangeable sodium percentage of saline soil is ----------
9. In isotropic soil, hydraulic conductivity is ---------- in all directions.
10. Drainage removes only ---------- water from the soil.

Q.9 State true or false (10)

1. Drainable porosity is the volume of soil water removed in a day.
2. Subsurface drainage is always a closed drainage.
3. Herringbone system is economical than grid iron.
4. Outlet conditions decide the depth of field drains.
5. Filter is provided to increase effective diameter of drain.
6. Land requires drainage when annual rainfall exceeds annual evaporation in th
7. Sodic soils can be reclaimed only by adding excess water.
8. Sandy soils are difficult to drain as compared to clayey soils.
9. Economic and hydrologic conditions are not considered in drainage design.
10. Permeable soils often need artificial drainage.

Q.10 Match the pairs. (10)

1. Small scattered depressions	a) Five days rainfall <35mm
2. Soil hydrologic group D	b) EC > 4dsm^{-1}
3. AMC - I	c) EC < 1dsm^{-1}
4. Saline alkali soils	d) Bedding system of surface drainage
5. Crowning	e) High runoff potential
	f) Random field drain system

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Maharashtra Agricultural Universities Examination Board, Parbhani
Semester End Examination
B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: FS-475	Title	: Environmental Control Engineering.
Credits	: 2 (1+1)	Total Marks	: 40
Day and Date	: Thursday, 14.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1. Solve ANY FIVE questions from section 'A'.
2. All questions from section 'B' are compulsory.
3. All questions carry equal marks.
4. Draw neat diagram wherever necessary.

SECTION 'A'

Q.1 Explain methods of food preservations. (5)

Q.2 Write short notes on i) Bukhari Type structure ii) Morai Type structure. (5)

Q.3 Workout the economical diameter & depth of a silo to store sufficient quantity of silage for a herd of 400 dairy cows having an average body weight of 450 kg each. The cows are fed silage for 200 days a year. Assume suitable data. (5)

Q.4 a) Explain with figure wire floored poultry houses. (3)
b) Write note on Cage houses. (2)

Q.5 Compare the loose housing & stall barn on the basis of floor area per cow, cost, health & comfort, spreading of diseases, sanitation, quality of milk, feed consumption & animal behavior. (5)

Give classification of Green-houses. (5)

Explain 'Active Summer Cooling Systems' & 'Active Winter Cooling Systems' in Green Houses. (5)

(P.T.O)

SECTION 'B'

Q.8 State true or false. (5)

1. Even span type green house is constructed on hilly terrain.
2. Living organisms are essentially isothermal.
3. Well drained sandy soil is most suitable for poultry house.
4. Silo are common structures for storage of grains.
5. Bacteria can grow rapidly in acid content food.

Q.9 Fill in the blanks. (5)

1. Slow freezing method provide freezing temperature of _____ °C to _____ °C.
2. A pit silo is recommended where water table is too _____ .
3. The average feed requirement of poultry bird is _____ gram per bird per day.
4. In a stanchion barn, window area of _____ m^2 per cow is desirable.
5. Due to green-house effect concentration of _____ gas is increased.

Q.10 Explain the following terms in short. (5)

1. Preservation of vegetables.
2. Trench Silo
3. Brooder house.
4. Homeothermy
5. Pyranometer

CCCC

SECTION 'B'

Q.8 State true or false. (5)

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Maharashtra Agricultural Universities Examination Board, Parbhani
Semester End Examination
B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: FMP-4710	Title	: Farm Machinery Design
Credits	: 2 (1+1)	Total Marks	: 40
Day and Date	: Wednesday, 13.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any FIVE questions from SECTION 'A'
2) All questions from SECTION 'B' are compulsory
3) All questions carry equal marks
4) Draw neat diagrams wherever necessary.

SECTION 'A'

Q.1 a) Explain the factors to be considered for Roller Chain Drive selection. (2½)
b) Consider the selection of Roller Chain Drive for a shelling mechanism. The Sheller must operate at 1000 rpm and is driven by a shaft that rotates at 600 rpm. The design center distance for the mechanical drive is 0.61 m. the power transmitted by the drive is 15 kW. (2½)

Q.2 Explain with mathematical expressions for the action of Cultivator sweeps on Weed Roots. (5)

Q.3 How will you decide the angle and speed of Disc Plough ? Explain the force acting on the Disc. (5)

Q.4 Express the determination of quantity and uniformity of sowing by Seed Rolls. (5)

Q.5 Explain the Design and Construction of Mowers. (5)

Q.6 Express the production capacity of threshing unit. (5)

Q.7 a) Explain in short various elements of cost estimation. (2½)
b) A factory is producing 1000 bolts and nuts per hour on a machine. Its material cost is Rs. 375, labour cost Rs. 245 and the direct expense is Rs. 83. the factory on-cost is 15% of the total labour cost and office on-cost is 30% of the total factory cost. If the selling price of each bolt and nut is Rs. 1.30, calculate whether the management is going in loss or gain and by what amount. (2½)

SECTION 'B'

Q.8 Fill in the blanks. (5)
1) Chain drives are more practical for ---------- speed.
2) The ---------- component acts to separate the gears while the component transmit the power.
3) ---------- = minimum hole diameter – maximum shaft diameter.
4) The ---------- determines the lateral displacement, overturn and crushing of the soil layer.
5) The volume of seeds which are sown by the fluted wheel in one revolution is called the ---------- of the seed metering mechanism.

Q.9 State True or False. (5)
1) The V-belt drive can be used for long center distances.
2) The ability of the rotary tiller to loosen the soil increases as the thickness of the chip cut by each cutter increases.
3) The volume of hopper is determined per hectare for crops with a high seed rate but low weight.
4) The quality of the work of harvesting machine is determined by agro-technical requirement.
5) Factory cost = Direct material cost + Direct labour cost + Direct expenses.

Q.10 Define the following. (5)
1) Tolerance.
2) Sweep.
3) Seed clustering.
4) Direct material cost.
5) Path of the cutter.

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Maharashtra Agricultural Universities Examination Board, Parbhani
Semester End Examination
B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: SWCE-476	Title	: Soil Conservation Structure Design.
Credits	: 2 (1+1)	Total Marks	: 40
Day and Date	: Saturday, 16.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any FIVE questions from SECTION 'A'
2) All questions from SECTION 'B' are compulsory
3) All questions carry equal marks
4) Draw neat diagrams wherever necessary.

SECTION 'A'

Q.1 State and explain the design procedure of conservation structures. (5)

Q.2 What is hydraulic jump and loss of energy in it ? Explain types of hydraulic jump. (5)

Q.3 A drop spillway has to take fall of 2.20 m with 12.0 m^3/sec. runoff rate, determine total depth of weir and crest length for h/L = 0.38. also determine the length of head wall extension, length of basin and height of wing wall at junction. (5)

Q.4 Describe the importance of nala bunding and enlist the steps in execution of nala bunding. (5)

Q.5 Explain the functional uses, adaptability, advantages and limitations of chute spillway. (5)

Q.6 A dam of trapezoidal section with a vertical waterfall has top width of 1.5 m, base width 3.0 m, height 6.0 m. It impounds water to a height of 5.5 m. Test the structure for stability. Assume density of masonry = 2.2 gm/cc, density of water = 1.0 gm/cc, coefficient of friction = 0.50, bearing capacity of soil = 25000 kg/m^2. (5)

Q.7 Write short notes (Any Two). (5)
a) Gravity dam b) Farm Pond c) Drop inlet spillway.

SECTION 'B'

Q.8 Define the following terms. (5)
1) Critical depth 2) Free board 3) Eccentricity
4) Alternate depth 5) Hydraulic drop.

Q.9 Fill in the blanks. (5)
1) Cantilever outlets are necessary when channel grade below is ---------- .
2) Evaporation from ponds can be reduced by selecting a site having a ----------, surface area and ---------- depth.
3) Thickness of spillway apron depends on ---------- .
4) Whenever depth of flow is below critical depth then the flow is ---------- .
5) Wing walls are set at an angle of ---------- with the center line of the basin.

Q.10 Answer the following in short.
1) State where box inlet is preferred.
2) State the role of riprap of approach channel.
3) State the function of longitudinal sill.
4) Calculate the critical depth of flow when 3 m^3/sec flow discharges from rectangular channel of 2 m width.
5) State whether hydraulic jump will form or not when the flow depths before and after the apron of the structure are 30 cm and 29 cm respectively.

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Course No.	: IDE-ELE-471	Title	: Rural Water Supply and Sanitation.
Credits	: 3 (1+2)	Total Marks	: 40
Day and Date	: Wednesday, 20.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any FIVE questions from SECTION 'A'
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Q.1 Enlist different waste water treatments for domestic/industrial effluents. Describe any one in detail. (5)

Q.2 Explain in detail about theory of sedimentation. (5)

Q.3 Define aeration. Explain types of aerators. (5)

Q.4 Describe in brief rapid sand Filters. (5)

Q.5 Enlist various types of settling of basins. Explain spiractor. (5)

Q.6 Describe in detail the water quality standards for potable water. (5)

Q.7 Explain in brief disinfection of water and role of chlorine and chloramines. (5)

SECTION 'B'

Q.8 Define the following. (5)
1) Flocculation 2) Filtration 3) Adsorption
4) Sedimentation 5) Chlorination.

Q.9 State True or False. (5)
a) The presence of harmful bacteria in raw water is far more serious than silt.
b) Iron in excess of 0.3 mg/lit and manganese in excess of 0.1 mg/lit are objectionable in water.
c) Most people believe that long narrow basin performs better than square basin.
d) There is theoretical difference between the operation of rapid gravity filter and pressure type filter.
e) The final process of water engineering is disinfection.

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a) The Reynolds number is ---------- related to kinematic viscosity.
b) Filter sand has grain size ---------- mm.
c) In rapid gravity filters the depth of water above a filter bed is generally about --------- .
d) Sludge can be defined as a highly concentrated suspension of --------- in a liquid.
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Credits	: 3 (1+2)	Total Marks	: 40
Day and Date	: Wednesday, 20.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any FIVE questions from SECTION 'A'
2) All questions from SECTION 'B' are compulsory
3) All questions carry equal marks
4) Draw neat diagrams wherever necessary.

SECTION 'A'

Q.1 Enlist different waste water treatments for domestic/industrial effluents. Describe any one in detail. (5)

Q.2 Explain in detail about theory of sedimentation. (5)

Q.3 Define aeration. Explain types of aerators. (5)

Q.4 Describe in brief rapid sand Filters. (5)

Q.5 Enlist various types of settling of basins. Explain spiractor. (5)

Q.6 Describe in detail the water quality standards for potable water. (5)

Q.7 Explain in brief disinfection of water and role of chlorine and chloramines. (5)

SECTION 'B'

Q.8 Define the following. (5)
1) Flocculation 2) Filtration 3) Adsorption
4) Sedimentation 5) Chlorination.

Q.9 State True or False. (5)
a) The presence of harmful bacteria in raw water is far more serious than silt.
b) Iron in excess of 0.3 mg/lit and manganese in excess of 0.1 mg/lit are objectionable in water.
c) Most people believe that long narrow basin performs better than square basin.
d) There is theoretical difference between the operation of rapid gravity filter and pressure type filter.
e) The final process of water engineering is disinfection.

Q.10 Fill in the blanks. (5)
a) The Reynolds number is ---------- related to kinematic viscosity.
b) Filter sand has grain size ---------- mm.
c) In rapid gravity filters the depth of water above a filter bed is generally about ---------- .
d) Sludge can be defined as a highly concentrated suspension of ---------- in a liquid.
e) Practically all natural ground water contains ---------- .

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Maharashtra Agricultural Universities Examination Board, Parbhani
Semester End Examination
B.Tech. (Agril. Engg.)

Semester	: VII (NEW)	Academic Year	: 2002-2003
Course No.	: IDE-ELE-471	Title	: Rural Water Supply and Sanitation.
Credits	: 3 (1+2)	Total Marks	: 40
Day and Date	: Wednesday, 20.11.2002	Time	: 15.00 to 17.00 hrs.

Note : 1) Solve any FIVE questions from SECTION 'A'
2) All questions from SECTION 'B' are compulsory
3) All questions carry equal marks
4) Draw neat diagrams wherever necessary.

SECTION 'A'

Q.1 Enlist different waste water treatments for domestic/industrial effluents. Describe any one in detail. (5)

Q.2 Explain in detail about theory of sedimentation. (5)

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SECTION 'B'

Q.8 Define the following. (5)
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Q.9 State True or False. (5)
a) The presence of harmful bacteria in raw water is far more serious than silt.
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