AR13

CODE: 13CE3019   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEM REGULAR EXAMINATIONS, MAY, 2016
SCHEME OF EVALUATION

WATER RESOURCES ENGINEERING
(CIVIL ENGINEERING)

PART-A

ANSWER ALL QUESTIONS   **[1 x 10 = 10 M]**

1.
    a)   What do you understand by evapo-transpiration?
    b)   Define 'Design Flood?'
    c)   What is hydrologic cycle?
    d)   Define Aquifer
    e)   Explain the term delta
    f)   Define specific yield
    g)   Write short notes on crop rotation
    h)   Define permanent wilting point
    i)   Define flood routing
    j)   What is water logging

PART-B

Answer one question from each unit   **[5x12=60M]**

UNIT-I

2.   (a) What factors you consider in selecting a site for a rain-gauge station?   6M
         (b) What are the different forms of precipitation?   6M

                       (OR)

3.   (a) List out various practical applications of hydrology   6M
         (b) Discuss with a neat sketch various methods used to compute average
             rainfall over a basin.   6M

UNIT-II

4.   (a) Sketch a typical hydrograph resulting from an isolated storm and explain   6M
             different features of it.
         (b) Define an 'S-curve hydrograph' giving a neat sketch, and state its use   6M

                       (OR)

5.   (a) Describe the method of estimating a T_r – year flood using   6M
             Log-Pearson type III distribution..
         (b) From the historical data of annual flood peaks of a catchment the   6M
             mean and   standard deviation are estimated as 20000 m^3/sec and 10000 m^3/sec. An
             existing structure on this catchment has been designed   for 40000 m^3/sec. What
             could be its return period? (Assume standard deviation and mean of the reduced
             extremes which Depend on the sample size and taken from Gumble's table are
             1.06 and 0.52).

UNIT-III

6.   (a) With a neat sketch explain different types of aquifers.   6M
        (b) Calculate the discharge in m^3/day from a tube well under the following   6M
            Conditions of an unconfined aquifer: Diameter of the well = 50 cm;
            Drawdown at   the well = 10 m; length of strains = 25 m;
            radius of influence of the well = 250 m; coefficient of permeability = 0.01 cm/s.

(OR)

7.   Write short notes on: 12M
                (i) drip irrigation method
                (ii) mixed cropping
                (iii) flood irrigation
                (iv) field capacity

UNIT-IV

8.   After how many days will you supply water to soil in order to ensure   12M
        sufficient irrigation of the given crop, if: field capacity of the soil = 28%;
         permanent wilting point =13%; dry density of soil = 1.3 gm/cc; effective
         depth of root zone = 70 cm; daily consumptive use of water
        for the given crop = 12 mm. Assume any other data required.

(OR)

9.   (a) Write short notes on: (i) consumptive use of water (ii) water distribution   6M
            efficiency (iii) crop seasons in India.
        (b) What are the factors on which duty depends? How can the duty   6M
            be improved?

UNIT-V

10.   Write short notes on: (i) Balancing depth (ii) Economics of canal lining   12M
            (iii) Advantages of canal lining.

(OR)

11.   Design a concrete lined channel to carry a discharge of 400 cumec   12M
         at a slope of 1 in 10000. The side slopes of the channel are 1.25:1 and
        Manning's N may be taken as 0.014. The depth is limited to 5.0 m.

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CODE: 13EE3019   SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEM REGULAR EXAMINATIONS, MAY, 2016

UNIX & SHELL PROGRAMMING
(ELECTIVE-I)
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3 Hours   Max Marks: 70

PART-A
ANSWER ALL QUESTIONS   [1 x 10 = 10 M]

1. a) List Strengths of UNIX like Operating system.
   b) List out any four environment variable with their usage.
   c) Write about awk command in UNIX.
   d) Give directory structure of UNIX file system.
   e) Explain the system variables with example.
   f) What is process status? Explain Ps with options
   g) Write notes on command substitution
   h) Write the purpose of set command?
   i) How will you test various file attributes while writing shell scripts
   j) Write a short note on filters command.

PART-B
Answer one question from each unit   [5x12=60M]

UNIT-I

2. a   What are general-purpose utilities of UNIX system? Explain with example.   **6 M**
   b   Explain multi-user capability of UNIX.   **6 M**

   (OR)
3. a   What is the significance of the following commands   **6 M**
         who, cat, more
   b   Write short notes on: (a) Unix system services (b) Shell responsibilities   **6 M**

UNIT-II

4. a   Explain the commands search for pattern and search & replace in Vi editor . **6 M**
   b   Explain each column of the output of ls –l command   **6 M**

   (OR)
5. a   Differentiate between grep,egrep, fgrep commands.   **6 M**
   b   What is file permission? What are the different ways to set the file permission? **6 M**

UNIT-III

6. a   Explain the following concepts about pipes.   **6 M**
   b   Explain the concept of Job Control?   **6 M**

   (OR)
7. a   Explain with example different types of commands recognized by the shell.   **6 M**
   b   What are shell variables? Explain with examples.   **6 M**

CODE: 13EE3019   **SET-2**

UNIT-IV

8.	a	What are the various features of Korn Shell .Explain with suitable examples**.**	**8 M**
	b	Awarite short note on command history.	**4 M**

(OR)

9.		Explain the following in the Korn Shell programming i)Making Selection ii) decision iii) repetition	**12 M**

UNIT-V

10.	a	List and explain various special parameters used by shell scripts .	**6 M**
	b	Write a short note on positional parameters in C shell.	**6 M**

(OR)

11.	a	How will you test various file attributes while wriiting shell scripts.	**6 M**
	b	Write a shell script to create a menu, which displays the list of files, current data, process status and current users of the system.	**6 M**

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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT,TEKKALI
(AUTONOMOUS)
III B.TECH II SEM REGULAR EXAMINATIONS, MAY-2016

OPERATION RESEARCH
(MECHANICAL ENGINEERING)

Time: 3 Hours   Max Marks: 70

PART –A

ANSWER ALL QUESTIONS   **[1x10=10M]**

1 a). Discuss the Applications of OR
   b). Define Slack Variable with one example
   c). List different methods to find initial basic feasible solution in Transportation Models.
   d). Identify the objective of the travelling salesman problem.
   e). What is sequencing?
   f). List various queuing models with examples.
   g). List behaviour of customers in Queuing theory.
   h). Define Saddle Point and Fair game.
   i). List various rules for constructing Network diagram.
   j). Define Critical path and slack.

PART-B

Answer one question from each unit   **[5x12=60M]**

UNIT-I

2. Solve the following Linear Programming problem by graphical method

    Maximize $Z = 100X_1 + 80X_2$

    Subjected to $5X_1 + 10X_2 \leq 50$

    $8X_1 + 2X_2 \geq 16$

    $3X_1 - 2X_2 \geq 60$ where $X_1, X_2 \geq 0$

    (OR)

3. Solve the following Linear Programming problem by Simplex method

    Maximize $Z = 3X_1 + 5X_2$

    Subjected to $X_1 \leq 4$

    $2X_2 \leq 12$

    $3X_1 + 2X_2 \leq 18$ where $X_1, X_2 \geq 0$

UNIT-II

4. A company has three Factories at F_1, F_2, and F_3 which supply to Warehouses at W_1, W_2 and W_3. Unit shipping costs (in rupees) are as follows. Determine the optimum distribution for this company to minimize shipping costs.

	W_1	W_2	W_3	Supply
F_1	16	20	12	200
F_2	14	6	18	160
F_3	26	24	16	90
Demand	180	120	150	

(OR)

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CODE:13ME3021   **SET-1**

5.   A Company has 5 jobs to be done. The following matrix shows the return in rupees on assigning machines to jobs. Assign 5 jobs to 5 machines so as to maximize the total expected profit.

		Jobs				
		A	B	C	D	E
	1	5	11	10	12	4
Machines	2	2	4	6	3	5
	3	3	12	5	14	6
	4	6	14	4	11	7
	5	7	9	8	12	5

UNIT-III

6.   There are five jobs each of which must go through machines A,B and C in order BAC. Processing times are given in the following table. To find the sequenceing in order BAC & Find the total prosing time.

	Processing Times		
Job_i	A_i	B_i	C_i
1	10	7	6
2	12	8	11
3	8	4	10
4	9	5	8
5	13	6	7

(OR)

7.   Customers arrive at sales counter managed by a single person according to Poisson process with a mean rate of 20/hr. The time requirement to serve a customer has an exponential distribution with a mean of 100sec. Find the average waiting time of customer in queue and in system.

UNIT-IV

8.   Find the replacement interval for the following machine which purchase price is Rs.6000 and maintaining prices are given below.

year	1	2	3	4	5	6	7	8
Maintenance cost	1000	1200	1400	1800	2300	2800	3400	4000
Resale Price	300	1500	750	375	200	200	200	200

(OR)

9. Two Competitors A and B are competing for the same product. Their different strategies are given in the following payoff matrix. Apply dominance principle and find the optimal strategy of both players for both companies and Value of game.

		Company-B			
		I	II	III	IV
Company-A	I	3	2	4	0
	II	3	4	2	4
	III	4	2	4	0
	IV	0	4	0	8

UNIT-V

10 Construct the network diagram for the following data. Calculate total float, free float, independent float, total project duration and the critical path?

Activity	1-2	1-3	1-4	2-5	3-6	3-7	4-7	5-8	6-8	7-9	8-9	9-10
Duration (days)	2	2	2	4	5	8	4	2	4	5	3	4

(OR)

11 Construct Network diagram and find critical path, project duration, slack for all events and the probability that the project will meet the due date of 19 weeks.

Activity (i-j)		1-2	1-3	1-4	2-5	3-5	4-6	5-6
Duration (Weeks)	Optimistic time	1	1	2	1	2	2	3
	Most likely time	1	4	2	1	5	5	6
	Pessimistic time	7	7	8	1	14	8	15

6. To find the sequencing in order BAC & Find the total prosing time.

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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEM REGULAR EXAMINATIONS, MAY, 2016

TV AND SATELLITE COMMUNICATIONS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Time: 3 Hours   **Max Marks: 70**

PART-A
ANSWER ALL QUESTIONS   **[1 x 10 = 10 M]**

1. a) What is Bandwidth? Compare Channel and Signal Bandwidth.
    b) What is the frequency range for video transmission?
    c) What are different camera tube types?
    d) What is NTSC?
    e) What is RF tuner?
    f) What is indent?
    g) What is synchronous demodulators?
    h) What are applications of satellite communications?
    i) How many satellites require covering the entire globe?
    j) In 14/12 link what is uplink frequency band?

PART-B

Answer one question from each unit   **[5x12=60M]**
UNIT-I

2. a) Discuss TV signal Propagation?
    b) Discuss merits and demerits about negative and positive modulation?
                                (OR)
3.   Explain about interlaced scanning and picture resolution?

UNIT-II

4. a) Explain luminance (Y) signaland colour difference (C) signal ?
    b) Explain PAL colour systems.
                                (OR)
5. a) Explain 525 line TV system and 625 line system?
    b) Explain any one of the camera tubes?

UNIT-III

6. a) Explain about burst phase discriminator?
    b)   Explain subcarrier generation?
                                (OR)
7.   Explain in detail about separation of u and v colour?

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SET-1

UNIT-IV

8. a) Explain orbital effects on communication system performance?
   b) What is look angle determination?

(OR)

9. a) What are orbital perturbations?
   b) What are applications and future trends of satellite communication?

UNIT-V

10. Explain in detail about (6/4) GHz communication subsystem.

(OR)

11. a) Explain basic transmission theory?
    b) Explain design of up and down links?

2 of 2
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AR13

CODE: 13CS3019   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech. II SEMESTER REGULAR EXAMINATIONS, MAY - 2016

UNIX PROGRAMMING
(Computer Science Engineering)

Time: 3 Hours   **Max. Marks: 70**

PART-A

Answer all the questions   **[10 x 1=10]**

1. a) How do you change file access permissions.

   b) How to Sends an IP echo request to the remote machine

   c) Define shell? How to change from one shell to another shell.

   d) What are shell Meta characters.

   e) Difference between system call and library functions.

   f) Difference between ordinary file and directory files.

   g) Draw the process structure.

   h) What are phases in signaling process?

   i) How to place a Data in Shared Memory.

   j) List applications of IPC.

PART-B

Answer one question from each unit   **[5 X 12 = 60M]**

UNIT-I

2. **a)** With the help of syntax and example, explain the different disk utility commands.   6M

    b) What are different commands that used for remote login? Explain them with syntax and examples.   6M

(OR)

3. **a)** Explain with syntax example, the various backup and restore commands used in unix programming.   6M

    b) give brief description on the following commands:
          i) tar   ii) cpio   iii) head   iv) ps   6M

UNIT-II

4. **a)** Explain the role of break and continue statement in shell scripting. Write example programs for each one.   6M

    b) Write a shell program to arrange three numbers in ascending order.   6M

(OR)

5. **a)** What are the different parts that present in shell. Explain them in detail.   6M

    b) Write a shell script to display first n numbers of Fibonacci series.   6M

UNIT-III

6. **a)** Explain getchar and putchar system calls.   6M

    b) Explain the following system calls
         i). chmod ii). chown iii). Unlink   6M

(OR)

7. **a)** Give brief description about file descriptor.   6M

    b) Explain about the following system calls: lseek, stat, symlink and closedir.   6M

UNIT-IV

8. **a)** What is a zombie process? Why they are created? How to handle them?   6M

    b) Explain the following signals:
         i). kill   ii) pause   iii). Raise   6M

(OR)

9. **a)** Explain the following system calls with clear syntax and example:
                (a) fork( )   (b) wait( )   (c) exec( )   6M

    b) Discuss about interrupted system calls.   6M

UNIT-V

10. **a)** Explain the importance of named pipes in interprocess communication.   6M

    b) List and explain the different system calls involved in message queues.   6M

(OR)

11. **a)** With the help of a neat sketch, explain the sharing of pipe between parent and child.   6M

    b) Explain, how a semaphore obtains its resources by using interprocess
    communication.   6M

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AR13

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEM REGULAR EXAMINATIONS, MAY, 2016

DESIGN AND ANALYSIS OF ALGORITHMS
(Information Technology)

Time: 3 Hours   **Max Marks: 70**

PART-A

1. a) Define Profiling
    b) 'Quick sort is better than Merge sort', will you state or interpret it in your own words.
    c) Write a brief outline about job sequencing with deadlines
    d) State single source shortest path problem..
    e) Derive cost function used in Bellman and Ford algorithm.
    f) What are different ways of traversing a Graph?
    g) At most how many colors are required to color any planar graph?
    h) When can a node be terminated in the sum of subset problem?
    i) List the conditions that are used to kill a node in branch and bound.
    j) State node cover decision problem.

PART-B

Answer one question from each unit   **[5X12=60M]**
UNIT-I

2. a) Differentiate traditional matrix multiplication and Strassen's matrix multiplication.
    b) Apply the quick sort algorithm on   2 5 1 7 4 8 9 10 6.
                                  (OR)
3. a) Find and analyze the running time of an algorithm with example.
    b) Explain the importance of Asymptotic notations with examples.

UNIT-II

4.   Apply Greedy method to find an optimal solution to the knapsack instance n=7, m=15, (p1,p2,p3,p4,p5,p6,p7) = (10,5,15,7,6,18,3) &(w1 , w2 , w3 , w4,w5,w6,w7) = (2,3,5,7,1,4,1) and also write the algorithm .
                                  (OR)
5. Apply Dijkstra's algorithm to find shortest path from node1 to all other nodes for the following graph.
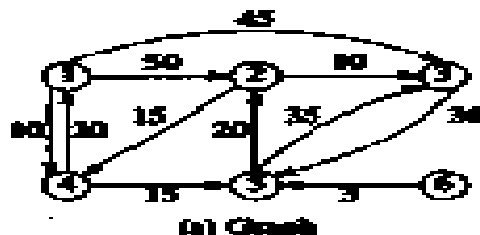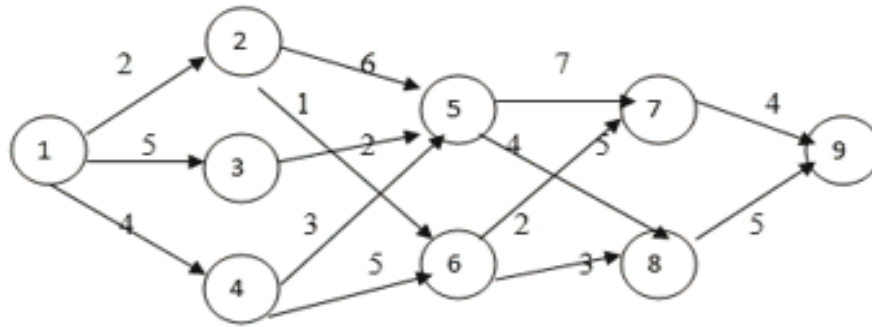

(a) Graph

UNIT-III

6. Apply Dynamic Programming to find minimum cost path for the following multistage graph using both forward and backward approach and also write its algorithm.
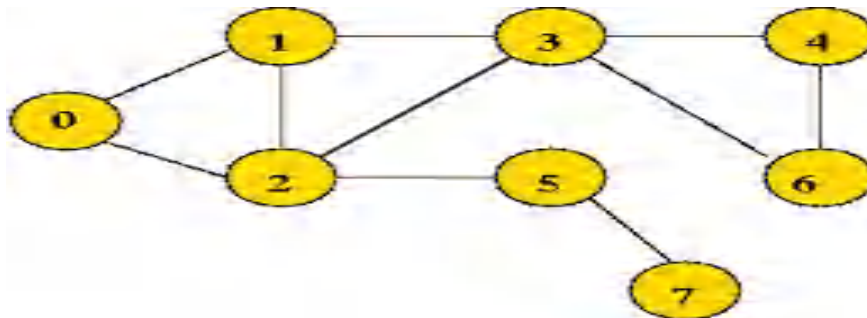

(OR)

7. Explain about multistage graph using both forward approach and backward approach with an example. And also write its algorithm.

UNIT-IV

8. Apply Depth First Search algorithm to find out whether 6 is present in the given graph or not. Justify your answer.

(OR)

9. Describe about connected components with suitable example.

UNIT-V

10. Generate a state space tree for 0/1 knapsack instance by using FIFOBB technique when by n=5; P=(10,15,6,8,4) w=(4,6,3,4,2) and m=12.

(OR)

11. a) Design a non-deterministic algorithm to search for an element in the given array.
    b) Explain the classes of P and NP.

RA/AR13

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEM REGULAR EXAMINATIONS, MAY,2016
GEOTECHNICAL ENGINEERING-I
(CIVIL ENGINEERING)

Time: 3 Hours   **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS   **[1 x 10 = 10 M]**

1. a) Distinguish between Unit weight of soil and Unit weight of solids.
    b) Classification symbol SC stands for----------------
    c) Distinguish between discharge velocity and seepage velocity. Discharge
        velocity = 0.1 cm/sec, void ratio = 0.3, what is its seepage velocity.
    d) What are the conditions necessary for Darcy's law to be applicable for flow
        of water through soil?
    e) Define 'Relative compaction/'percentage compaction'?
    f) What is 'Secondary consolidation'?
    g) Which test is used to determine shear strength of soil in the field?
    h) The OMC & MDD are 15% and 18 kN/m^3 respectively. Assume G=2.7, the
        percentage of air voids at OMC is --------
    i) What is 'critical void ratio' of sands?
    j) Distinguish between NCC and OCC.

PART-B

Answer one question from each unit   **[5x12=60M]**

UNIT-I

2. a) Establish the relationship $\gamma_d = G \gamma_w /(1+(wG/S))$ where γ_d = dry unit weight,
        G = sp.gr of solids, γ_w =unit weight of water, w= water content and S = degree
        of saturation.
    b) A soil has void ratio = 0.72, moisture content = 12% and G_s = 2.72. Determine
        (i) Dry unit weight (ii) moist unit weight, (iii) amount of water to be added per
        m^3 to make it saturated. Use γ_w = 9.81 kN/m^3.

(OR)

3. a) Briefly explain Indian Standard Soil classification System for coarse grained
        soils based on particle size & plasticity characteristics
    b) Classify the soil according to Indian standard soil classification system: Liquid
   limit = 40% and Plastic limit = 20%.

UNIT-II

4. a) Explain the procedure to determine permeability coefficient by variable head
       permeability test and derive the formula for it.

b)   A falling head permeability test was performed on a sand sample and the following data were recorded. Cross-sectional area of per mea-meter = 100 cm^2, length of soil sample = 15 cm, area of stand pipe = 1 cm^2, time taken to fall head from 150 cm to 50 cm = 8 min, temperature of water = 25^0 C, dry mass of soil specimen = 2.2 kg and its G = 2.68. Compute the coefficient of permeability of soil for the void ratio of 0.7 and the standard temperature of 20^0 C.

(OR)

5. a)   Define quick sand condition. Derive the formula for critical hydraulic gradient. In what types of soils quick sand conditions occur?

   b)   Draw total stress, effective stress and pore water pressure diagrams for the following case. If the water is lowered by 0.5m, what is the change in effective stress at A-A.
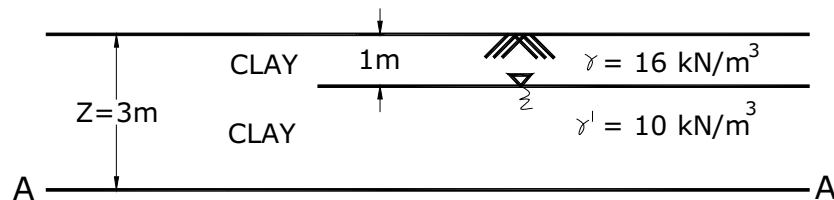
UNIT-III

6. a)   Explain how can you determine vertical stress increase due to loading using New mark's influence chart with neat sketch.

   b)   A circular ring type foundation for a water tank exerts on the soil a uniformly distributed pressure of 20 kN/m^2. The inner and outer diameters of foundation are 8 m and 10 m respectively. Determine vertical stress increase at the centre of foundation at a depth of 10 m form G.L.

(OR)

7. a)   Explain the assumptions in Boussinesq's theory.

   b)   Three concentrated loads of 3000 kN, 1000 kN and 2000 kN, spaced at 4.5 m and 3.5 m between first and second and second and third loads, are acting in one vertical plane at the surface of a soil mass. Calculate the resultant stress produced by these loads on a horizontal plane 1.5 m below the surface, at points directly below the loads.

UNIT-IV

8. a)   Distinguish clearly between specifications in IS light & IS heavy compaction tests.

   b)   The following are results of IS light compaction test performed on a sample of soil.

Water content (%)	5	10	14	20	25
Bulk unit weight (kN/m^3)	17.7	19.8	21	21.8	21.6

Plot the water content – dry unit weight curve and obtain MDD & OMC. Calculate water content necessary to completely saturate the sample at its MDD, assuming no change in volume. Take G=2.7

(OR)

9. a)   Explain assumptions in Terzaghi's time-rate of consolidation.

   b)   A clay layer of soft clay 8 m thick is located between two layers of sand. Consolidation test on representative sample of clay gave C_v = 3 x 10^{-4} cm^2/sec. The expected ultimate settlement of a foundation on the clay layer is 5 cm. How much time is required for 30% of ultimate settlement to occur?

UNIT-V

10. a)   Explain advantages and disadvantages of direct shear test over triaxial shear test.

   b)   The results of a series of CU tests on undisturbed samples of over consolidated clay were as below:

Cell pressure (kN/m^2)	100	200	400	600
Deviator stress at failure(kN/m^2)	300	410	610	850
Pore water pressure at failure(kN/m^2)	- 45	-15	50	110

   Determine the shear strength parameters in terms of effective stresses.

(OR)

11. a)   Explain Mohr-Coulomb theory of shear strength of soils

   b)   In a direct shear test on a sand sample, the normal stress was 200 kN/m^2 and the sample failed at a shear stress of 120 kN/m^2.Draw Mohr circle and strength envelope. Determine (i) the angle of shearing resistance of the soil, (ii) the magnitude of major and minor principal stresses and (iii) the orientation of principal planes.

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