

B. E. CONSTRUCTION ENGINEERING 4TH YEAR 2ND SEMESTER - 2017**SUBJECT: Repair and Rehabilitation of Structures**

Time : Three Hours

Full Marks : 100

Part I

No of Questions		Marks
	Answer any Five Questions	
Q1a.	Define the following i) Repair ii) Protection iii) Strengthening	05
Q1b.	Describe the method of removal of concrete by hand held breakers.	05
Q2.	Write a short note on plastic shrinkage cracks.	10
Q3.	Describe the method of underpinning by 'Pre test Piles'.	10
Q4.	Describe the method of monitoring of cracks by 'Tell-tale'.	10
Q5.	Write a short note on cement grouting technique employed in repair of concrete structure.	10
Q6.	Write a short note on corrosion of reinforcement and its effect on concrete structures.	10

B. Construction Engineering 4th Year 2nd Semester Examination 2017
REPAIR, REHABILITATION & MAINTENANCE OF STRUCTURE
Part II

Answer any three Questions. Maximum Marks is 50
 Answer should be to the point and explained with neat sketches

1. a) Define and Distinguish between Control, Compliance and Secondary Test? 6
- b) Discuss with neat sketches on the faulty workmanship due to
 - i. Improper detailing of bending & shear reinforcements. 5
 - ii. Cold joint in construction. 5
2. a) What are the objectives of Schmidt Hammer Test for concrete structure? 4
- b) The Hammer readings at different locations of a column are given below. Calculate the average, standard deviation and most probable least value of the estimated strength of concrete at those locations and in totality.

Location	Y(m)	Hammer Reading (Horizontal) X									
Bottom	0.75	38	36	37	32	39	42	33	39	36	38
Middle	1.5	30	34	34	37	32	32	36	38	31	30
Top	2.5	32	25	24	37	35	27	28	25	36	34

Discuss on the result of the estimated strength of concrete and comment if any
 Assume the estimated strength $S = 0.011 X^2 + 1.416 X + 8.691$ 12

3. a) What is the principle of low energy based Pile Integrity Test? 6
- b) Discuss how the length of pile and different types of defects are identified 5
- c) What do you mean by corrosion of concrete and discuss the preventive measures for corrosion control? 6
4. a) Discuss Ultrasonic Pulse Velocity test in concrete and its objective. 5
- b) What are the different types of UPV test? Discuss the application acceptance criteria of UPV test for concrete structure. 6
- c) Discuss the effect of ambient temperature, stress level and close presence of reinforcement on the UPV test result. 6