

B. E. CONSTRUCTION ENGINEERING 4TH YEAR 2ND SEMESTER - 2018**SUBJECT: Repair and Rehabilitation and Maintenance of structure**

Time : Three Hours

Full Marks : 100

Part I

	Question No.		Marks
CO1 [10]		Answer any one from question (1a) and question (1b) in this block	
	Q1a.	Briefly discuss the different factors that influences the selection of repair materials	10
	Q1b.	Write short notes on i) Polymer Modified concrete ii) Polymer concrete	05 + 05
CO2 [20]	Q2.	Write a short note on alkali-aggregate reaction	10
	Q3.	Describe the effects of sulphates on concrete structures. Also state the measures that can be taken to mitigate the same.	10
CO4 [10]		Answer any one from question (4a) and question (4b) in this block	
	Q4a.	Describe the process of surface preparation by different abrading methods.	10
	Q4b.	Write a short note on Dry method of Shotcreting.	10
CO5 [10]	Q5.	Describe the process of underpinning by continuous strip foundations	10

B. Construction Engineering 4th Year 2nd Semester Examination 2018**REPAIR, REHABILITATION & MAINTENANCE OF STRUCTURE****Part II**

Answer All Questions. Maximum Marks is 50

Answer should be to the point and explained with neat sketches

1. a) Distinguish between Repair, Rehabilitation & Retrofit of Structures? 5
 b) Discuss with neat sketches on the faulty workmanship due to
 i. Improper detailing of bending & shear reinforcements. 5
 Or
 ii. Improper Column Formwork. 5
 [CO1 & CO2]
2. a) Discuss ultrasonic pulse velocity test in concrete indicating its principle and objective and acceptance criteria. 7
 b) What are the different types of UPV test? Discuss the application of In-direct method of UPV test for estimation of crack depth. 8
 OR
- c) Discuss the effect of surface condition & moisture content, stress level and close presence of reinforcement on the test result of UPV. 8
 [CO3]
3. a) Discuss principle & objectives of Schmidt Hammer Test in concrete structure 5
 b) Discuss the effect of surface condition & moisture content, carbonation and mass of the member on the result of Schmidt Hammer test. 10
 Or
- c) The hammer readings at different locations of a beam are given below. Calculate the average, standard deviation and most probable least value of the estimated strength of concrete. Discuss on the result of the estimated strength of concrete and comment if any. The estimated strength $S = 0.006X^2 + 1.155X - 16.2$

Location	X(m)	Hammer Reading (Horizontal) X									
		Edge	0.25	28	26	27	28	29	32	23	29
Middle	1.5	32	34	34	37	32	32	36	38	31	30
Support	3.0	22	25	24	27	25	27	28	25	36	30

10

[CO3]

4. a) Discuss Corrosion in Reinforce Concrete structures. 5
- b) What are the different causes of corrosion in reinforced concrete structures? 5
- OR
- c) Discuss the mechanism of corrosion in Reinforced concrete and its effect. 5
- d) What are the repair techniques for rehabilitation of corrosion damaged concrete? 5
- OR
- e) What are the different preventive measures of corrosion control? 5
- [CO6]