

**B. E. CONSTRUCTION ENGINEERING 4<sup>TH</sup> YEAR 2<sup>ND</sup> SEMESTER - 2019****SUBJECT: REPAIR, REHABILITATION AND MAINTENANCE OF STRUCTURE**

Time : Three Hours

Full Marks : 100

**Part I**

	Question No.		Marks
CO1 [10]		<b>Answer any one from question (1) and question (2) in this block</b>	
	Q1.	Discuss the different uses of epoxy compounds related to concrete repair	10
		or	
	Q2a.	Define the following a) Repair,      b) Protection,      c) Strengthening	05
	Q2b.	Write a short note on micro concrete	05
CO2 [20]	Q3.	<b>State whether the following statements are TRUE or FALSE</b>	02
	i)	Chlorides attack and damage the hydrated cement paste in concrete	
	ii)	Concrete is susceptible to corrosion if its pH value is above 12	
	Q4.	Discuss in brief the corrosion of reinforcement in concrete structures	10
	Q5a.	Write a short note on plastic shrinkage cracks	04
	Q5b.	Briefly mention the different types of defect, damage and deterioration commonly encountered in civil engineering structures	04
CO4 [10]	Q6.	<b>State whether the following statements are TRUE or FALSE</b>	01
	i)	Guniting is the method of applying dry-mix shotcrete.	

**B. E. CONSTRUCTION ENGINEERING 4<sup>TH</sup> YEAR 2<sup>ND</sup> SEMESTER - 2019****SUBJECT: REPAIR, REHABILITATION AND MAINTENANCE OF  
STRUCTURE**

Time : Three Hours

Full Marks : 100

**Part I**

Question No.		Marks
	<b>Answer any one from question (7a) and question (7b) in this block</b>	
Q7a.	Write a short note on cement grouting technique employed in repair of concrete structures	09
	Or	
Q7b.	Discuss the method of waterproofing with APP membrane.	09
<b>CO5 [10]</b>	<b>Answer any one from question (8a) and question (8b) in this block</b>	
Q8a.	Describe with sketches the jacketing scheme for columns	10
	or	
Q8b.	Briefly discuss the different types of shores used for providing temporary supports to structures.	10

**B. Construction Engineering 4<sup>th</sup> Year 2<sup>nd</sup> Semester Examination 2019**  
**REPAIR, REHABILITATION & MAINTENANCE OF STRUCTURE**

**Part II**

Answer Question No 1 and any two of the following. Maximum Marks is 50

Answer should be to the point and explained with neat sketches

1. a) What do you mean by Seismic Evaluation and Lateral Load Modification Factor? 5

- b) Answer any one of the following

- i. What are the common faults in relating to concrete construction 5  
 ii. Discuss the faulty workmanship of Cold Joints & Segregation. 5

[CO1 & CO2]

2. a) What are the principle and objective of Ultrasonic pulse velocity test in concrete 5

- b) Discuss the Equi-distant method of UPV test for estimation of Crack depth. The following UPV readings were observed to estimate the crack depth.

Grid No.	Grid Length (mm)	Time $T_1$ for $X_1$ (Micro-sec)	Time $T_1$ for $X_1$ (Micro-Sec)
P	50	32.7	64.5
Q	100	71.4	128.6
R	75	63.2	115.8
S	50	27.3	43.6
T	75	48.5	96.5

Calculate the crack depth and comment on it. 8

- c) Discuss the effect of surface condition & moisture content, stress level and close presence of reinforcement and concrete grade on the test result of UPV. 7

[CO3]

3. a) What are the advantage and disadvantage of Schmidt Hammer test and discuss the principle of Schmidt Hammer Test in concrete structure 5

- b) Discuss the effect of carbonation & moisture content on the result of Hammer test 5

- c) Discuss Pile Integrity Test, its principle & interpretation for necking and bulging 10

[CO3]

4. a) What are the different causes of corrosion in reinforced concrete structures? 5

- b) Discuss the mechanism of corrosion in Reinforced concrete and its effect. 5

- c) What are the repair techniques for rehabilitation of corrosion damaged concrete? 5

- d) What are the different preventive measures of corrosion control? 5

[CO6]