Total No. of Questions: 6

Total No. of Printed Pages:3

Enrollment No.....



Faculty of Engineering

End Sem (Even) Examination May-2018 CE3EL04 Building Maintenance & Repairs

Programme: B.Tech.

Branch/Specialisation: CE

Maximum Marks: 60

Duration: 3 Hrs. Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

¿.ı (1 v ı	CQ3)	should be written in run instea	d of only a, b, c of a.		
Q.1	i.	The major causes of d temperature below 0°C.	eterioration of concrete having	1	
		(a) Wearing	(b) Freezing and Thawing		
		(c) Erosion	(d) None of these		
	ii.	Which one of the chemica reinforcement?	al is major cause of corrosion in	1	
		(a) Carbon dioxide	(b) Chloride		
		(c) Sulphate	(d) Manganese		
	iii.				
		(a) Preventive (b) Remedial	(c) Routine (d) Machinery		
	iv.	The process of restoring	something that is damaged or	1	
		deteriorate or broken, to good condition is called			
		(a) Repair	(b) Maintenance		
		(c) Rehabilitation	(d) None of these		
	v.	Which one of the monomer is used in impregnated polymer concrete?			
		(a) Methyl methacrylate	(b) Acrylonitrile		
		(c) Styrene	(d) All of these		
	vi.	` '			
		(a) Accelerators	(b) Retarders		
		(c) Plasticizers	(d) All of these		

P.T.O.

	vii.	Shotcrete is used in the application of	1
		(a) Soil stabilization	
		(b) Waterproofing	
		(c) Stabilization of rock slopes	
		(d) None of the above	
	viii.	The Ferrocement is a composite material obtained by	1
		(a) Random dispersal of short, discontinuous fibres in conventional concrete.	
		(b) Reinforcing the cement mortar with steel fibres in the form of wire mesh.	
		(c) Blending ferrous compounds in the ordinary Portland cement	
		(d) None of the above	
	ix.	Before proceeding with the repair of the cracks, diagnosis is made to determine the	1
		(a) Location and extent of cracking	
		(b) Causes of cracking	
		(c) Likely extent of further deterioration	
		(d) All of the above	
	х.	The weak spots in a concrete member can be identified by	1
		(a) Tapping the surface and observing the sound of hollow areas	
		(b) Opening up the suspected weak concrete	
		(c) Non-destructive tests	
		(d) All of the above	
Q.2	i.	Describe Corrosion Inhibitors.	2
Q. <i>2</i>	ii.	Explain the effect due to wear and erosion of concrete in	3
	11.	building structure.	
	iii.	Explain in detail the sulphate attack and chloride attack on	5
		concrete structure with suitable chemical equations.	
OR	iv.	Explain in detail the design and construction errors.	5
Q.3	i.	What is Maintenance?	2
*	ii.	Describe the steps in assessment procedure for evaluating	8
		damages in a structure with neat flow chart.	

OR	iii.	Explain various causes for deterioration of concrete structure.		
Q.4	i.	What is Expansive cement?	3	
	ii.	Explain polymer impregnated concrete, its properties and applications.	7	
OR	iii.	What are sulphur infiltrated concrete? Describe its properties and applications.	7	
Q.5	i.	Write four techniques to repair cracks developed in building.	4	
	ii.	Write techniques for repair of structure to overcome the low member strength.	6	
OR	iii.	Write a short note on shoring and underpinning.	6	
Q.6		Attempt any two:		
	i.	Describe preliminary procedure in demolition of structure.	5	
	ii.	Describe in detail about the various engineering techniques of demolition.	5	
	iii.	Explain explosive and non explosive methods of demolition.	5	

Marking Scheme

CE3EL04 Building Maintenance & Repairs

Q.1	i.	The major causes of deterioration of conditemperature below 0°C. (b) Freezing and Thawing	crete having	1
	ii.	Which one of the chemical is major cause of corrosion in reinforcement? (b) Chloride		
	iii.	Which one of them is not a classification of mainter (d) Machinery	nance?	1
	iv.	The process of restoring something that is deteriorate or broken, to good condition is called (c) Rehabilitation	damaged or	1
	V.	Which one of the monomer is used in impreg concrete? (d) All of these	nated polymer	1
	vi.	Which one them is a concrete chemicals used structure for repair. (d) All of these	in concrete	1
	vii.	Shotcrete is used in the application of (c) Stabilization of rock slopes		1
	viii.	The Ferrocement is a composite material obtained by (b) Reinforcing the cement mortar with steel fibres of wire mesh.	~	1
	ix.	Before proceeding with the repair of the cracks, made to determine the (d) All of the above	diagnosis is	1
	х.	The weak spots in a concrete member can be identified. (d) All of the above	fied by	1
Q.2	i.	Corrosion Inhibitors.		2
	ii.	Effect due to wear and erosion of concrete in buildi	ng structure.	3
	iii.	Detail of sulphate attack	2 marks	5
		Chemical equation	0.5 mark	
		Detail of chloride attack	2.5 marks	
		Chemical equation	0.5 mark	

OR	iv.	Design error	2.5 marks	5		
		Construction errors	2.5 marks			
Q.3	i.	Description of Maintenance		2		
V .0	ii.	Assessment procedure for evaluating damages				
			Max. 5 marks)	8		
		Neat Flow chart	3 marks			
OR	iii.	Causes for deterioration of concrete structure.	5 marks	8		
	111.		Max. 8 marks)			
Q.4	i.	Expansive cement		3		
۳.ب	ii.	Polymer impregnated concrete	3 marks	7		
	111.	Its properties	2 marks	,		
		Applications	2 marks			
OR	iii.		3 marks	7		
OK	1111.	Sulphur infiltrated concrete		,		
		Its properties	2 marks			
		Applications	2 marks			
Q.5	i.	Four techniques to repair cracks developed in b	uilding.	4		
		1 mark for each techniques (1*4= 4 marks)				
	ii.	Repair of structure to overcome the low member strength.				
		1 mark for each techniques (1*6= 6 marks)				
OR	iii.	Shoring	2 marks	6		
		Shoring diagram	1 mark			
		Underpinning	2 marks			
		Underpinning diagram	1 mark			
Q.6		Attempt any two:				
	i.	Preliminary procedure in demolition of structur	e.	5		
		1 mark for each point (1*5= 5 marks)				
	ii.	Engineering techniques of demolition.		5		
	***	1 mark for each techniques (1*5= 5 marks)				
	iii.	Explosive methods of demolition	2.5 marks	5		
	111,	Non explosive methods of demolition.	2.5 marks	3		
		Tion explosive medicus of demondon.	2.5 marks			
