M.E. OF CONSTRUCTION ENGG 2nd YEAR 2ND SEMESTER EXAMINATION, 2019 <u>Repair & Retrofitting Technique – II, Part -I</u>

Answer any Two questions. Explain your answer with neat sketches if necessary.

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1.	a)	Differentiate between Repair, Rehabilitation and Retrofitting of structures in context of Seismic considerations?	the
	b)	What are the different Seismic performance Levels of a structure?	4
	c)	What do you mean by 'Seismic Evaluation' in the context of seismic retrofitting structures'?	g of 6
	d)	Discuss on global seismic retrofit strategies of multi-storied R.C.C buildings.	10
2.	a)	Discuss on the different aspects of seismic disaster mitigation?	5
	b)	Discuss Base isolation technique in the context of force displacement trade-of- indicate short term & long term benefits and goal of base isolation.	off? 10
	c)	Indicate the practical limitation , applicability, and constructability aspect base isolation retrofitting technique.	t of 5
	d)	Compare between conventional retrofitting and base isolation technique buildings.	for 5
3	a)	Discuss 'Push-Over Analysis' indicating its objectives in the context of seis retrofitting of structure? What are the expected outcomes of the analysis?	mic
	b)	What are the seismic hazard levels and performance objectives of structures?	5
	c)	Discuss Capacity & Demand Spectrum and performance point of a structure.	10
4.	a)	Discuss the main failure modes of masonry walls under seismic excitation?	5
	b)	What are the different Repair techniques for damaged brick masonry? Discuss 'Re-pointing Technique' retrofitting of damaged brick masonry walls.	on 10
	c)	Why most of stone masonry walls have failed at the top in 'out of plane' fai mode during Sikkim earthquake 2011? Discuss 'Metal Stitching' for retrofittin stone masonry walls indicating its applicability?	

[4]

	M.E.CONSTRUCTION ENGINEERING 2 nd SEMESTER EXAMINATION 2019	
	Repair and Retrofitting Technique-II PART-II	
	Answer any TWO questions	
	Assume relevant data with justification if required.	
	Q-1. (a) Explain the reason why overloading by multi-axle vehicle initiates premature bituminous road pavement. [7]	failure of
	(b) Explain the reasons of top down and bottom up crack in binder course in flexible Suggest suitable repair approach to resist such crack formation. [8]	pavements.
	© Explain why skid resistance of pavement is important in terms of road safety in sign intersection and curves with lower radius? [10]	nalised road
f	Q-2.(a) A three layer flexible pavement is resting on a subgrade with design CBR of 4% course of the pavement consists of 100 mm thick BC layer with insitu resilient modulu followed by a granular layer of thickness 450 mm. Determine the remaining life of the rutting failure and also from cracking failure. [20]	
((b) Estimate the design ESAL for a two lane undivided road in Kolkata, which requires a overlay, with present traffic load of 1245 GVPR	a hituminous
C	overlay, with present traffic load of 1245 CVPD. [5]	
d	Q-3.(a) Explain the basic principle of determination of overlay thickness by using falling deflectometer. [10]	g weight
(1	(b) Explain the limitation of Benkelmann beam rebound deflection as a parameter of p [6]	avement repair.
@	© Explain the significance of DCPT test in relation to repair of in situ road pavement.	[5]

(d) Describe briefly, the acceptance criteria of road pavement I terms of IRI.