APPENDIX A

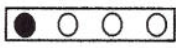
SOLUTIONS TO MULTIPLE CHOICE QUESTIONS

CHAPTER 1

Problem No.	Brief Explanation	Correct Answer A B C D
1.1	When two earth plates moves apart from each other, the earth movements creates a ridge	○ ○ ○ ●
1.2	When a hanging wall moves up a footing wall during an earthquake, the movement is known as normal fault	○ ○ ● ○
1.3	Earthquake origination on the earth surface is known as the epicenter.	○ ● ○ ○
1.4	A plate moving underneath another plate is known as subduction	● ○ ○ ○
1.5	California San Andreas fault is right lateral strike slip movement	● ○ ○ ○
1.6	P-waves displace materials just ahead or behind their line (direction) of propagation. S-waves displace materials vertically and horizontally.	○ ○ ● ○
1.7	When a seismic sea wave (Tsunami) approaches sea shore, the wave velocity decreases and the height increases	○ ○ ○ ●
1.8	Shear waves causes more damages than Primary waves to structures	○ ○ ● ○
1.9	Tsunami can be best described as seismic sea waves	○ ● ○ ○
1.10	Seismic waves are generated by sudden snap of rock formation within earth crust	○ ○ ● ○

CHAPTER 2

Problem No.	Brief Explanation	Correct Answer A B C D
2.1	Hazard level is defined using earthquake probability of exceedance	● ○ ○ ○
2.2	Earthquake magnitude is determined from the logarithm of recorded amplitude	○ ● ○ ○
2.3	The Modified Mercalli scale is commonly used to determine earthquake intensity	○ ○ ● ○
2.4	Modified Mercalli Scale has 12 categories for earthquake intensity	○ ○ ○ ●
2.5	Attenuation of ground motions indicates a decrease in seismic energy far from the earthquake epicenter	○ ● ○ ○
2.6	A seismometer is used to measure earthquake displacement amplitude with time	○ ○ ○ ●
2.7	Attenuation of ground motions is not influenced by earthquake magnitude	● ○ ○ ○
2.8	An increase in earthquake magnitude by one whole number represents 10 fold increases in vibration amplitude. Two whole number increase yields 100 fold increases	○ ○ ● ○
2.9	An increase in earthquake magnitude by one whole number represents 32 fold increases in energy release. Two whole number increase yields approximately 1000 fold increases	○ ○ ○ ●
2.10	Soil liquefaction is best described as an increase in pore water pressure causing severe drop/loss of shear strength of soil	● ○ ○ ○
2.11	Soil liquefaction occurs when soil formation are composed of saturated loose sand	○ ● ○ ○
2.12	Vulnerability of welded steel frame buildings was one of the most notable lessons learned from Northridge Earthquake 1994	● ○ ○ ○
2.13	Ground motions are greatly amplified when passing through geologic formation mostly composed of soft soil (soft clay or bay mud)	○ ○ ● ○
2.14	Field Act assigned responsibility for approving design of public schools to Division of State Architecture	○ ● ○ ○
2.15	From TABLE 2.1, MM scale IX indicates considerable damage to structures from earthquake event	○ ● ○ ○
2.16	Resonance amplifies the vibration amplitude when any of the earthquake period/frequency, site (soil) period/frequency, and building period/frequency coincide with any or each other periods/frequencies. All of the above	○ ○ ○ ●
2.17	Hazard level 3%, n = 75 years $Pe = 1 - (1 - Pa)^n = 1 - (1 - 1/Tr)^n$ $0.03 = 1 - (1 - 1/Tr)^{75}$ $(0.97)^{1/75} = 1 - 1/Tr \quad 0.9995939 = 1 - 1/Tr$	○ ○ ○ ●

	0.000406 = 1/ *Tr* *Tr* = 2463 years = 2500 year	
2.18	Longer duration of ground shaking is likely to increase the damage to structures during earthquake. Larger attenuation and distance to epicenter is likely to reduce the damage. S waves (secondary) not P waves (primary) is the cause of damage to structures	
2.19	Raleigh waves has a relatively large predominate earthquake period that coincide with the natural period of a tall high-rise building	
2.20	large duration of ground shaking, liquefaction potential, poor seismic detailing are more likely to cause severe damage. Less likely with small PGA, large distance to epicenter and new construction