

THE OPEN UNIVERSITY OF SRI LANKA
Bachelor of Technology (Civil) - Level 6
CEX 6331- Construction Engineering and Management



FINAL EXAMINATION - 2009

Time Allowed: Three (03) hours

Date: 18-03 -2010 (Thursday)

Time: 0930- 1230 hrs.

The paper consists of 06 questions. Answer Four (04) questions.

Q1

- (a) Site mobilisation is a process that can be accomplished in stages. Briefly explain the different stages while highlighting principal tasks carried out under each stage.

(Marks 07)

- (b) What do you understand by shoring? Timber is used abundantly in shoring. Explain the use of timber in shoring. Support your answer with illustrations.

(Marks 06)

- (c) Provide short descriptions on the following two types of rollers:

- (i) Tamping rollers
- (ii) Smooth wheel rollers

(Marks 06)

- (d) Explain the importance of incorporating traffic engineering considerations in the design of roads.

(Marks 06)

Q2

- (a) Describe different methods and plants available for horizontal movement of concrete.

(Marks 09)

- (b) Success of a concrete pumping operation depends on the coordination among the main parties involved. Explain the main points that need to be agreed upon by these parties.

(Marks 07)

- (c) Explain the key points that need to be covered in an exercise of providing correct instructions to site work force engaged in placing and compacting concrete in a slab.

(Marks 09)



Q3

- (a) List the three methods of producing holes in rock. Explain these methods while highlighting their special features.
(Marks 12)
- (b) Any excavation below ground level will normally require some method of removing or excluding water, thus enabling work to proceed 'in the dry'. Explain two methods of removing water emphasising on their features.
(Marks 13)

Q4

- (a) Explain what is understood by 'compaction of soil'. Also explain how you can use water to obtain optimum degree of compaction of clayey soil.
(Marks 06)
- (b) List five important components of an aggregate crushing plant. Briefly state the primary function of each of these components.
(Marks 06)
- (c) Write a short description about different types of cracks in concrete. Your answer should cover how they are formed and identified. Illustrate your answer with diagrams.
(Marks 07)
- (d) Name and describe different types of joints provided in water retaining structures. Illustrate your answer with diagrams.
(Marks 06)

Q5

- (a) There are two widely used methods for tunnel construction. What is the method popular in Sri Lanka? Explain the reasons for its popularity.
(Marks 07)
- (b) There are several methods of attacking the face of tunnels driven through rock. List four common methods and explain any two in detail. Illustrate your answer with diagrams.
(Marks 06)
- (c) Explain the method of construction of pretensioned prestressed concrete and post tensioned prestressed concrete. You may use diagrams for this.
(Marks 06)
- (d) Briefly describe two types of internal vibrators.
(Marks 06)



Q6.

A large private company wishes to construct a guesthouse in Kandy. The company awarded the contract to a builder who decided to use network approach to plan and control the construction activity. The builder therefore, divided the construction project into number of activities. The details of these activities are depicted in the table below;

Symbol	Activity description	Immediate preceding activity	Duration Days
A	Development of the site	-	16
B	Foundation with Pillars	A	10
C	Crawl space plumbing	B	02
D	Air conditioning and Heating	B	02
E	Water heater	C	02
F	Walls, ceiling and rough roofing	D	14
G	Rough plumbing	E,F	06
H	Rough wiring	E,F	04
I	Heating and AC ducts	E,F	05
J	Doors and windows	E,F	03
K	Exterior siding	J	03
L	Interior wall finishing	G,H,I	10
M	Finish roofing	K	10
N	Finish flooring	L	06
P	Plumbing and drainage	M	02
Q	Kitchen and bathroom finishing	N	03
R	Finish carpentry	N	05
S	Finish painting	Q,R	06
T	Finish electrical and interior decoration	S	03
W	Landscaping	P	04
X	Handing over	T,W	01

- (a) Draw the activity on arrow diagram of this project. (Marks 12)
- (b) Carry out the forward pass and backward pass calculations on this network, and indicate the critical path. (Marks 04)
- (c) Explain the situations where different types of dummy activities are used. (Marks 03)
- (d) Explain the purposes of carrying out following two operations associated with project planning;

Resource scheduling
Resource smoothening

(Marks 06)

