

- Note: 1) Question I is compulsory  
 2) Answer any **four questions** out of remaining six questions  
 3) Assumptions made should be clearly stated  
 4) Illustrate answers with neat sketches wherever required.

M-ETC) *Pen II Const. Mgt. Proc. Adv. Const. Techniques.*  
 Q.1.a) What are the types of drilled shafts? What are their advantages? Explain. (04) *13/6/07*

- b) Explain the utility of shafts in tunnels. (04)  
 c) Explain the advantages and disadvantages of pneumatic caissons. (04)  
 d) Write a note on corrective measures to minimize land slides. (04)  
 e) Write a detailed note on light weight concrete. (04)

Q.2.a) What are the preliminary and detailed investigations required to be carried out for selecting a dam site for a water resource project? Explain. (08)

- b) What are the advantages of indirect methods of sub-soil investigations? Explain 'Electrical Resistivity Method'. (06)  
 c) Describe the safety measures required in excavation to avoid accidents. (06)

Q.3.a) What are the various equipment used for excavation and what factors will you consider in selecting suitable equipment for the excavation work in hand? Explain the factors affecting production of trenching machines. (08)

- b) What are the requirements of soil stabilisation? Write a detailed note on Portland cement stabilization. (06)  
 c) Explain the chemical stabilisation using –  
 (i) Natural and synthetic polymers, and  
 (ii) Aggregants and dispersants. (06)

Q.4.a) Explain the behaviour of expansive soil and precautions required in the design of foundations in expansive soils. (08)

- b) What are the factors affecting liquefaction potential of a soil? Explain. (06)  
 c) Explain use and applications of geosynthetics in construction industry. (06)

Q.5.a) What are the different groups by which rocks can be blasted? Explain with the help of neat sketches the principles, advantages and limitations of

- (i) pre-splitting methods, and  
 (ii) air column method. (08)

b) What are the causes of accidents in tunnels? Describe the preventive methods to be taken in various operations of tunnelling. (06)

c) What are the purposes of tunnel lining? Discuss the types of linings that can be used for various purposes. Write a note on sequence of lining. (06)

M.P. (C) Const. Mgt. IITL Adv. Const. Techn. 5 hrs  
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Q.6.a) With the help of neat sketches explain types of under water form work.

Explain the different methods of under water concreting. (08)

b) Critically compare high strength and high performance concrete. (06)

c) Describe the slip forms w. r. t. the following:

(i) essential parts, (ii) operations of slip forms, and (iii) advantages. (06)

Q.7. Write detailed notes on

(a) compressed air tunnelling in sand and clay. (05)

(b) requirements and selection criteria of cofferdams. (05)

(c) necessity of underpinning and pile method of underpinning. (05)

(d) deep well system of dewatering. (05)

\*\*\*\*\* Paper Ends \*\*\*\*\*