

Open Book Exam

Total Mark (100) degrees

Systematic arrangement of calculations, neat drawings and clear answers are essential.
Any data not given can be reasonably assumed. The exam consists of THREE questions. all of them must be answered.

Question (1) (25 D):

- a- Define the elements of wooden formwork using free hand sketches to clarify your answer?
- b- What are the different types of formwork from material, statically, movable point of view?
- c- State briefly the external parameters that affect the design of formwork?
- d- What are the different types of loads and pressures that acting on formwork (roofs or walls) and the factors affecting on each type of load or pressure loads?

Question (2) (25 D):

- a- What are the modern construction technology methods?
- b- State briefly the advantages and disadvantages of both lift slab and push up construction systems using free hand sketches?
- c- State briefly the method of statements for both slip form and tunnel form construction systems using free hand sketches?
- D- Give examples for the most economic modern construction systems within your course study from the following points of view?
 - 1- Constructability
 - 2- Maneuverability
 - 3- Economical
 - 4- Environmental
 - 5- Product ability
 - 6- Safety

Prof. D. Y.
Heiza
6/2018

Question (3) (50 D):

a- Design the formwork (Sheathing, Joints, Strings, Shores and Bracing) requires for constructing a flat slab with the following information, and check of bearing pressure, and total settlement of forms?

- Slab dimensions	225 ft*150 ft
- Slab bays are	15 ft*15ft
- Height of slab from the ground	= 12ft
- Slab thickness	=12 in.
- Unit weight of concrete is	175 lb/ft ³
- Construction L.L	40 lb/ft ²
- Own weight of forms	=16% of total load
- Wind load (Local code)	=16 lb/ft ²
- Short term load is first	
- Sheathing	(1*4 in)
- Joists	(2*4 in)
- Stringers	(2*6 in)
- Shores	(4*4 in)
- Bracing	(3*3 in)
- Bending stress (F)	=1050 Psi
- Horizontal shear stress (H)	=140 psi
- Compression parallel to grains (C//)	=1100 Psi
- Compression normal to grains (C⊥)	=400 Psi
- Modulus of elasticity (E)	=1500000 Psi

Prof. Dr.
heiza
2018