

SUBJECT CODE NO:- P-141
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(Civil) Examination MAY/JUNE-2016
Foundation Engineering
(Revised)

[Time: Three Hours]

[Max Marks:80]

“Please check whether you have got the right question paper.”

N.B

- i) Solve any three questions from the two sections each.
 ii) Assume suitable data wherever necessary and state it clearly.
 iii) Draw neat sketches wherever required.

Section-A

- Q.1 a) Explain with neat sketches: 07
 i) General shear failure
 ii) Local shear failure
 iii) Punching shear failure.
 b) Determine the ultimate bearing capacity of a strip footing, 1.20m wide and having depth of foundation at 1.0m. Use Terzaghi's equations for general shear failure. 07
 Take $\phi' = 35^\circ$, $\gamma = 18\text{KN}/\text{m}^3$, $C=15\text{KN}/\text{m}^2$, $N_c=57.80$, $N_q=41.40$, $N_\gamma=42.40$.
- Q.2 a) State the methods of site investigation and sub-soil exploration. Explain the seismic method with the help of neat & labeled diagram. 07
 b) Discuss the effect of water table on bearing capacity of soil. 06
- Q.3 a) What is modulus of sub-grade reaction? Discuss. 06
 b) Discuss the consolidation settlement of soil. 07
- Q.4 a) Derive the equation for immediate settlement for semi-infinite layer. 07
 b) With the help of neat sketches, explain different types of Raft foundation. 06
- Q.5 Write short notes on: 13
 i) Standard penetration test
 ii) Design procedure of combined footing
 iii) Anger boring.

Section-B

- Q.6 a) A n-pile group has to be proportioned in uniform pattern in a 20m bay with equal spacing in both directions. Assuming any value for cohesion, determine the optimum spacing of the piles in the group. Take $n=25$, and $m=0.70$. Neglect the end bearing effect and assume circular pile in cross section. 07
 b) Explain the difference between friction piles, bearing piles and under-reamed piles. 07
- Q.7 a) Differentiate between open caisson & pneumatic caisson. 06
 b) What is cofferdam? Explain cellular cofferdam with neat sketches. 07
- Q.8 a) Explain the various forces acting on well. 07
 b) What difficulties are encountered in sinking of caisson? 06
- Q.9 a) Explain pile load test in detail. 07
 b) Write a note on pumping & sealing of bottom of cofferdam. 06
- Q.10 Write short notes on: 13
 i) Sand island method.
 ii) Group efficiency of piles.
 iii) Caisson disease.