

MAHARASHTRA JEEVAN PRADHIKARAN
Examination Conducted by
MAHARASHTRA ENVIRONMENTAL ENGINEERING TRAINING &
RESEARCH ACADEMY (MEETRA) NASHIK

Professional Examination of AEE/AE-I/SDE/SDO (Civil)
November 2020

Subject : General Engineering (Civil) – (Written)

Date : 03/11/2020

Time : 10.00 To 13.00

Marks : 75

- Note :**
- 1) Question No.1 is compulsory and solve any five questions from the remaining.
 - 2) Use of Calculator, Log table are allowed
 - 3) Assume suitable data wherever necessary.
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Question No. 1 : **(15)**

Design a footing for circular column 50 cm dia. to support load of 27 MT Inclusive of self wt. ; bearing capacity 20 MT / m². Make suitable assumptions; as per I.S. code as above. Draw sketches showing details of reinforcement.

OR

Question No. 1 : **(15)**

Design RCC roof slab required to carry Liveload of 200 Kg / m². The span of slab 4.5 M X 4.5 M clear inside with wall for support on all side with corner held down.

Concrete grade M 15 & steel fe 415.

Question No. 2 : **(12)**

- (A) Explain the term 24 X 7 water supply system and its advantages over intermittent water supply schemes.

(1)

(B) Draw flow diagram of W.T.P. showing units & directions of flow with approximate dimension and slope of 5 MLD capacity.

Question No. 3 : Explain in brief

(12)

- i) Water hammer pressure
- ii) Well foundation
- iii) Necessity of curing of concrete
- iv) Purpose of guniting of M.S. pipe

Question No. 4 :

i) Design a Septic tank for 50 users assuming the rate of water supply as 60 lit/head / day. Detention period of 24 Hours. The cleaning time for sludge as 3 years. Assuming space for digestion as 0.0425 M^3 / Capita; space for storage of sludge as 0.085 M^3 / capita. Draw sketches. (8)

ii) Write advantages and disadvantages of septic tank (4)

Question No. 5 : Differentiate between following. (Any Four)

(12)

- a) Slow sand filter & rapid sand filter.
- b) One-way slab & Two-way slab.
- c) Temporary & Permanent hardness of water
- d) Self cleansing velocity & non-scouring velocity.
- e) Short & long column.
- f) Grouting and guniting.

(2)

Question No. 6 : Answer in brief (Any Three)

(12)

- a) List of various pipes commonly used.
- b) Well sinking method.
- c) Define formwork & list requirement of good formwork.
- d) Precautions about storing and use of explosive.
- e) Measure for the welfare of labour on worksite.

Question No. 7 : What precautions will you take? (Any Four)

(12)

- i) To prevent CGI sheet roof from being blown up.
- ii) Storing of cement
- iii) Issuing material from stock account
- iv) Vibration of concrete.
- v) Starting masonry work on old work after rainy season.
- vi) Discontinuing of concrete in R.C.C. work in slab, beam, column.