

महाराष्ट्र स्थापत्य अभियंत्रिकी सेवा (मुख्य) परीक्षा - २०२३, दि. २८ जानेवारी, २०२४
(पेपर - II)



2023

P18

**Civil Engineering
Paper – II**

BOOKLET NO.

205626

Time Allowed : Three Hours

Maximum Marks : 200

Medium : English

Type of Paper : Conventional

Question Paper Specific Instructions

Please read each of the following instructions carefully before attempting questions :

1. There are **EIGHT** questions divided in two Sections, out of which **FIVE** are to be attempted.
2. Questions no. 1 and 5 are compulsory. Out of the remaining questions, **THREE** are to be attempted choosing at least **ONE** question from each Sections.
3. The number of marks carried by a question/sub question is indicated against it.
4. Keep in mind the word limit indicated in the question if any.
5. Wherever option has been given, only the required number of responses in the serial order attempted shall be assessed. Unless struck off, attempt of a question shall be counted even if attempted partly. Excess responses shall not be assessed and shall be ignored.
6. Candidates are expected to answer all the sub-questions of a question together. If sub-question of a question is attempted elsewhere (after leaving a few page or after attempting another question) the later sub-question shall be overlooked.
7. Any page or portion of the page left blank in the Answer Booklet must be clearly struck off.
8. Unless otherwise mentioned, symbol and notation have their usual standard meanings. Assume suitable data, if necessary and indicate the same clearly.
9. Neat sketches may be drawn, wherever required.
10. The medium of answer should be mentioned on the answer book as claimed in the application and printed on admission card. The answers written in medium other than the authorized medium will not be assessed and no marks will be assigned to them.

Note – 1. Candidates will be allowed to use Scientific (Non-programmable type) calculators.

P.T.O.

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SECTION – A

Q1. Write short notes on **any five** of the following.

(8×5=40)

- (a) Four instruments used for Surveying.
- (b) Geosynthetics.
- (c) Principles of Building Planning.
- (d) Fluid Statics and Buoyancy.
- (e) Hydraulic Turbines.
- (f) Methods of Irrigation.
- (g) Hydrographic surveying.

Q2. (a) Discuss three methods for plane table surveying.

(5×3=15)

- (b) Discuss the qualities of ,
 - i) Good Building Stone.
 - ii) Good Bricks.
 - iii) Good Cement.

(5×3=15)

(c) Explain in short,

- i) Temporary adjustments of dumpy level.
- ii) Rise and fall method.
- iii) Height of instrument method.
- iv) Change point.

(2.5×4=10)

Q3. (a) Explain in detail, for building construction,

- i) Ventilation.
- ii) Acoustics.
- iii) Fire Protection.

(5×3=15)

(b) Explain in detail, for fluid,

- i) Viscosity.
- ii) Compressibility.
- iii) Surface tension and capillarity.

(5×3=15)

(c) Explain in short,

- i) CWR.
- ii) Water logging.
- iii) River Training.
- iv) Spillways.

(2.5×4=10)



Q4. (a) Explain in detail,

- i) Types of Centrifugal Pump.
- ii) Components and working of reciprocating pump.
- iii) Layout of powerhouse with pondage and storage.

(5×3=15)

(b) Explain in detail,

- i) Energy Dissipation.
- ii) Diversion Head works.

iii) Cross Drainage works.

(5×3=15)

(c) Explain in short,

- i) Types of Foundations.
- ii) Water proofing of flat roofs.

(5×2=10)



SECTION – B

- Q5. Write short notes on **any five** of the following. (8×5=40)
- (a) Human characteristics as road users.
 - (b) TBM.
 - (c) Four methods of valuation.
 - (d) Floods and Flood routing.
 - (e) Sources for water supply.
 - (f) Sources and effects of air and noise pollution.
 - (g) Disposal of solid wastes.
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- Q6. (a) Explain in detail, five road patterns. (3×5=15)
- (b) Explain in detail,
- i) Mucking and Ventilation in tunnels.
 - ii) NATM.
 - iii) Cut and cover method for metro tunnelling. (5×3=15)
- (c) Explain in short,
- i) Factors affecting rate analysis. (5×2=10)
 - ii) Overhead cost and outturn.
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- Q7. (a) Explain in detail, six types of estimates. (2.5×6=15)
- (b) Explain in detail,
- i) Water quality standards.
 - ii) Primary and secondary water treatment.
 - iii) Conveyance and distribution of treated water. (5×3=15)
- (c) Explain in short,
- i) Reservoir planning.
 - ii) Sediment control. (5×2=10)
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- Q8. (a) Explain in detail,
- i) Sources and classification of solid waste.
 - ii) Solid waste collection systems.
 - iii) Transfer stations and layout of solid waste collection route. (5×3=15)
- (b) Explain in detail,
- i) Hydrological cycle.
 - ii) Infiltrimeters.
 - iii) Factors affecting run-off. (5×3=15)
- (c) Explain in short,
- "White-topping" and its three methods. (1+3×3=10)
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