

# GATE 2026 Civil Engineering Question Paper

Time Allowed :3 Hours	Maximum Marks :100	Total Questions :65
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## General Instructions

Read the following instructions very carefully and strictly follow them:

1. Each GATE 2024 paper consists of a total of 100 marks. The examination is divided into two sections – General Aptitude (GA) and the Candidate's Selected Subjects. General Aptitude carries 15 marks, while the remaining 85 marks are dedicated to the candidate's chosen test paper syllabus.
2. GATE 2024 will be conducted in English as a Computer Based Test (CBT) at select centres in select cities. The duration of the examination is 3 hours.
3. MCQs carry 1 mark or 2 marks.
4. For a wrong answer in a 1-mark MCQ, 1/3 mark is deducted.
5. For a wrong answer in a 2-mark MCQ, 2/3 mark is deducted.
6. No negative marking for wrong answers in MSQ or NAT questions.

1. Consider a soil sample where the following parameters are defined:

- $S$  = Soil suction head
- $K$  = Hydraulic conductivity
- $w$  = Moisture content

If the moisture content ( $w$ ) of the soil increases, which of the following statements regarding the soil suction head ( $S$ ) and hydraulic conductivity ( $K$ ) is correct?

- (A) Both  $S$  and  $K$  increase.  
(B) Both  $S$  and  $K$  decrease.  
(C)  $S$  increases while  $K$  decreases.  
(D)  $S$  decreases while  $K$  increases.

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2. A clay deposit is found to have a natural water content and void ratio that corresponds to a pre-consolidation pressure ( $\sigma'_p$ ) that is greater than the present effective overburden pressure ( $\sigma'_o$ ). This clay is best classified as:

- (A) OCC (Over Consolidated Clay)  
(B) LCC (Lightly Consolidated Clay)  
(C) NCC (Normally Consolidated Clay)

(D) Quick Clay

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3. For a two-lane, two-way highway, the length of a summit curve is ideally designed based on which parameter to ensure full operational efficiency (overtaking opportunities)?

- (A) Lateral friction ( $f$ )
- (B) Centrifugal acceleration ( $a_c$ )
- (C) Stopping Sight Distance (SSD)
- (D) Overtaking Sight Distance (OSD)

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4. In a rectangular open channel, a hydraulic jump occurs. The ratio of the post-jump depth ( $y_2$ ) to the pre-jump depth ( $y_1$ ) is measured to be 2. What is the Froude number ( $Fr_1$ ) of the flow immediately before the jump?

- (A)  $\sqrt{2}$
- (B) 1.5
- (C)  $\sqrt{3}$
- (D) 2.5

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5. The Rational Method formula for estimating peak runoff is given as  $Q = \frac{CiA}{360}$ . For the result  $Q$  to be in cubic meters per second ( $m^3/s$ ), what must be the units of rainfall intensity ( $i$ ) and catchment area ( $A$ )?

- (A)  $i$  in  $cm/hr$ ,  $A$  in  $km^2$
- (B)  $i$  in  $mm/hr$ ,  $A$  in  $km^2$
- (C)  $i$  in  $mm/hr$ ,  $A$  in hectares
- (D)  $i$  in  $m/hr$ ,  $A$  in hectares

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6. Match the Gradually Varied Flow (GVF) profiles on a mild slope ( $M_1, M_2, M_3$ ) with the nature of their water surface slope ( $dy/dx$ ) relative to the flow direction. Select the correct classification:

Profile	Nature of Slope ( $dy/dx$ )
P. $M_1$ Profile	1. Positive (Rising Curve)
Q. $M_2$ Profile	2. Negative (Drawdown Curve)
R. $M_3$ Profile	3. Positive (Rising Curve)

- (A)  $M_1$  is Rising,  $M_2$  is Rising,  $M_3$  is Falling
  - (B)  $M_1$  is Rising,  $M_2$  is Falling,  $M_3$  is Rising
  - (C)  $M_1$  is Falling,  $M_2$  is Rising,  $M_3$  is Falling
  - (D)  $M_1$  is Rising,  $M_2$  is Falling,  $M_3$  is Falling
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