# GATE 2026 PE Question Paper

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

**Please read the following instructions carefully:**

1. This question paper is divided into three sections:
   - **General Aptitude (GA):** 10 questions (5 questions × 1 mark + 5 questions × 2 marks) for a total of 15 marks.
   - **Environmental Science and Engineering + Engineering Mathematics:**
     - **Part A (Mandatory):** 36 questions (1 questions × 1 mark + 19 questions × 2 marks) for a total of 55 marks.
     - **Part B (Section 1):** Candidates can choose either Part B1 (Surveying and Mapping) or Part B2 (Section 2). Each part contains 16 questions (8 questions × 1 mark + 11 questions × 2 marks) for a total of 30 marks.
2. The total number of questions is **65**, carrying a maximum of **100 marks**.
3. The duration of the exam is **3 hours**.
4. Marking scheme:
   - For 1-mark MCQs, $\frac{1}{3}$ mark will be deducted for every incorrect response.
   - For 2-mark MCQs, $\frac{2}{3}$ mark will be deducted for every incorrect response.
   - No negative marking for numerical answer type (NAT) questions.
   - No marks will be awarded for unanswered questions.
5. Ensure you attempt questions only from the optional section (Part B1 or Part B2) you have selected.
6. Follow the instructions provided during the exam for submitting your answers.

**1. A vertical well is drilled up to a depth of 4000 ft. Further drilling starts with 10 ppg of fresh mud and 50000 lbf weight on bit (WOB). An equivalent circulation density (ECD) of 10.75 ppg was recorded. The total circulation pressure loss is estimated to be 110 psi. The steel density is 65.5 ppg. The decrease in hook load is _____ lbf (rounded off to one decimal place). (Note: 1 ppg mud is equivalent to 0.052 psi/ft.)**

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**2. The laboratory analysis data obtained from the core is as follows:**
**Weight of clean dry core in air = 30 g**

**Weight of core completely saturated with oil = 32 g**
**Weight of saturated core completely immersed in oil = 24 g**
**If the density of oil used for saturation of core during the experiment is 0.88 g/cc, then the effective porosity of the core is _____% (rounded off to two decimal places).**

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**3. The porosity of a formation with matrix density of 2.65 g/cc and fluid density of 1.0 g/cc is 0.15. The formation has shear modulus of 30 GPa and bulk modulus of 36 GPa. The compressional wave velocity in the formation is _____ $\times 10^3$ m/s (rounded off to two decimal places).**

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**4. In a capillary rise experiment with a capillary tube of length $l_1$, water rises to a height $h$ such that $h < l_1$. If the capillary tube is cut to a length $l_2$ such that $l_2 < h$, and the experiment is repeated, which of the following statements is/are CORRECT?**

(A) Water overflows from the top of the tube.
(B) Water does not overflow from the top of the tube.
(C) At equilibrium, radius of curvature of meniscus are same in both the experiments.
(D) At equilibrium, radius of curvature of meniscus are different in both the experiments.

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**5. Which of the following option(s) is/are CORRECT for well testing analysis of a reservoir?**

(A) Permeability, skin and reservoir geometry are calculated using data from pseudo steady state.
(B) Permeability, skin and reservoir geometry are calculated using data from transient state.
(C) Reservoir geometry is calculated using data from pseudo steady state.
(D) Absolute open flow potential is calculated from back pressure test for a gas well.

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**6. Classification of kerogen is based on the relative amount of Carbon (C), Hydrogen (H) and Oxygen (O). Which ONE of the following options is CORRECT about Type II kerogen?**

(A) It is low in aliphatic compounds and H:C ratio $< 0.84$.
(B) It is rich in aliphatic compounds and H:C ratio $< 0.84$.
(C) It is low in aliphatic compounds and H:C ratio $> 1.0$.
(D) It is rich in aliphatic compounds and H:C ratio $> 1.0$.

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