

TS PGECET 2025 Question Paper

Time Allowed :2 Hours	Maximum Marks :120	Total questions :120
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. **Mode of Examination:** Online (Computer-based examination)
2. **Medium of Exam:** English
3. **Duration of Exam:** 2 hours
4. **Type of Questions:** Multiple-choice questions
5. **Number of Questions:** 120 Questions
6. **Total Marks:** 120 Marks
7. **Marking Scheme:**
 - 1 mark for each correct answer.
 - No negative markings for incorrect answers.

1. Find the eigenvalues of the matrix:

$$A = \begin{pmatrix} 4 & 1 \\ 2 & 3 \end{pmatrix}$$

- (1) 3, 4
 - (2) 5, 2
 - (3) 4, 1
 - (4) 6, 1
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2. Evaluate the integral:

$$\int_0^{\pi} \sin^2(x) dx$$

- (1) $\frac{\pi}{2}$
 - (2) $\frac{\pi}{4}$
 - (3) π
 - (4) 1
-

3. Solve the differential equation:

$$\frac{d^2y}{dx^2} + 4y = 0$$

- (1) $y = C_1 \cos(2x) + C_2 \sin(2x)$
 - (2) $y = C_1 e^{2x} + C_2 e^{-2x}$
 - (3) $y = C_1 e^x + C_2 e^{-x}$
 - (4) $y = C_1 \cos(x) + C_2 \sin(x)$
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4. If a die is rolled twice, what is the probability that the sum of the numbers is 7?

- (1) $\frac{1}{6}$
 - (2) $\frac{1}{12}$
 - (3) $\frac{1}{36}$
 - (4) $\frac{5}{36}$
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5. Which data structure is used in the implementation of recursion?

- (A) Stack
 - (B) Queue
 - (C) Linked List
 - (D) Array
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6. In a series RLC circuit, if the resistance is 10, inductance is 0.1H, and capacitance is 100F, calculate the resonant frequency.

- (1) 500 Hz
 - (2) 1000 Hz
 - (3) 1590 Hz
 - (4) 300 Hz
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7. Determine the moment of inertia of a rectangular beam section with a width of 300 mm and height of 500 mm about its neutral axis.

- (1) $1.25 \times 10^7 \text{ mm}^4$
 - (2) $2.5 \times 10^7 \text{ mm}^4$
 - (3) $3.75 \times 10^7 \text{ mm}^4$
 - (4) $4.5 \times 10^7 \text{ mm}^4$
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8. Calculate the efficiency of a Carnot engine operating between temperatures of 500K and 300K.

- (1) 40%
 - (2) 60%
 - (3) 70%
 - (4) 50%
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9. What is the Reynolds number for flow in a pipe with a diameter of 0.05 m, velocity of 2 m/s, and kinematic viscosity of $1 \times 10^{-6} \text{ m}^2/\text{s}$?

- (1) 1000
 - (2) 2000
 - (3) 4000
 - (4) 5000
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10. Which of the following is a beta-blocker used in the treatment of hypertension?

- (A) Metoprolol
 - (B) Amlodipine
 - (C) Losartan
 - (D) Enalapril
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