

TS PGECET 2026 EC

Question Paper (Memory-Based)

Conducted by JNTU, Hyderabad



General Instructions

- (i) The test is of 2 hours duration.
- (ii) This test paper consists of 120 questions. The maximum marks are 120.
- (iii) Each question carries +1 marks for correct answer and there is no negative marking for wrong answer.

1. Evaluate $\int_0^{\pi/2} \sqrt{\tan x} dx$

- (A) 0
- (B) $\frac{\pi}{\sqrt{2}}$
- (C) π
- (D) 1

2. Solve

$$\frac{d^2x}{dt^2} + 4\frac{dx}{dt} + 5x = 0, \quad x(0) = 1, \quad x'(0) = 0$$

- (A) $x(t) = e^t(\cos t + \sin t)$
- (B) $x(t) = e^{-2t}(2 \cos t - \sin t)$
- (C) $x(t) = e^{-2t}(\cos t + 2 \sin t)$
- (D) $x(t) = e^{-2t}(\cos t + 2 \sin t)$

3. Evaluate $\int_c \frac{5z-2}{z-1} dz$, where $|z| = \frac{1}{2}$

- (A) $\frac{5}{2}$
- (B) 0
- (C) $2\pi i$
- (D) $\frac{\pi}{2}$

4. Transfer function of an ideal delay of T seconds

- (A) s
 - (B) $1/s$
 - (C) e^{-sT}
 - (D) e^{sT}
-

5. Brewster angle for $\epsilon_r = 10$

- (A) $\tan^{-1}(\sqrt{10})$
 - (B) $\cos^{-1}(\sqrt{10})$
 - (C) $\sin^{-1}(\sqrt{10})$
 - (D) $\cot^{-1}(\sqrt{10})$
-

6. Bandwidth of cascaded stages with bandwidth B

- (A) $\frac{B}{\sqrt{2^n - 1}}$
 - (B) $B\sqrt{2^n - 1}$
 - (C) $B\sqrt{2^{1/n} - 1}$
 - (D) $\frac{B}{\sqrt{2^{1/n} - 1}}$
-

7. Electron concentration for Si (1000 atoms/cm³)

- (A) $10 e/cm^3$
 - (B) $1000 e/cm^3$
 - (C) $100 e/cm^3$
 - (D) $10000 e/cm^3$
-

8. Reflection coefficient (Γ) for glass (index n)

- (A) $\Gamma = \left(\frac{n-1}{n+1}\right)^2$
 - (B) $\Gamma = \left(\frac{n+1}{n-1}\right)^2$
 - (C) $\Gamma = \frac{n+1}{n-1}$
 - (D) $\Gamma = \frac{1-n}{1+n}$
-

9. Avalanche breakdown voltage of a pn junction

- (A) Increases with increase in doping and also with increase in band gap
 - (B) Increases with decrease in band gap and also with increase in doping
 - (C) Decreases with increase in band gap and also with increase in doping
 - (D) Decreases with increase in doping and also with decrease in band gap
-

10. $\lim_{z \rightarrow 0} f(z)$ for $f(z) = z(\bar{z})^{-1}$

- (A) Does not exist
 - (B) 0
 - (C) 1
 - (D) -1
-