

EE3900 : Gate Assignment-4

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Download all latex-tikz codes from

[https://github.com/Rahul27n/EE3900/blob/main/
Gate_Assignment_4/Gate_Assignment_4.tex](https://github.com/Rahul27n/EE3900/blob/main/Gate_Assignment_4/Gate_Assignment_4.tex)

1 QUESTION: GATE EC 1998 Q1.4

The trigonometric Fourier series of a periodic time function can have only:

- (A) cosine terms
- (B) sine terms
- (C) cosine and sine terms
- (D) d.c. ,cosine and sine terms

2 SOLUTION

The trigonometric Fourier series of a periodic function $x(t)$ with period $T = \frac{2\pi}{\omega}$ is given by:

$$x(t) = a_0 + \sum_{k=1}^{\infty} a_k \cos k\omega t + \sum_{k=1}^{\infty} b_k \sin k\omega t \quad (2.0.1)$$

where a_0 is the d.c component of the signal and a_k and b_k are Fourier coefficients. Hence the correct answer is option (D).