

Q.P. Code :11966

[Time: 3 Hours]

[ Marks:80]

Please check whether you have got the right question paper.

- N.B:**
1. **Question No.1 is compulsory.**
  2. **Solve any THREE from the remaining FIVE questions.**
  3. Assume suitable data if required.

Q.1 a) What is cross correlation and auto correlation of the system.

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b) Determine the even and odd part of the following continuous time signals.

i)  $x(t) = \sin 2t + \cos 2t + \sin t \cos 2t$

ii)  $x(t) = e^{-t} u(t)$

c) Determine the Laplace transform of the given signals:-

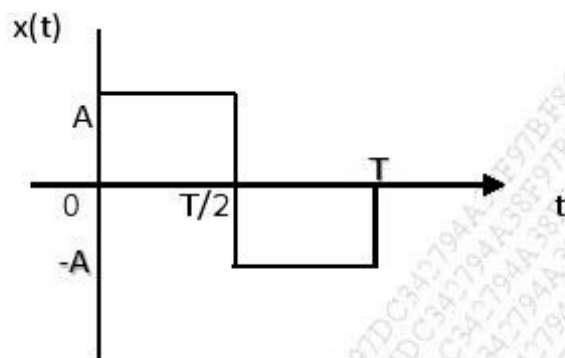


Fig.(a)

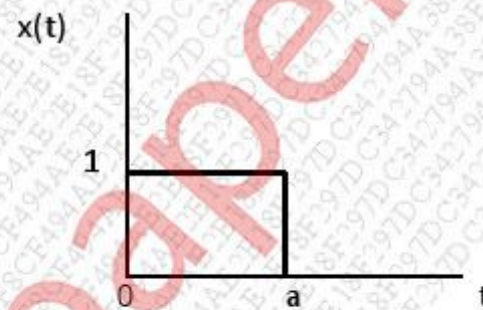


Fig.(b)

d) Determine whether the given systems are linear or non linear.

i)  $y(t) = x^2(t)$

ii)  $y(t) = e^x(t)$

e) Justify the following with Fourier series,

- i) Odd functions only have sine terms and even function have no sine terms

Q.2 a) Prove the following properties of Fourier Transform.

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- i) Time shifting    ii) Frequency Scaling    iii) Time Convolution    iv) Time Scaling

b) Determine the Fourier series of the following signal shown:-

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