

Version NK/3

EGT3

ENGINEERING TRIPOS PART IIA

Monday 5 May 2014

Module 3F4

DATA TRANSMISSION

Answers:

1. (b) $S_x(\omega) = 0.96/T_s$;

(c) $S_y(\omega) = 0.24T_s \left| \text{sinc} \left(\frac{\omega T_s - \pi}{2} \right) + \text{sinc} \left(\frac{\omega T_s + \pi}{2} \right) \right|^2$

2. (b) (i) ISI: yes.

(ii) $r(mT) = \frac{1}{2T} [a_{m-3} + 2a_{m-2} + a_{m-1}]$

3. –

4. (c) 1878 carriers; 7.516 MHz plus a gap for realisable filters ≈ 8 MHz.