EECS 461 PROBABILITY & STOCHASTIC PROCESSES

QUIZ 6.4

A SMARTPHONE RUNS A NEWS APPLICATION THAT DOWNLOADS INTERNET NEWS EVERY 15 MINUTES AT THE START OF A DOWNLOAD, THE RADIO MODEMS NEGOTIATE A CONNECTION SPEED THAT DEPENDS ON THE RADIO CHANNEL QUALITY. WHEN THE NEGOTIATED SPEED IS LOW, THE SMARTPHONE REDUCES THE AMOUNT OF NEWS THAT IT TRANSFERS TO AVOID WASTING ITS BATTERY. THE NUMBER OF KILOBYTES TRANSMITTED L, & THE SPEED B IN Kb/s HAVE THE JOINT PMF

$P_{L,B}(l,b)$	$b=512$	$b=1024$	$b=2048$
$l=256$	0.2 ($T=4$)	0.1 ($T=2$)	0.05 ($T=1$)
$l=768$	0.05	0.1	0.2
$l=1536$	0	0.1	0.2

$T = 8L/B$

LET T DENOTE THE NUMBER OF SECONDS NEEDED FOR THE TRANSFER EXPRESS T AS A FUNCTION OF L & B. WHAT IS THE PMF OF T?

THE TIME REQUIRED FOR THE TRANSFER IS $T = 8L/B$. FOR EACH PAIR OF VALUES OF L & B, WE CAN CALCULATE THE TIME T NEEDED FOR THE TRANSFER.

B)