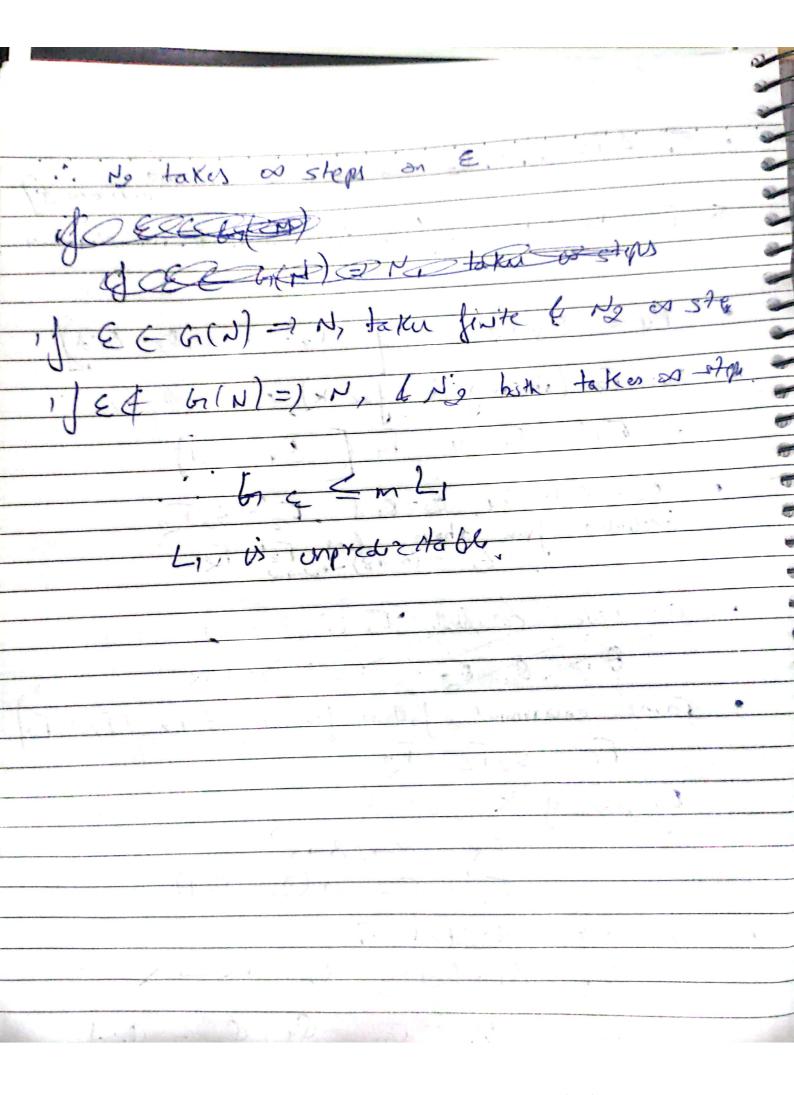
190549, CS340 Assignment-4, Nikhl Mehta M, N au two. TM's de Makes lever steps than N on input Ey · Undecidable We will tay to prove L. W. undecidable using reduction. GETM = occepting E) is undecable ( Class Lective 4 Notes < hE < nily a function of which takes < No as inplies E = (M) = N, takes Jever steps than to on E TM N. is contracted. such that on every exact. · Accent of Noccepts & if Noveret & go into infinite loop. Comment anothe TM No which goes ento infente loup on all export Camin

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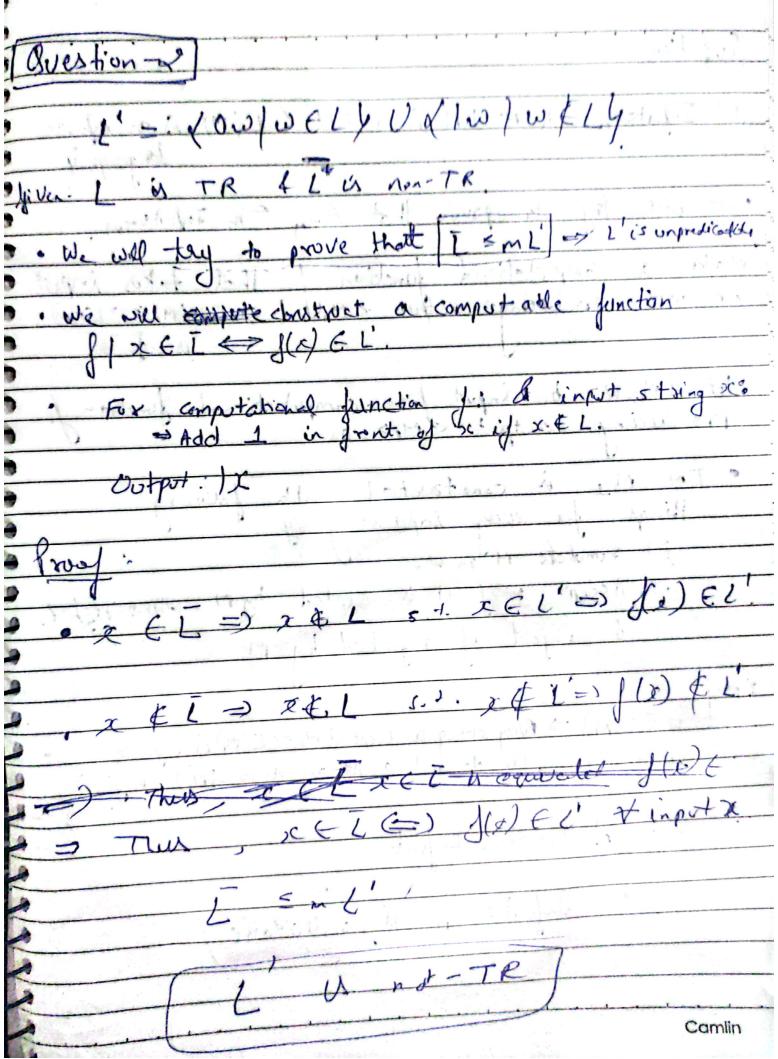
of KM > | M takes at most & bia. of input are relevant because accepted within at-most 3 40 steps.

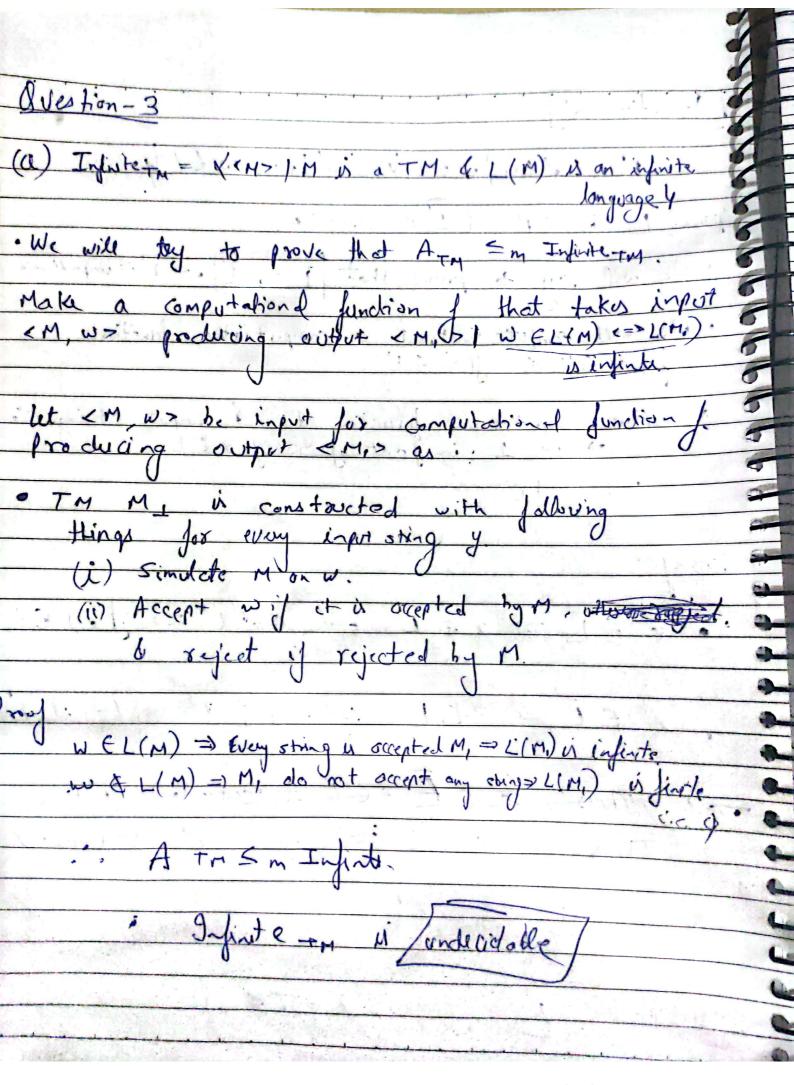
C) L2 = { < M > | Here are infinitely many TMs ? ...

equivalent to MY. · Decidable · Fact: Every TM has infinitely many equivalent TMs. addied to any TM not changing the So Accept input if it is a TM otherwise (d) Ly = of (M, N) [ (M) \( L(N) \) is infinite ) · Un decidable by to derign a competable function s. t. it takes < M, w> as input <MI, M. 7 as output : WEL(M) (=) C/M) A L/M2) is injuste. the claim that TATM ZLY. on input < M, w> out pot < M, M2> . M. is designed s.t. + input (a) simulate monw.

(b) Accept of morcept w, reject if morget w. Camlin · Also beign His Me

accept ever string WfU(m) DILIM) 102 (M2), i ciginter unde cida ble





(b) ALLTMINITED MIN a TM & L(M) = =x · We will try to prove that ATM IN Alling Metal a computable function of that takes input let < M, w> be expet & construct TMM' with

Jollowing on input string y:

10 Simulate M on w. (ii) Accept it if acceptal by M ·L(M')= = if M accept w. ·L(m')= p if M downot accept w. WEL(M) =) M' occept all stay cet w & L(M) =) M' do not occept a (Cm') Not E < 5)25 ATA EM FILM. ATA EM ALLTA o a All TH is unpredictable