		962465192
States (N,3) g (2,3) are terminal states and a not have and algoring transitions. Therefore, the state values conferminal (states are thier homedate revised. $V_{A}(S) = \sum_{\alpha \in A} \pi(\alpha S) \in P(S, r S, \alpha) [r + y V_{A}(S')]$ $T(\alpha S) = 0.25 y = 0.9$ $T(\alpha S) = 0.25 y = 0.9$ $V((, 1) = 0.25 \times [0.8 \times (0 + V_{A}((2, 1))) + 0.1 \times (0 + V_{A}((1, 2)) + 0.1 \times (0 + V_{A}((1, 1)))] \times 0.9$ $+ 0.25 \times [0.8 V_{A}((, 1) + 0.1 \times (1, 2)) + 0.1 \times [(1, 1))] \times 0.9$ $+ 0.25 \times [0.8 V_{A}((, 1) + 0.1 \times [(2, 1]) + 0.1 \times [(1, 1])] \times 0.9$. Assignment 1
To loss = 0.25 × [0.8 × (0+ V_{π} ((2,1)) + 0.1 V_{π} ((1,1))] ×0.9 = + 0.25 × [0.8 V_{π} ((1,11)] + 0.1 V_{π} ((1,11)] V_{π} ((1,11)]		Question 1: states (1,3), (2,3) are terminal, thus Visterminal)=0
Guestion 29 $V_{\pi}(s) = \sum_{\alpha \in A} \pi(\alpha \setminus s) \sum_{s \leq s} P(s, r \mid s, \infty) [r + y \lor_{\pi}(s')]$ $\pi(\alpha \mid s) = 0.25 \ r \lor_{\pi}(0.9) + 0.1 \times (0.1 \lor_{\pi}((1.92)) + 0.1 \times (0.1 \lor_{\pi}((1.92))) + 0.1 \times (0.1 \lor_{\pi}((1.91))) \times 0.9$ $+ 0.25 \times [0.8 \lor_{\pi}((1.91)) + 0.1 \lor_{\pi}((1.91)) + 0.1 \lor_{\pi}((1.91)) \times 0.9$ $+ 0.25 \times [0.8 \lor_{\pi}((1.91)) + 0.1 \lor_{\pi}((1.91)) + 0.1 \lor_{\pi}((1.91)) \times 0.9$ $+ 0.25 \times [0.8 \lor_{\pi}((1.91)) + 0.1 \lor_{\pi}((1.91)) + 0.1 \lor_{\pi}((1.91)) \times 0.9$		States (193) g (2,3) are terminal states and do not have any subscing transitions. Therfole, the state values tollectional (states we thier amediate Teward.
$V_{\pi}(s) = \sum_{\alpha \in A} \pi(\alpha \setminus s) \sum_{s,i} P(s,i)[s,\alpha)[r_{+} \vee V_{\pi}(s')]$ $\overline{\pi}(\alpha \mid s) = 0.25 \cdot 1 \forall = 0.9$ $1[\rightarrow \leftarrow V([l,1]) = 0.25 \times [0.8 \times (0 + V_{\pi}((2,1))) + 0.1 \times (0 + V_{\pi}((1,2)) + 0.1 \times (0 + V_{\pi}((1,2)))] \times 0.9$ $+ 0.25 \times [0.8 \vee_{\pi}([l,1]) + 0.1 \vee_{\pi}([l,2]) + 0.1 \vee_{\pi}([l,1])] \times 0.9$ $+ 0.25 \times [0.8 \vee_{\pi}([l,2]) + 0.1 \vee_{\pi}([2,1]) + 0.1 \vee_{\pi}([1,1])] \times 0.9$ $+ 0.25 \times [0.8 \vee_{\pi}([1,1]) + 0.1 \vee_{\pi}([2,1]) + 0.1 \vee_{\pi}([1,1])] \times 0.9$		413725
$ \pi (a S) = 0.25 \text{ i } y = 0.9 $ $ \uparrow ((1,1)) = 0.25 \times \left[0.8 \times (0 + V_{\pi}((2,1))) + 0.1 \times (0 + V_{\pi}((1,2)) + 0.1 \times (0 + V_{\pi}((1,1)))\right] \times 0.9 $ $ + 0.25 \times \left[0.8 V_{\pi}((1,1)) + 0.1 V_{\pi}((1,2)) + 0.1 V_{\pi}((1,1))\right] \times 0.9 $ $ + 0.25 \times \left[0.8 V_{\pi}((1,1)) + 0.1 V_{\pi}((2,1)) + 0.1 V_{\pi}((1,1))\right] \times 0.9 $		Guestion 23
$ \frac{1}{1} \Rightarrow \leftarrow V((1,1)) = 0.25 \times \left[0.8 \times (0 + V_{\pi}((2,1))) + 0.1 \times (0 + V_{\pi}((1,2)) + 0.1 \times (0 + V_{\pi}((1,1)))\right] \times 0.9}{+ 0.25 \times \left[0.8 V_{\pi}((1,1)) + 0.1 V_{\pi}((1,2)) + 0.1 V_{\pi}((1,1))\right] \times 0.9} \\ + 0.25 \times \left[0.8 V_{\pi}((1,1)) + 0.1 V_{\pi}((2,1)) + 0.1 V_{\pi}((1,1))\right] \times 0.9} $		$V_{\pi}(S) = \underset{\alpha \in A}{\mathcal{E}} \pi(\alpha S) \underset{S,i}{\mathcal{E}} P(S,i S,\alpha) [r_{+} y V_{\pi}(S')]$
$+ 0.25 \times \left[0.8 V_{\pi}((y) + 0.1 V_{\pi}((y)) + 0.1 V_{\pi}((y)) \right] \times 0.9 \\ + 0.25 \times \left[0.8 V_{\pi}((y) + 0.1 V_{\pi}((y)) + 0.1 V_{\pi}((y)) \right] \times 0.9 \\ + 0.25 \times \left[0.8 V_{\pi}((y) + 0.1 V_{\pi}((y)) + 0.1 V_{\pi}((y)) \right] \times 0.9 \\ $		TI (a15) =0.25 1 Y=0.9
$+ 0.25 \times 0.8 V_{\pi}((y) + 0.1 V_{\pi}((y)) + 0.1 V_{\pi}((y))] \times 0.9 \\ + 0.25 \times \left[0.8 V_{\pi}((y) + 0.1 V_{\pi}((2y)) + 0.1 V_{\pi}((y))] \times 0.9 \right] \\ + 0.25 \times \left[0.8 V_{\pi}((y)) + 0.1 V_{\pi}((2y)) + 0.1 V_{\pi}((y))] \times 0.9 \right]$	11->4	$V((1,1)) = 0.25 \times \left[0.8 \times (0 + \sqrt{\pi}((2,1))) + 0.1 \times (0 + \sqrt{\pi}((1,2))) + 0.1 \times (0 + \sqrt{\pi}((1,2))) \right] \times 0.9$
+ 0.25 x [0.8 V/T ((1911) + 0.1 V/T ((2911) + 0.1 V/T ((1911))] vo.)		+ 0.25× 0.8 VA((1,1)) +0.1 VA((1,2)) +0.1 VA((1,1)) (x0.9)
		+ 0.25 x [0.8 V/ ((191)) + 0.1 V/ ((2911) + 0.1 V/ ((191))] xo.9
	(

0.8 Vx (12,2))+0.1(-5+Vx(1,3))+0.1VA **%** • 0-9 VT ((191) + 0.1 VT ((292))

Question 3. VT (292) = 0.25 VT (292) + VT (192) + 5 + VT (291)



Question 4° Vr(192)=0.8Vr(191)+0.1Vr(292)+0.1Vr(102) x0.9 Vn'(291) -[0.8Vn'(292) +0.1Vn'(291) +0.1Vn (191)] x0.9 V1 (2,2) - 0.8x5 - 0.1x0.9V1 (2,2) + 0.1x0.9V1 (1,2) V((91) 9 Vp((291) = 3.819 Va' 12,22) = 4.702 G:

Question 5: V(S) = max & P(Sor Soa) [+ YV(S) 0.9 V1 (291) + 0.1 V1 (191) + 0.1 V1 (192) - 0.9 Vn (191) + O. 1 Vn (2,2) + O. 1 Vn (1.2) 0.09 Vy (2,2) + 0.09 Vy (1,2 Since V'(291) + V1'(291) it doesn't satisfy bellman optimality Quistion 6: Since bellman optimallity is not satisfied the sisiis not optimal counter example is state (291). M'(201) - up instead of left -) V*(291) - 0.9 [0.8 V/(292) + 0.1 V/(191) - 0.1 x5=3.184 Since Vn' (291) 7 Vn (291) -> Mn' is not optimal

