NLP
A2 Q4
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a)

classifier output	Gold Standard A	B	C	
A	18	18	16	52
B	7	42	19	68
C	10	17	33	60
	35	77	68	180

b) accuracy = $\frac{18 + 42 + 33}{180} \approx 0.5166 = 51.67\%$

c)

classifier output	Gold Standard A	Not A	
A	18	34	52
not A	17	111	128
	35	145	180

$P_A = 18/52$, $R_A = 18/35$

$\beta = 1$

F-Measure $= \frac{(\beta^2+1) P_A R_A}{\beta^2 P_A + R_A}$

$= 36/87$

d) for B

classifier output	Gold Standard: B	Gold Standard: not B	
B	42	26	68
Not B	35	77	112
	77	103	180

$P_B = 42/68$

$R_B = 42/77$

for C,

classifier o/p	Gold standard: C	Gold standard: Not C	
C	33	27	60
Not C	35	85	120
	68	112	180

$P_C = 33/60$

$R_C = 33/68$

$$P_{MACRO} = \frac{18/52 + 42/68 + 33/60}{3}$$

$P_{MACRO} = 0.5046$

$$R_{MACRO} = \frac{18/35 + 42/77 + 33/68}{3}$$

$R_{MACRO} = 0.5149$

$$F_{MACRO} = \frac{2 \cdot P_{MACRO} \cdot R_{MACRO}}{P_{MACRO} + R_{MACRO}} = 0.5096$$

e)

	Gold standard: Z	Gold standard: Not Z	
Z	93	87	180
Not Z	87	273	360
	180	360	540

$P_{MICRO} = 93/180$

$R_{MICRO} = 93/180$

$$F_{MICRO} = \frac{2 \cdot P_{MICRO} \cdot R_{MICRO}}{P_{MICRO} + R_{MICRO}}$$

$= 0.5167$