

QUESTION 1a

PROB OF OSA = YES

$$P(\text{AGE} = \text{LOWER} | \text{OSA YES}) = 6/9$$

$$P(\text{BMI} = \text{MED} | \text{OSA YES}) = 4/9$$

$$P(\text{GENDER} = \text{MALE} | \text{OSA YES}) = 6/9$$

$$P | \text{OSA YES} = 9/14$$

PROB OF OSA = NO

$$P(\text{AGE} = \text{LOWER} | \text{OSA NO}) = 1/5$$

$$P(\text{BMI} = \text{MED} | \text{OSA NO}) = 1/5$$

$$P(\text{GENDER} = \text{MALE} | \text{OSA NO}) = 1/5$$

$$P | \text{OSA NO} = 5/14$$

$$6/9 \times 4/9 \times 6/9 \times 9/14 = P | \text{OSA YES} = 0.12698$$

$$1/5 \times 1/5 \times 1/5 \times 5/14 = P | \text{OSA NO} = 0.00285$$

THE INDIVIDUAL HAS A LIKELIHOOD FOR OSA
PROBABILITY

QUESTION 4d

$$x1 \quad 0.8 \times 0.1 = 0.08$$

$$x2 \quad -0.22 \times -0.4 = 0.088$$

$$x3 \quad 0.12 \times 0.22 = 0.0264$$

$$\text{BIAS} \quad 0.3$$

ADD VALUES

$$0.08 + 0.088 + 0.0264 + 0.3 =$$

$$y = \phi(0.4944)$$

$$\text{RELU} = \phi(\max(0, 0.4944))$$
$$= 0.4944$$

LOGISTIC ACTIVATION FUNCTION

$$\phi y = \frac{1}{1+e^{-y}}$$

$$1 + e^{-0.494} = 0.6099 + 1 = 1.6099$$

$$1 / 1.6099 =$$

$$0.62115$$