

A



Inspiring Excellence

Solve

CSE423: Computer Graphics

Summer 2025

Quiz 3

Time: 20 minutes

Marks : (/20)

Name:	Id:	Sec:
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Q1) "Monkey D. Luffy" is developing a game for his CSE423 Project where he needs to draw a bridge over a river. Suppose, the bridge has been colored using the **HSV model**, the color of the bridge is **(140, 0.3, 0.8)** in HSV format. Compute the **CMY** color of the bridge.

Q2) Suppose a color has a **hue** of **110**. If the color is converted into an **RGB** color, identify the **maximum** and **minimum** components amongst **red, green, and blue**. Show your work.

Q1)

$$H = 140, S = 0.3, V = 0.8$$

$$C = 0.8 \times 0.3 = 0.24$$

$$X = 0.24 \times \left(1 - \left|\frac{140}{60} \bmod 2 - 1\right|\right) = 0.08$$

$$M = 0.8 - 0.24 = 0.56$$

$$R' = 0 + M \quad G' = C + M \quad B' = X + M$$

$$R = 0.56 \quad G = 0.8 \quad B = 0.64 \rightarrow CMY = (0.44, 0.2, 0.36)$$

Ans

Q2)

If Hue = 110, Green dominance,

$$\text{Out. H} = \left(\frac{B - R}{L} \right) \times 60 + 120^\circ$$

this must be negative, so $R > B$

max component = Green

min component = Blue.

Ans

B



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Q1) "Roronoa Zoro" is developing a game for his CSE423 Project where he needs to draw a bridge over a river. Suppose, the bridge has been colored using the **HSV model**, the color of the bridge is **(300, 0.7, 0.9)** in **HSV** format. Compute the **CMY** color of the bridge.

[15 marks]

Q2) Suppose a color has a **hue** of **230**. If the color is converted into an **RGB** color, identify the **maximum** and **minimum** components amongst **red, green, and blue**. Show your work.

[5 marks]

Q1) $H = 300, S = 0.7, V = 0.9$

$$C = 0.9 \times 0.7 = 0.63$$

$$X = 0.63 \times \left(1 - \left| \frac{300}{60} \bmod 2 - 1 \right| \right) = 0.63$$

$$M = 0.9 - 0.63 = 0.27$$

$$R = C + M, G = 0 + M, B = X + M$$

$$R = 0.9, G = 0.27, B = 0.9 \rightarrow CMY = (0.1, 0.73, 0.1)$$

Ans

Q2) Since $H = 230^\circ$, Blue dominance

$$H = \left(\frac{R - G}{L} \right) \times 60^\circ + 240$$

\rightarrow This must be negative, so $G > R$

max component = Blue
min component = Red \rightarrow Ans

C



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Q1) "Vinsmoke Sanji" is developing a game for his CSE423 Project where he needs to draw a bridge over a river. Suppose, the bridge has been colored using the **HSV model**, the color of the bridge is **(240, 0.6, 0.7)** in HSV format. Compute the **CMY** color of the bridge.

Q2) Suppose a color has a **hue** of **140**. If the color is converted into an **RGB** color, identify the **maximum** and **minimum** components amongst **red, green, and blue**. Show your work.

Q1 $H = 240, S = 0.6, V = 0.7$
 $C = 0.7 \times 0.6 = 0.42$
 $X = 0.42 \times \left(1 - \left|\frac{240}{60} \bmod 2 - 1\right|\right) = 0$
 $M = 0.7 - 0.42 = 0.28$

$R = X + M \quad G = 0 + M \quad B = C + M$
 $\Rightarrow R = 0.28 \quad G = 0.28 \quad B = 0.7$] CMY $\rightarrow (0.72, 0.72, 0.3)$ Ans

Q2 Since $H = 140^\circ$, Green dominance

$$H = \left(\frac{B - R}{L}\right) \times 60 + 120^\circ$$

\rightarrow This must be positive, so $B > R$

max component = Green
min component = Red] Ans

D



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Q1) "Shanks" is developing a game for his CSE423 Project where he needs to draw a bridge over a river. Suppose, the bridge has been colored using the **HSV model**, the color of the bridge is **(90, 0.7, 0.9)** in HSV format. Compute the **CMY** color of the bridge.

Q2) Suppose a color has a **hue of 260**. If the color is converted into an **RGB** color, identify the **maximum** and **minimum** components amongst **red, green, and blue**. Show your work.

Q1) $H = 90, S = 0.7, V = 0.9$
 $C = 0.9 \times 0.7 = 0.63$
 $X = 0.63 \times \left(1 - \left|\frac{90}{60} \bmod 2 - 1\right|\right) = 0.315$
 $m = 0.9 - 0.63 = 0.27$

$R = X + m \quad G = C + m \quad B = 0 + m$
 $\rightarrow R = 0.59 \quad G = 0.9 \quad B = 0.27 \rightarrow \text{CMY } (0.41, 0.1, 0.73) \text{ Ans}$

Q2) Since $H = 260$, Blue dominance

$H = \left(\frac{R - G}{2}\right) \times 60 + 240^\circ$
 \rightarrow This must be positive, $R > G$

max component = Blue
min component = Green. Ans