Mission 6 - Navigate Review Questions

1	Select the computer science definition of: FLOW SENSOR	a. Laser sensor that detects distance b. **Optical sensor used to track movement** c. A change in position d. Combining data from multiple sensors
2	Select the computer science definition of: SENSOR FUSION	a. Laser sensor that detects distance b. Optical sensor used to track movement c. A change in position d. **Combining data from multiple sensors**
3	Select the computer science definition of: DELTAS	a. Errors that might happen during a program run b. Optical sensor used to track movement c. **Changes in position, indicated by dx and dy** d. Combining data from multiple sensors
4	Select the computer science definition of: EXCEPTIONS	a. **Errors that might happen during a program run** b. Optical sensor used to track movement c. Changes in position, indicated by dx and dy d. Combining data from multiple sensors
5	What line of code reads and unpacks the flow sensor data?	a. `x, y, z = get_data(FLOW)` b. `fwd, up, down = get_data(FLOW)` c. **`dx, dy = get_data(FLOW)`** d. `dx, dy = get_data(RANGERS)`
6	If the flow sensor reports that X is decreasing, which direction is CodeAIR moving?	a. Forward b. **Backward** c. Left d. Right
7	How does altitude affect the flow sensor?	a. **The sensor returns a faster speed when higher** b. The sensor returns a slower speed when higher c. The sensor spins when higher d. The sensor is more accurate when higher
8	How does the flight controller factor altitude into the position calculations?	a. It uses the dz value from the flow sensor b. It uses the dx and dy values from the flow sensor c. **It checks the down-facing laser ranger** d. It checks the up-facing laser ranger

9	What is printed by the following code?
	
	``python
	x = 5
	dx = 2
	x = x + dx
	print(f"x={x}")
	``
		a. x=2
		b. **x=7**
		c. x=5
		d. Printing error

10	What is printed by the following code?
	
	``python
	dy = -5
	if abs(dy) > 5:
	    dy = 0
	print(dy)
	``
		a. **-5**
		b. 5
		c. 0
		d. dy

11	Why does rotation cause the flow sensor readings to drift?	a. Rotation causes motor oscillations, which disrupt the flight dynamics. b. It doesn't. Rotation has no effect on flow sensor readings. c. Rotation causes errors in the deltas that are misinterpreted by the flight controller. d. Rotation produces curved pixel trajectories that are not properly interpreted by the flight controller.
12	What line of code measures the battery voltage?	``` a. vbatt = power.charger_current() b. vbatt = power.battery_voltage(10) c. vbatt = power.is_usb() d. vbatt = power.is_batt() ```
13	When can the battery level be assessed?	a. Anytime b. Only when the USB is plugged in c. Only when the USB is not plugged in d. Only when the CodeAIR is flying
14	What is the best way to know the true battery level?	a. Testing under load, when the motors are powered b. Testing under load, having a pixel light turned on c. When not under load and no motors are powered d. When the USB is plugged in
15	What is the purpose of the `battery_check_steady(seconds)` function?	a. To make sure the battery level doesn't change for a specified period of seconds. b. To test the battery and provide a visual indication while hovering. c. To confirm the battery is firmly attached to CodeAIR. d. To know the battery level when the USB is plugged in.
16	With a fully charged battery, how long does the following function take to run? `isOkay = battery_check_steady(1.5)`	a. 1.0 seconds b. 1.5 seconds c. 2.0 seconds d. 3.0 seconds
17	What is printed by the following code? ``` value = 0b1001 print(value) ```	a. value b. 0b1001 c. 9 d. 5
18	What line of code will turn on the first four blue LEDs?	``` a. leds.set_mask(15, 20) b. leds.set_mask(16, 20) c. leds.set_mask(0b00000111, 20) d. leds.set(4, 20) ```
19	What is the purpose of the line of code? `If __name__ == '__main__':`	a. It is needed so the file can be imported by other programs. b. It ensures the code is named '__main__' c. To execute the code block only if the file is run as the main program, not an import. d. To execute the code block only if the file is run as an import and not the main program.

20	What is printed by the following code:	
| | ```python
colors = [RED, GREEN]
try:
    print("Starting")
    my_color = colors[5]
    pixels.fill(my_color, 20)
    print("Turn on pixel")
except:
    print("No color")
``` | a. ```
Starting
Turn on pixel
No color
``` |
| | | b. ```
Starting
No color
Turn on pixel
``` |
| | | c. ```
Starting
No color
``` |
| | | d. ```
No color
``` |