

# Physics Summative Exam

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3.1	Solve for each of the following (50) . . . . .	4
3.1.1	Incline Plane (10) . . . . .	4
3.1.2	Elevator (10) . . . . .	4
3.1.3	Pulleys (10) . . . . .	4
3.1.4	SPWNL (10) . . . . .	4
3.1.5	Projectile Motion 1 or 2 (10) . . . . .	4
3.2	Theory (5) . . . . .	4
3.2.1	What are Newton's Three Laws of Motion? (3) . . . . .	4
3.2.2	What is the difference between uniform and non-uniform motion? (2) . . . . .	4
3.3	Labs (14) . . . . .	4
3.3.1	What is the procedure for the Projectile Motion Lab? (7)	4
3.3.2	What is the procedure for the Fletchers Trolley Lab? (7)	4
<b>4</b>	<b>Unit 2 - Fields (30)</b>	<b>4</b>
4.1	Milikans Oil Drop Experiment (10) . . . . .	4
4.1.1	Draw the diagram for this experiment (5) . . . . .	4
4.1.2	What is the significance of this experiment? (5) . . . . .	4
4.2	Electrostatic Forces (10) . . . . .	4
4.3	Electric Field Intensity (10) . . . . .	4
<b>5</b>	<b>Unit 3 - Momentum + Energy (69)</b>	<b>4</b>
5.1	Solve for each of the following (50) . . . . .	4
5.1.1	2D Momentum (10) . . . . .	4
5.1.2	Inelastic Momentum (10) . . . . .	4
5.1.3	Energy with a Spring (10) . . . . .	4
5.1.4	Energy + Momentum (10) . . . . .	4
5.1.5	Impulses (10) . . . . .	4

5.2	Theory (5)	4
5.2.1	Describe how Banked Curves work (3)	4
5.2.2	What are two ways to reduce the force of a collision? (2)	4
5.3	Labs (14)	4
5.3.1	What is the procedure for the 2D Momentum Lab? (7)	4
5.3.2	What is the procedure for the Pith Ball Lab? (7)	4
<b>6</b>	<b>Unit 4 - Light as a Wave</b>	<b>4</b>
6.1	Theory (50)	4
6.1.1	Explain why an interference pattern appears for a single slit (10)	4
6.1.2	Explain why an interference pattern appears for a double slit (10)	4
6.1.3	Draw the intensity diagram for a double and single slit (10)	4
6.1.4	Explain how 3D movies work (10)	4
6.1.5	Briefly elaborate on each of the following: (10)	4
6.2	Labs (10)	5
6.2.1	What is the procedure for the Young's Double Slit Lab (10)	5
6.3	Solve for each of the following (10)	5
6.3.1	Double Slit (5)	5
6.3.2	Single Slit (5)	5
<b>7</b>	<b>Unit 5 - Quantum (20 Bonus Marks)</b>	<b>5</b>
7.1	Theory	5
7.1.1	Describe Wave-Particle Duality (10)	5
7.1.2	Elaborate on one of the following: (10)	5
<b>8</b>	<b>Extra Bonus Marks (20)</b>	<b>5</b>
8.1	Momentum + Energy + Kinematics + Forces #1 (10)	5
8.2	Momentum + Energy + Kinematics + Forces #2 (10)	5

## 1 Information

The exam will be worth 238 marks total.

**The final exam will be on the following topics:**

- Unit 1 - Dynamics and Motion
- Unit 2 - Fields
- Unit 3 - Momentum + Energy
- Unit 4 - Light as a Wave
- Unit 5 - Quantum - Bonus

**The marks will be distributed as follows:**

- Unit 1 - Dynamics and Motion (69)
- Unit 2 - Fields (30)
- Unit 3 - Momentum + Energy (69)
- Unit 4 - Light as a Wave (70)
- Unit 5 - Quantum (20 Bonus Marks)

**Mark Distribution Matrix:**

like the one mrs beamer shows in the examples

## **2 Personal Notes**

make a separate and private git repo for this project  
200 marks total  
4 units total

### 3 Unit 1 - Dynamics and Motion (69)

#### 3.1 Solve for each of the following (50)

##### 3.1.1 Incline Plane (10)

##### 3.1.2 Elevator (10)

##### 3.1.3 Pulleys (10)

##### 3.1.4 SPWNL (10)

##### 3.1.5 Projectile Motion 1 or 2 (10)

#### 3.2 Theory (5)

##### 3.2.1 What are Newton's Three Laws of Motion? (3)

##### 3.2.2 What is the difference between uniform and non-uniform motion? (2)

#### 3.3 Labs (14)

##### 3.3.1 What is the procedure for the Projectile Motion Lab? (7)

##### 3.3.2 What is the procedure for the Fletchers Trolley Lab? (7)

### 4 Unit 2 - Fields (30)

#### 4.1 Milikans Oil Drop Experiment (10)

##### 4.1.1 Draw the diagram for this experiment (5)

##### 4.1.2 What is the significance of this experiment? (5)

#### 4.2 Electrostatic Forces (10)

#### 4.3 Electric Field Intensity (10)

### 5 Unit 3 - Momentum + Energy (69)

#### 5.1 Solve for each of the following (50)

##### 5.1.1 2D Momentum (10)

##### 5.1.2 Inelastic Momentum (10)

##### 5.1.3 Energy with a Spring (10)

##### 5.1.4 Energy + Momentum (10)

##### 5.1.5 Impulses (10)

#### 5.2 Theory (5)

##### 5.2.1 Describe how Banked Curves work (3)

##### 5.2.2 What are two ways to reduce the force of a collision? (2)

#### 5.3 Labs (14)

##### 5.3.1 What is the procedure for the 2D Momentum Lab? (7)

##### 5.3.2 What is the procedure for the Pith Ball Lab? (7)

### 6 Unit 4 - Light as a Wave

2. Polarization
3. Red light vs Green light

## **6.2 Labs (10)**

### **6.2.1 What is the procedure for the Young's Double Slit Lab (10)**

## **6.3 Solve for each of the following (10)**

### **6.3.1 Double Slit (5)**

make it have some sort of trick with  $\Delta x$

### **6.3.2 Single Slit (5)**

make it have a trick with  $\Delta y$

## **7 Unit 5 - Quantum (20 Bonus Marks)**

### **7.1 Theory**

#### **7.1.1 Descibe Wave-Particle Duality (10)**

#### **7.1.2 Elaborate on one of the following: (10)**

1. Schrödinger's Cat
2. Superposition
3. Heisenberg Uncertainty Principle

## **8 Extra Bonus Marks (20)**

### **8.1 Momentum + Energy + Kinematics + Forces #1 (10)**

### **8.2 Momentum + Energy + Kinematics + Forces #2 (10)**