Relational Schema with Integrity Constraints

1. Customer –
   Schema: **customerID**, name (first_name, last_name), address (street, city, state, pincode), phone_no, email, password, dob, age(), gender

customerID	INT AUTO_INCREMENT PRIMARY KEY
first_name	VARCHAR(50) NOT NULL
last_name	VARCHAR(50)
street	VARCHAR(100) NOT NULL
city	VARCHAR(50) NOT NULL
state	VARCHAR(50) NOT NULL
pincode	INT NOT NULL
phone_no	BIGINT UNIQUE NOT NULL
email	VARCHAR(100) UNIQUE NOT NULL
password	VARCHAR(50) NOT NULL
dob	DATE
age	INT
gender	VARCHAR(10)

2. Admin –
   Schema: **adminID**, password

adminID	INT AUTO_INCREMENT PRIMARY KEY
password	VARCHAR(50) NOT NULL

3. ProductCategory –
   Schema: **categoryID**, name, noOfProducts

categoryID	INT AUTO_INCREMENT PRIMARY KEY
name	VARCHAR(50) NOT NULL
noOfProducts	BIGINT NOT NULL DEFAULT 0

4. Product –
   Schema: **productID**, name, price, stock, brand, qty_bought, description, **categoryID** (fk)

productID	INT AUTO_INCREMENT PRIMARY KEY
name	VARCHAR(50) NOT NULL
price	DECIMAL (10,2) NOT NULL
stock	INT NOT NULL DEFAULT 0 CHECK (stock>=0)
brand	VARCHAR(50) NOT NULL
qty_bought	INT NOT NULL DEFAULT 0
description	VARCHAR(200) NOT NULL DEFAULT "A high-quality product."
categoryID (Product "Falls Under" ProductCategory relation)	INT NOT NULL FOREIGN KEY references productCategory(categoryID) ON DELETE CASCADE ON UPDATE CASCADE

5. DeliveryAgent –
Schema: **agentID**, name (first_name, last_name), availabilityStatus, phone_no, email, password

agentID	INT AUTO_INCREMENT PRIMARY KEY
first_name	VARCHAR(50) NOT NULL
last_name	VARCHAR(50)
availabilityStatus	VARCHAR(20) NOT NULL DEFAULT "Offline"
phone_no	BIGINT UNIQUE NOT NULL
email	VARCHAR(100) UNIQUE NOT NULL
password	VARCHAR(50) NOT NULL

6. Store
Schema: **storeID**, address (street, city, state, pin)

storeID	INT AUTO_INCREMENT PRIMARY KEY
street	VARCHAR(100) NOT NULL
city	VARCHAR(50) NOT NULL
state	VARCHAR(50) NOT NULL
pincode	INT NOT NULL

7. Order
   Schema: **orderID**, status,total_price, time, location, **customerID** (fk), **agentID** (fk)

orderID	INT AUTO_INCREMENT PRIMARY KEY
status	VARCHAR(20) NOT NULL DEFAULT "Confirmed"
total_price	DECIMAL (10,2) NOT NULL
time	TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP
location	VARCHAR(255) NOT NULL
customerID (Customer "places" Order relation)	INT NOT NULL FOREIGN KEY references customer(customerID)
agentID (Order "fulfilled by" DeliveryAgent relation)	INT NOT NULL FOREIGN KEY references deliveryAgent(agentID)

Weak Entities :-

1. Wallet
   Schema: customerID (discriminator/partial key), balance, upiID, rewardPoints

customerID (Wallet "Belongs to" Customer identifying relation)	INT NOT NULL FOREIGN KEY references customer(customerID) ON DELETE CASCADE
balance	DECIMAL(10, 2) NOT NULL DEFAULT 0 CHECK (balance>=0)
upiID	VARCHAR(100) NOT NULL
rewardPoints	INT NOT NULL DEFAULT 0

2. Delivery_agent_wallet
   Schema: agentID (discriminator/partial key), earning_balance, earning_paid, earning_total, Transaction_history, upiID

agentID (Agent_Wallet "Belongs to" Agent identifying relation)	INT NOT NULL FOREIGN KEY references deliveryAgent(agentID) ON DELETE CASCADE
earning_balance	DECIMAL(10, 2) NOT NULL DEFAULT 0 CHECK (earning_balance>=0)
earning_paid	DECIMAL(10, 2) NOT NULL DEFAULT 0 CHECK (earning_paid>=0)
earning_total	DECIMAL(10, 2) NOT NULL DEFAULT 0
Transaction_history	VARCHAR(500)
upiID	VARCHAR(100) NOT NULL

3. ProductReview
   Schema: productReviewID (discriminator/partial key), **orderID** (fk) , **customerID** (fk), comment, rating

productReviewID	INT NOT NULL
orderID (Customer "purchases" Product Ternary relation)	INT NOT NULL FOREIGN KEY references order(orderID) ON DELETE CASCADE
customerID (Customer "purchases" Product Ternary relation)	INT NOT NULL FOREIGN KEY references customer(customerID) ON DELETE CASCADE
comment	TEXT
rating	INT DEFAULT 5 CHECK (rating >= 1 AND rating <= 5)

4. DeliveryReview
   Schema: <u>deliveryReviewID</u> (discriminator/partial key), **orderID** (fk) , **agentID** (fk), comment, rating, tip

deliveryReviewID	INT NOT NULL
orderID	INT NOT NULL FOREIGN KEY references order(orderID) ON DELETE CASCADE
agentID (Customer "rates" Delivery Ternary relation)	INT NOT NULL FOREIGN KEY references deliveryAgent(agentID) ON DELETE CASCADE
comment	TEXT
rating	INT DEFAULT 5 CHECK (rating >= 1 AND rating <= 5)
tip	DECIMAL(10, 2) DEFAULT 0

<u>Relations Schema :-</u>

1. AddsToCart - Customer Adds to Cart Product
   Schema: **<u>customerID, productID</u>**, quantity

customerID	INT NOT NULL PRIMARY KEY FOREIGN KEY references customer(customerID) ON DELETE CASCADE
productID	INT NOT NULL PRIMARY KEY FOREIGN KEY references product(productID) ON DELETE CASCADE
quantity	INT NOT NULL DEFAULT 1 CHECK (quantity >= 1)

2. OrderConsistsProduct - Order Consists Of Product
   Schema: **orderID, productID**, quantity

orderID	INT NOT NULL PRIMARY KEY FOREIGN KEY references order(orderID) ON DELETE CASCADE
productID	INT NOT NULL PRIMARY KEY FOREIGN KEY references product(productID) ON DELETE CASCADE
quantity	INT NOT NULL DEFAULT 1 CHECK (quantity >= 1)

3. StoreContainsProduct - Store contains Products
   Schema: **storeID, productID**, quantity

storeID	INT NOT NULL PRIMARY KEY FOREIGN KEY references store(storeID) ON DELETE CASCADE
productID	INT NOT NULL PRIMARY KEY FOREIGN KEY references product(productID) ON DELETE CASCADE
quantity	INT NOT NULL DEFAULT 1 CHECK (quantity >= 1)