



**ELIZADE UNIVERSITY**

**ILARA-MOKIN**

**FACULTY: Basic and Applied Sciences**  
**DEPARTMENT: Physical and Chemical Sciences**  
**FIRST SEMESTER EXAMINATIONS**  
**2018/2019 ACADEMIC SESSION**

**COURSE CODE: PHY 305**

**COURSE TITLE: WORK SHOP PRACTICE II**

**DURATION: 3 HOURS**

A rectangular box containing a handwritten signature in black ink, which appears to be 'Ilara Mokin'.

**HOD's SIGNATURE**

**TOTAL MARKS:**

**Matriculation Number:** \_\_\_\_\_

**INSTRUCTIONS:**

1. Write your matriculation number in the space provided above and also on the cover page of the exam booklet.
2. This question paper consists of 3 pages with printing on all the sides.
3. Answer all questions in the examination booklet provided.
4. More marks are awarded for problem solving method used to solving problems than for the final numerical answer.
5. Box your final answers.
6. **Attempt any 1 of the 2 questions**
- 7.

1(ai). What is a Relay?

(ii) State 5 features to consider when choosing a relay

(iii) List three Advantages and Disadvantages of a Relay

(b). On Proteus software, use the following component to design and simulate a system to detect the room temperature. The system should start up a cooling fan if the room temperature rises to 42°C with indicator. It should also OFF the lighting bulb in the room when the cooling fan starts up. [(i) LM 35 (ii) IC 741 (iii) DC motor (iv) LED (v) Resistors (vi) 5V - 12V power supply, (vii) SPST Switch]

(bi) What is the function of the IC 741?

(bii). State 3 other application of LM 35

2. (a) Mention the two types of 7 segment display component and state their differences.

(b). A student designs a 4-way traffic light for Oja-Oba junction in Akure. During the simulation of the project on Proteus software, it was observed that two indicators were ON at the same time at two different sides of the road. Copy and Debug the code (A to B to C) below for better functioning of the 4 way-traffic light.

A.

```
int r1 = 1;
int y1 = 2;
int g1 = 3;
int r2 = 4;
int y2 = 5;
int g2 = 6;
int r3 = 7;
int y3 = 8;
int g3 = 9;
int r4 = 10;
int y4 = 11;
int g4 = 12;
//Eng; Elizade
void setup() {
pinMode (r1, OUTPUT);
pinMode (y1, OUTPUT);
pinMode (g1, OUTPUT);

pinMode (r2, OUTPUT);
pinMode (y2, OUTPUT);
pinMode (g2, OUTPUT);

pinMode (r3, OUTPUT);
pinMode (y3, OUTPUT);
pinMode (g3, OUTPUT);

pinMode (r4, OUTPUT);
pinMode (y4, OUTPUT);
pinMode (g4, OUTPUT);
}
```

B.

```
digitalWrite(g1, HIGH);
digitalWrite(r2, HIGH);
digitalWrite(r3, HIGH);
digitalWrite(r4, HIGH);
delay(3000);
digitalWrite(g1, LOW);
digitalWrite(r2, LOW);

digitalWrite(y1, HIGH);
digitalWrite(y2, HIGH);
delay(1000);
digitalWrite(y1, LOW);
digitalWrite(y2, LOW);

digitalWrite(r1, HIGH);
digitalWrite(g2, HIGH);
delay(3000);

digitalWrite(g2, LOW);
digitalWrite(r3, LOW);
digitalWrite(r4, LOW);

digitalWrite(y2, HIGH);
digitalWrite(y3, HIGH);
digitalWrite(y4, HIGH);
delay(1000);

digitalWrite(y2, LOW);
digitalWrite(y3, LOW);
digitalWrite(y4, LOW);
```

```
void loop() {
```

C.

```
digitalWrite(r2, HIGH);  
digitalWrite(g3, HIGH);  
digitalWrite(g4, HIGH);  
delay(3000);
```

```
digitalWrite(r1, LOW);  
digitalWrite(g3, LOW);  
digitalWrite(g4, LOW);
```

```
digitalWrite(y1, HIGH);  
digitalWrite(y3, HIGH);  
digitalWrite(y4, HIGH);  
delay(1000);
```

```
digitalWrite(y3, LOW);  
digitalWrite(y4, LOW);
```

```
digitalWrite(r3, HIGH);  
digitalWrite(g4, HIGH);  
delay(3000);
```

```
digitalWrite(r3, LOW);  
digitalWrite(g4, LOW);  
digitalWrite(y1, LOW);  
digitalWrite(g3, HIGH);  
digitalWrite(r1, HIGH);  
digitalWrite(y4, HIGH);  
delay(1000);
```

```
digitalWrite(y1, HIGH);  
digitalWrite(y4, LOW);  
}
```