2014.06.20

**ISTANBUL COMMERCE UNIVERSITY**
**SPRING 2013-2014 / EEE / ELECTROTECHNIC LAB. / FINAL**
**OPEN-ACCESS COPY (29.04.2015)**
**(SOME QUESTIONS WERE CUTTED)**

| Total | |
|---|---|
| Q1 | |
| Q2 | |
| Q3 | |
| Q4 | |
| Q5 | |
| Q6 | |
| Q7 | |

**NAME** : .....

**ID** : .....

**SIGNATURE:** .....

- Put your full name and student ID on every page.
- Read all questions carefully. There should be 4 seperate pages with questions written on them.
- You can start from any question. You can use both sides of the paper to compile your answer.
- You may NOT ask help from proctors.
- Laboratory notes or experiment pages are NOT allowed.
- Talking, or using any device (calculator, mobile phone etc.) are prohibited.
- If you get caught cheating, you will forfeit the entire exam.
- Exam Duration: **… min.**

Good luck!

Res. Asst. Ezgi Yamaç Res. Asst. Ufuk Şanver Assoc. Prof. Taha İmeci

**Q1(10p).** Write value of resistances.

**R1 :** Red + Red + Red + Gold = ……..…….**Ω** ±……%

….

**R10 :** Red+ Red+ Black+ Orange+ Silver = ……**K** ±……%

| **COLOUR** | **VALUE** |
|---|---|
| BLACK | 0 |
| BROWN | 1 |
| RED | 2 |
| ORANGE | 3 |
| YELLOW | 4 |
| GREEN | 5 |
| BLUE | 6 |
| VIOLET | 7 |
| GREY | 8 |
| WHITE | 9 |

| **COLOUR** | **TOLERANCE** |
|---|---|
| BROWN | ±1.00% |
| RED | ±2.00% |
| GREEN | ±0.50% |
| BLUE | ±0.25% |
| VIOLET | ±0.10% |
| GREY | ±0.05% |
| GOLD | ±5.00% |
| SILVER | ±10.00% |

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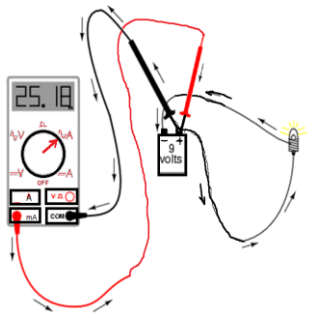
**Q2(20p).** Mark the statements below true (T) or False (F).

- _____*a) Current,*: Denoted by I, measured in Amperes (A).
- _____*b) Resistance ,*: Denoted by R, measured in volts (V ) .

**….**

- _____s) Internal resistance of a voltmeter is very high.
- _____t) An oscilloscope is connected serially to the circuit.

**Q3(4p).** Re-draw the correct shape (for ampermeter).

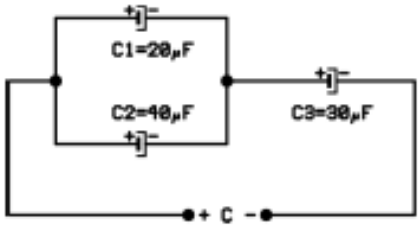


**NAME** : .....

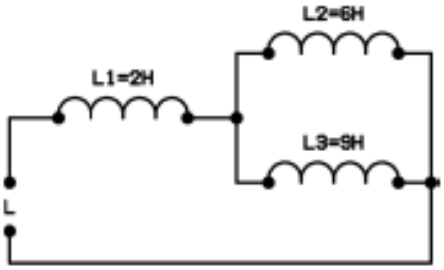
**ID** : .....

**Q4(10p).**

a) Calculate the total capacitance of the circuit shown below.




b) Calculate the total inductance of the circuit shown below.




**Q5(11p).** Use the circuit shown to fill in the table below and connect an ampermeter and a voltmeter into the right position on the circuit to measure voltage and the current of the resistor. (internal resistor of the coil is zero.)


| For each circuit element find | R (1K) | L (1mH) | C (1uF) |
|---|---|---|---|
| **EffectiveCurrent (A)** | | | |
| **Effective Voltage (V)** | | | |
| **Power (W)** | | | |

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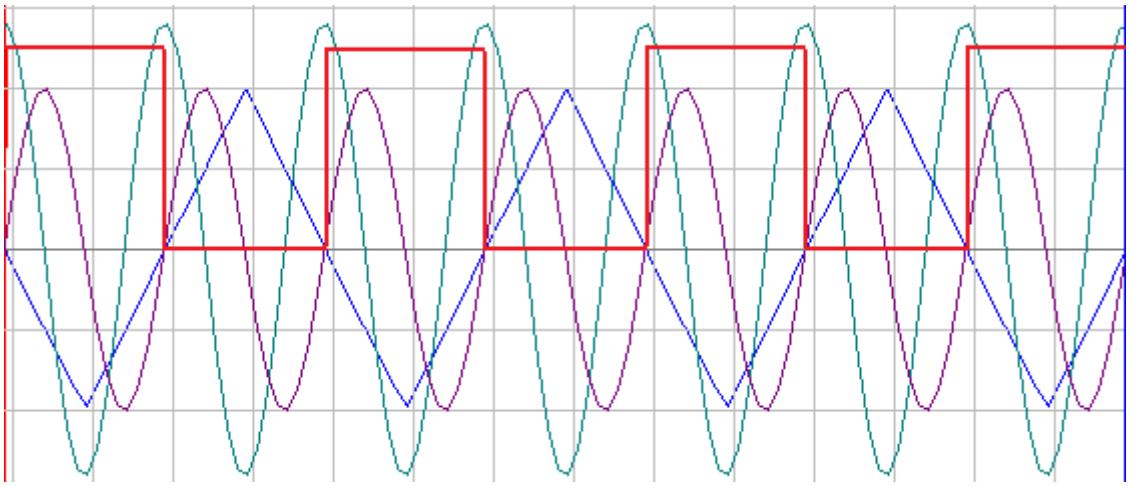
**Q6(40p).** Use the ossiloscope screen shown to fill in the table below.



| | CH**A** | CH**B** | CH**C** | CH**D** |
|---|---|---|---|---|
| **Time/Div:** | 10ms | 5us | 5ms | 5ms |
| **Volts/Div:** | 5V | 10V | 5V | 5V |
| **Signal** | Square Wave | Triangle Wave | Sinusoidal Wave | Sinusoidal Wave |
| f (Hz) | | | | |
| $V_{max}$ (V ) | | | | |
| $V_{min}$ (V ) | | | | |
| $V_{p-p}$ (V ) | | | | |
| $V_{average}$ (V ) | | | | |

**Q7(5p).** Calculate the phase difference between CHC and CHD.