



Measurements and Measuring Devices
Course Code: ECE251
Mid-Term Exam.



BME Program - Level 200
Exam Date: 25-8- 2019
Allowed Time: 2 Hours

Attempt ten questions only. Assume any missed data. Full mark is 50

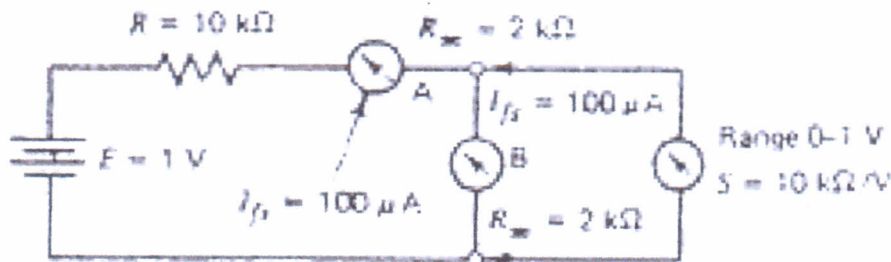
Q.1) State the main measurement standards. Determine the uses of each standard. [5 Marks]

اذكر معايير القياس الرئيسية. وضح أهم استخدامات كل معيار.

Q.2) Using neat sketches, explain the basic operation of D'arsonval meter. How can it be modified to measure unknown current? [5 Marks]

مستعينا بالرسم، وضح نظرية عمل جهاز دي أرسونوفال ذي الملف المتحرك. وضح كيف يمكن تعديله لقياس تيار مجهول

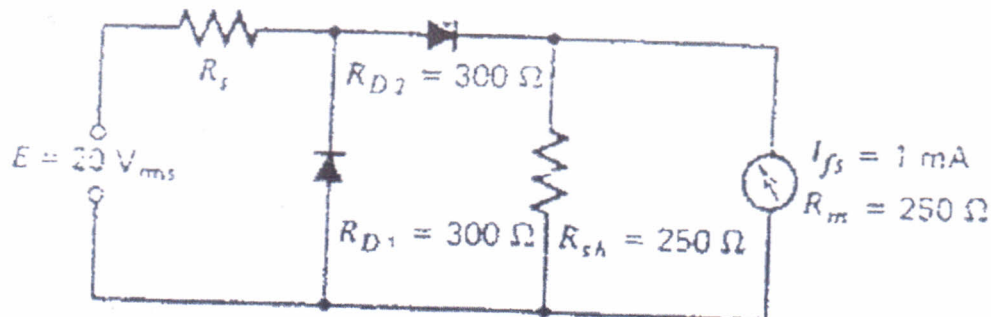
Q.3) Find the readings of meters A and B in the circuit shown below [5 Marks]



Q.4) Using neat sketches and equations, explain the basic construction and operation of the single-phase watt-hour meter. State its main applications. [5 Marks]

مستعينا بالرسم والمعادلات، وضح تركيب وفكرة عمل جهاز قياس الواط- ساعة للوجه الواحد. اذكر أهم استخداماته

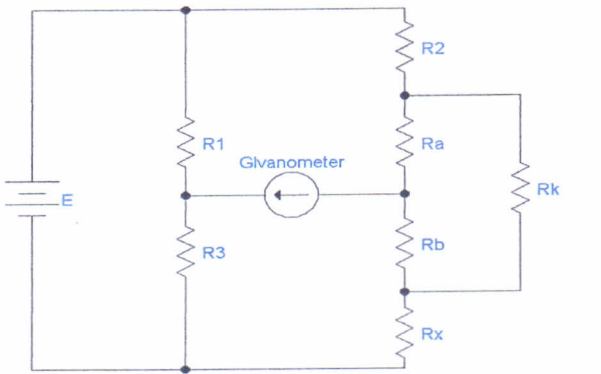
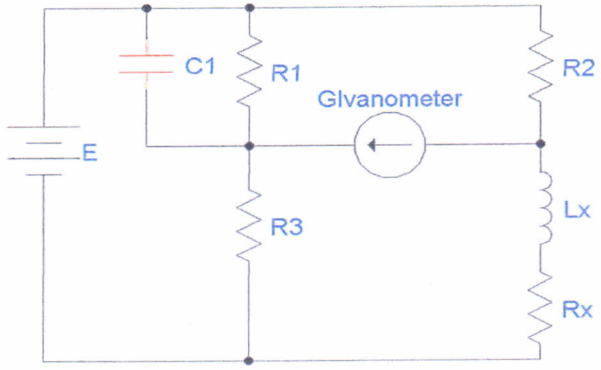
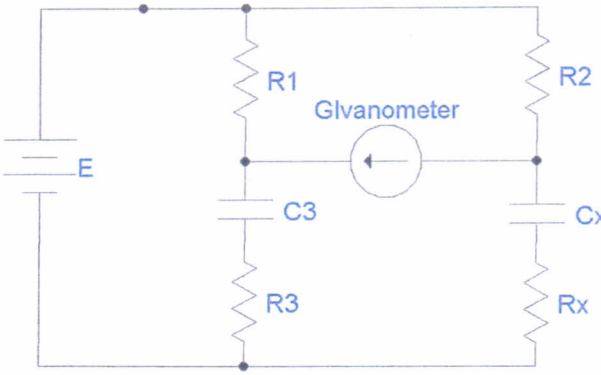
Q.5) Find the ac and dc sensitivities and the value of multiplier resistor required to limit current to full-scale deflection current in the circuit shown below. [5 Marks]



Q.6) Sketch a block diagram to show the main components of oscilloscope. State its main applications [5 Marks]

ارسم شكلا تخطيطيا يوضح الأجزاء الرئيسية لجهاز رؤية الذبذبات. اذكر أهم استخداماته

Q.7) Using neat sketches and equations, explain the basic construction and operation of the Wheatstone Bridge. [5 Marks]

<p>Q.8) For the circuit shown; Calculate the value of R_x if:</p> <p>$R_a = 1200\Omega$</p> <p>$R_a = 1600R_b$</p> <p>$R_1 = 800R_b$</p> <p>$R_1 = 1.25R_2$</p> <p>[5 Marks]</p>	
<p>Q.9) For the circuit shown; Calculate the value of R_x, L_x if:</p> <p>$R_3 = 100\Omega$</p> <p>$C_1 = 1\mu F$</p> <p>$F = 1\text{KHz}$</p> <p>$R_1 = 600\Omega$</p> <p>$R_2 = 1\text{K}\Omega$</p> <p>[5 Marks]</p>	
<p>Q.10) For the circuit shown; Calculate the value of R_x, L_x if:</p> <p>$C_3 = 10\mu F$</p> <p>$F = 1\text{KHz}$</p> <p>$R_1 = 1650\Omega$</p> <p>$R_3 = 15.3\text{K}\Omega$</p> <p>$R_2 = 2.5\text{K}\Omega$</p> <p>[5 Marks]</p>	

Q.11) Using neat sketches, explain the basic construction and operation and the usage of the Strain Gages. [5 Marks]

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Q.12) Using neat sketches, explain the basic construction and operation and the usage of the Capacitive displacement Gages. [5 Marks]

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Best Wishes

Hossam Eldeen Moustafa

Ehab H. Abdelhay