

PhD ELECTRICAL ENGINEERING

1.	<p>A series L-C-R circuit has a resonant frequency <math>f_0</math>, with <math>R = 1\Omega</math>, <math>L = 1\text{ H}</math> and <math>C = 1\text{ F}</math>. If the L-C-R values are tripled, the new resonant frequency will be</p> <p>(a) <math>3f_0</math>                  (b) Unaltered                  (c) <math>f_0/\sqrt{3}</math>                  (d) <math>f_0/3</math></p>	
2.	<p>For the driving point impedance function of a circuit is</p> $Z(s) = \frac{s + \alpha}{s + \beta}$ <p>Where <math>\alpha</math> and <math>\beta</math> are real Then voltage will lead the current if <math>\alpha</math> and <math>\beta</math> are</p> <p>(a) Positive and <math>\alpha &gt; \beta</math>                  (b) positive and <math>\alpha &lt; \beta</math>                  (c) Positive and real negative, respectively                  (d) negative and real positive, respectively</p>	
3.	<p>If a voltage waveform connected to an R-L circuit is switched on at an angle <math>\alpha</math> and <math>\theta</math> is the impedance angle of the R-L circuit, there will be no transient when</p> <p>(a) <math>\alpha = \theta</math>                  (b) <math>\alpha = 90 - \theta</math>                  (c) <math>\alpha = 90 + \theta</math>                  (d) None of the above.</p>	
4.	<p>When maximum power is transferred from a voltage source to a load then the efficiency of the system will be</p> <p>(a) 50%                  (b) 80%                  (c) 20%                  (d) 100%</p>	
5.	<p>A 100 W bulb is connected in series with a room heater of 750 W. If the bulb is replaced by a 60W bulb then</p> <p>(a) Heater output will increase                  (b) Heater output will decrease                  (c) Heater output will remain unchanged                  (d) Bulb will not glow.</p>	
6.	<p>Two equal resistors R connected in series across a voltage source V dissipate total power P. What would be the total power dissipated in the same resistors when they are connected in parallel across the same voltage source ?</p> <p>A. 4P                  B. P                  C. 2P                  D. 16P</p>	