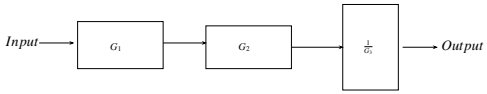
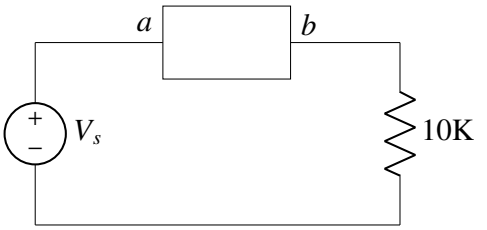
2009-EE-1-12

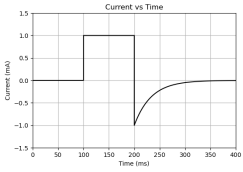
EE24BTECH11035 - KOTHAPALLI AKHIL

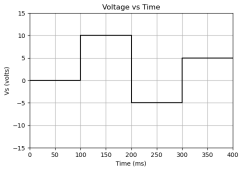
1) The pressure coil of a dynamometer type wattmeter is
   a) highly inductive
   b) highly resistive
   c) purely resistive
   d) purely inductive
2) The measurement system shown in the figure uses three sub-systems in cascade whose gains are specified as G_1, G_2, and $\frac{1}{G_3}$. The relative small errors associated with each respective subsystem G_1, G_2, and G_3 are ϵ_1, ϵ_2, and ϵ_3. The error associated with the output is:

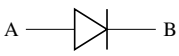


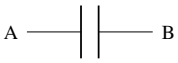
   a) $\epsilon_1 + \epsilon_2 + \frac{1}{\epsilon_3}$
   b) $\frac{\epsilon_1 \cdot \epsilon_2}{\epsilon_3}$
   c) $\epsilon_1 + \epsilon_2 - \epsilon_3$
   d) $\epsilon_1 + \epsilon_2 + \epsilon_3$
3) The following circuit has a source voltage V_s as shown in the graph. The current through the circuit is also shown. The element connected between a and b could be:



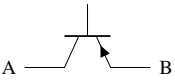




   a) 

b) 

c) 

d) 

4) The two inputs of a CRO are fed with two stationary periodic signals. In the X-Y mode, the screen shows a figure which changes from ellipse to circle and back to ellipse with its major axis changing orientation slowly and repeatedly. The following inference can be made from this:
   a) The signals are not sinusoidal
   b) The amplitudes of the signals are very close but not equal
   c) The signals are sinusoidal with their frequencies very close but not equal
   d) There is a constant but small phase difference between the signals

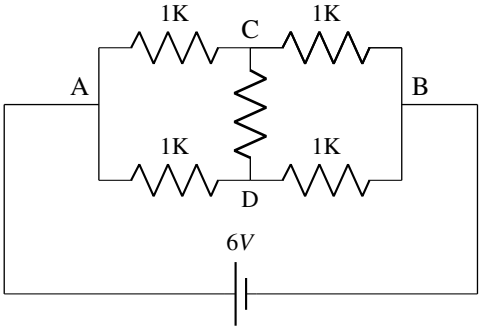
5) The increasing order of speed of data access for the following devices is:
   (i) Cache Memory
   (ii) CDROM
   (iii) Dynamic RAM
   (iv) Processor Registers
   (v) Magnetic Tape

   a) (v), (ii), (iii), (iv), (i)
   b) (v), (iii), (ii), (i), (iv)
   c) (ii), (i), (iii), (iv), (v)
   d) (v), (iv), (i), (iii), (ii)

6) A field excitation of 20 A in a certain alternator results in an armature current of 400 A in short circuit and a terminal voltage of 2000 V on open circuit. The magnitude of the internal voltage drop within the machine at a load current of 200 A is:
   a) 1 V
   b) 10 V
   c) 100 V
   d) 1000 V

7) The current through the 2 kΩ resistance in the circuit shown is:
   a) 0 mA
   b) 1 mA
   c) 2 mA
   d) 6 mA

8) Out of the following plant categories, the base load power plants are:
   (i) Nuclear
   (ii) Run-of-river
   (iii) Pump Storage
   (iv) Diesel



a) (i) and (ii)
b) (ii) and (iii)
c) (i), (ii) and (iv)
d) (i), (iii) and (iv)

9) For a fixed value of complex power flow in a transmission line having a sending end voltage V, the real power loss will be proportional to:

a) V
b) V^2
c) $\frac{1}{V^2}$
d) $\frac{1}{V}$

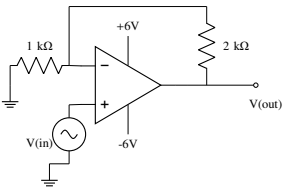
10) How many 200W/220V incandescent lamps connected in series would consume the same total power as a single 100W/220V incandescent lamp?

a) not possible
b) 4
c) 3
d) 2

11) A Linear Time Invariant system with an impulse response $h(t)$ produces output $y(t)$ when input $x(t)$ is applied. When the input $x(t-\tau)$ is applied to a system with impulse response $h(t-\tau)$, the output will be

a) $y(t)$
b) $y(2(t-\tau))$
c) $y(t-\tau)$
d) $y(t-2\tau)$

12) The nature of feedback in the opamp circuit shown is



a) Current - Current feedback
b) Voltage - Voltage feedback
c) Current - Voltage feedback
d) Voltage - Current feedback