Enroll. No._____

MARWADI UNIVERSITY

Faculty of Technology

Department of Electronics and Communication

B.E. SEM: 1st **UNIT TEST: I** **MONTH: September, 2017**

Subject: - (Basics of Electronics Engineering) (01EC0101) **Date:- 29/09/2017**

Total Marks:-30 **Time: - 1 hour 30 Minutes**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question-1 Identify given statement is TRUE or FALSE. In case of FALSE statement write correct statement. **[4]**

1. Reverse bias current of PN junction diode is observed in mille ampere range. **[1]**

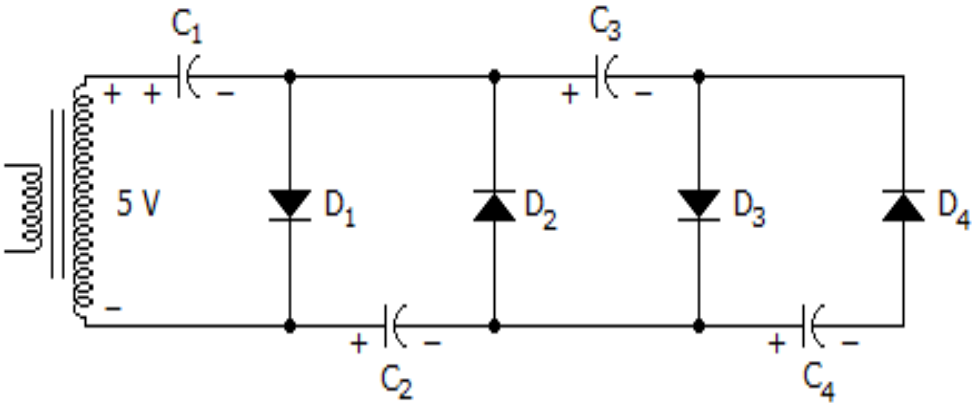
2. Output frequency of full wave rectifier is 100Hz for the given input frequency 50Hz. **[1]**

3. By changing Time/div in CRO, one can change frequency of the signal. **[1]**

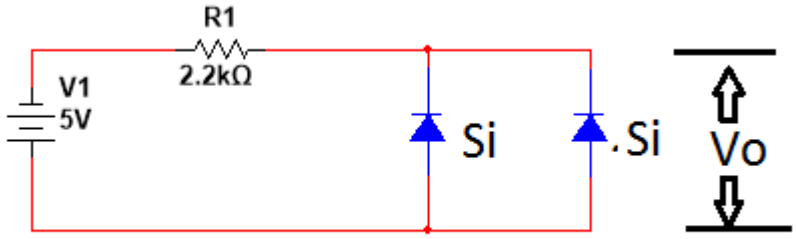
4. A p-type semiconductor material is doped with donor impurities whereas a n-type semiconductor material is doped with acceptor impurities **[1]**

Question-2 Attempt any **FIVE** from given **SIX** question **[10]**

1. What is the voltage measured from the negative terminal of C_4 with reference to the negative terminal of the transformer? **[2]**



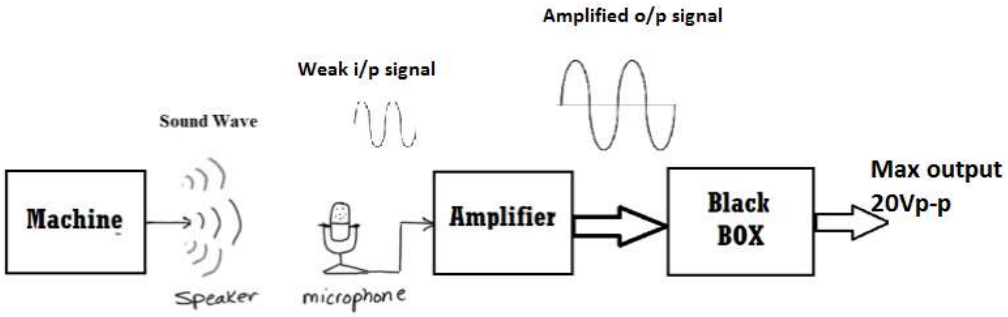
2. What will be the output voltage of the given circuit? **[2]**



3. Justify. Capacitor can be used to reduce the ripple in rectifier output. **[2]**

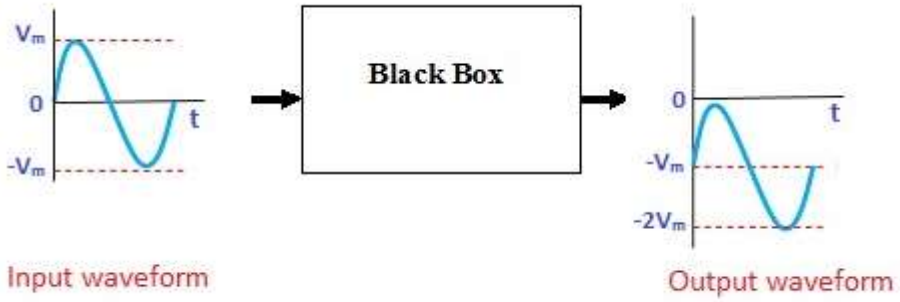
A person is working in a factory. His ears are very sensitive to external noise. He was feeling irritation while listening sound above certain range. During his consult with ENT doctor, he is advised to use a hearing device to restrict sound up to maximum 20Vpp. He got a readymade assembly of electrical circuit as shown in figure to convert sound wave in to electrical signal. Your task is to design a circuit for Black box to limits level of signal as per doctor's advice.

4. **[2]**



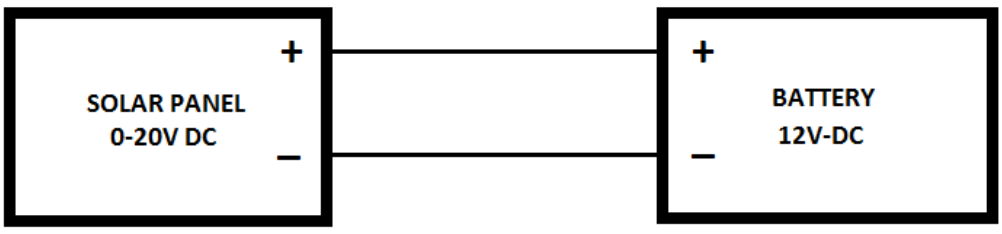
Design a circuit for Black box.

5. **[2]**



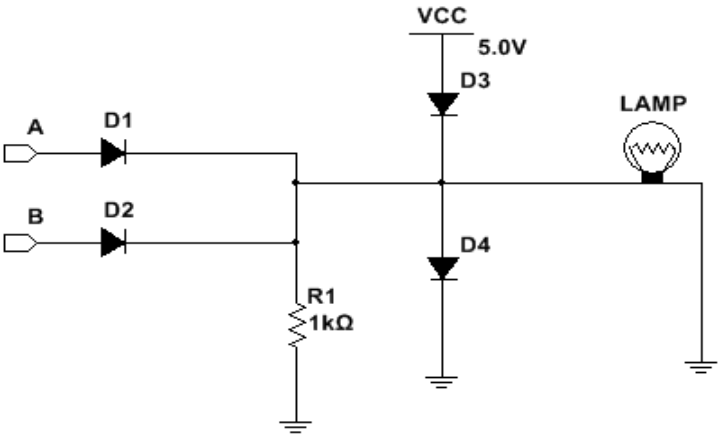
In domestic solar powered battery charger, Solar panel generating 0V to 20V based on dark to maximum solar illumination and battery is 12V rated. If the back current flow from battery to solar panel it can damage the solar cell.
Suggest the required component to put in the circuit to eliminate possibilities of back current flow from battery to solar panel. Redraw new concept with additional component.

6. **[2]**



Question-3 Attempt any **FOUR** from given **SIX** question **[16]**

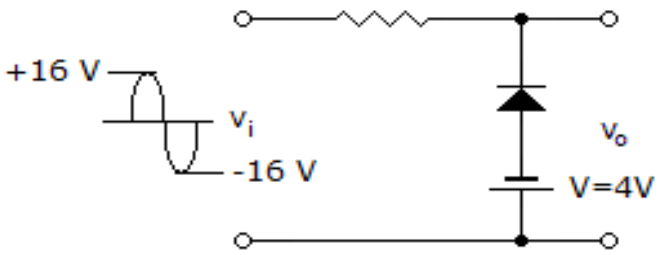
1 Fill output values in **0V/5V** in below table **(Consider diode as a ideal and the lamp will glow with 5v and off with 0V)** **[4]**



A	B	LAMP
0V	0V	
0V	+5V	
+5V	0V	
+5V	+5V	

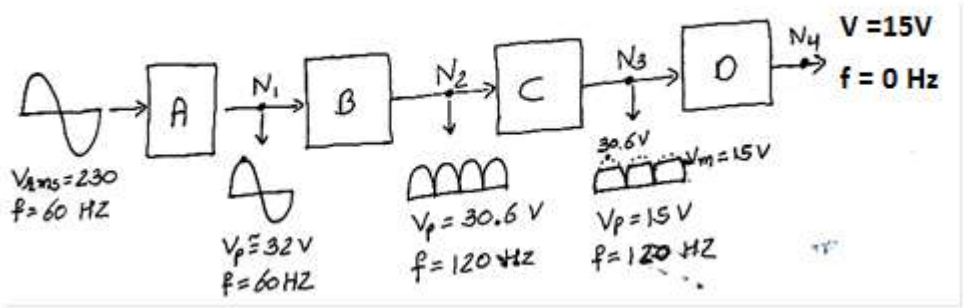
Determine the peak voltage for both half cycles of the output waveform.

2 **[4]**

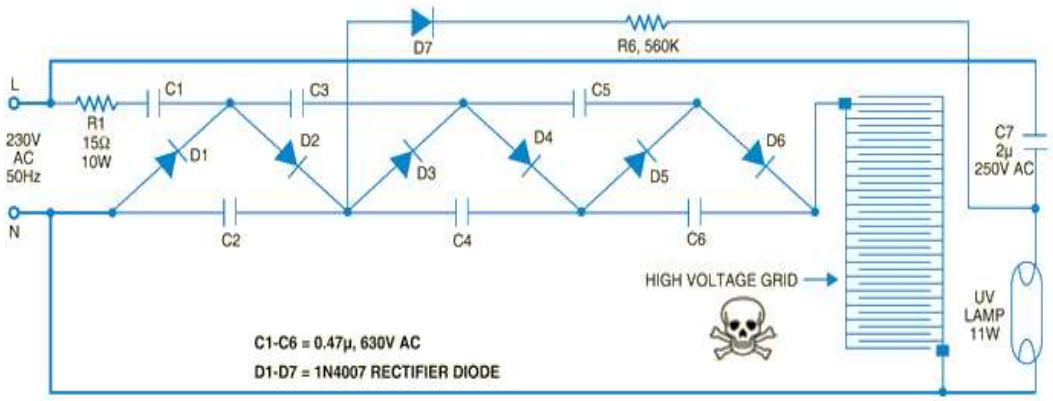


Identify name of required components/circuits to generate mention waveforms at each node.

3 **[4]**

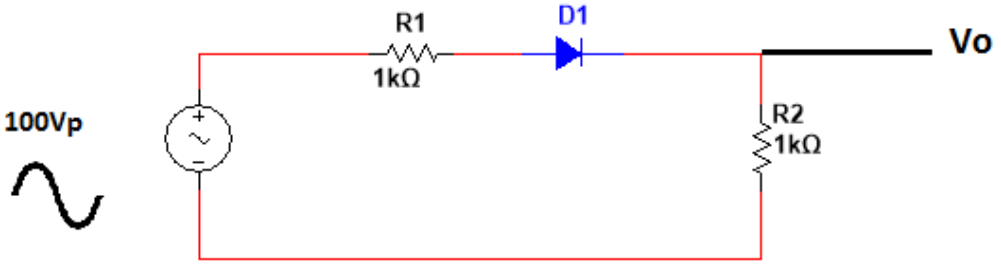


4 To kill flying insects, they should first be attracted and then kill by electric shock. Below given circuit is one such device with a high-voltage kill by electric shock circuit and an insect-attracting UV lamp of 365 nm wave-length. When an insect comes close enough to the mesh pair, an electrical arc is formed, the dielectric breaks down and current flows through the insect's body. The grid is charged with almost 1940V. Analyze the circuit to show how 230V ac is converted in to required 1940V. **[4]**



Calculate output peak and dc voltage for the given circuit. Table represents type of diode with its PIV rating. Select diode from the given table which can be select to work for the given circuit. Diode D1 is made up of silicon.

5



[4]

Sr. No.	Diode type	PIV	Material
1	A	60	Si
2	B	50	Si
3	C	80	Si
4	D	120	Si
5	E	30	Si

6 Write eight fundamental learnings (concepts) learnt during lab/lecture sessions of Basics of Electronics Engineering. **[4]**

Bloom'S Taxonomy Report –

Sub: (Basics of Electronics Engineering) (01EC0101)
Sem.: 2nd
Branch: Department of Electronics and Communication

Que. Paper weightage as per Bloom's Taxonomy

LEVEL	Question No.	Marks of Question	% of weightage
Remember/Knowledge	Q-1(4)	1	2.5
Understand	Q-3(6)	4	10
Apply	Q-1(3)	1	2.5
Analyze	Q-1 (1)(1), Q-2(1)(2)(3), Q-3(1)(2)(3)(4)(5)	1,1 2,2,2 4,4,4,4,4 Total =28	70
Evaluate	Q-2(4)	2	5
Creative	Q-2(5)(6)	2,2 =4	10