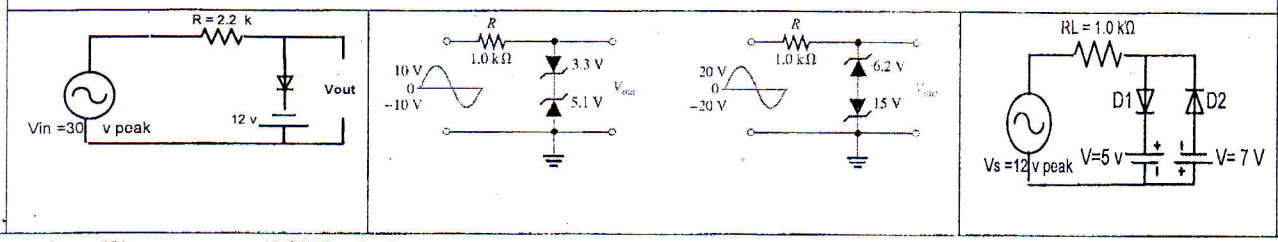
Menoufiya University
Faculty of Engineering
Shebin El-Kom
Final Exam
Academic Year: 2017-2018

Department: Electrical Engineering.
Year: Frist year.
Subject/Code: Electronics / ELE 121
Time Allowed: 3 hours
Date: 20/5/2018

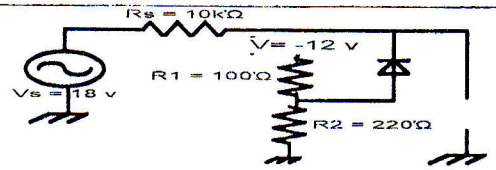
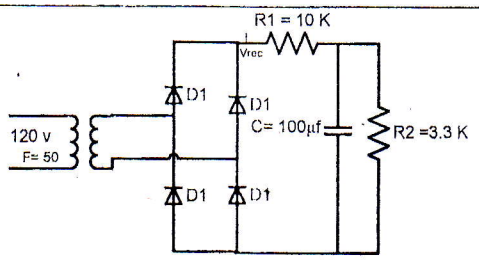
Remarks: No. of pages: 2 No. of questions: 7 Allowed Tables and Charts: *(None)*

Answer the following Questions (assume any required data)

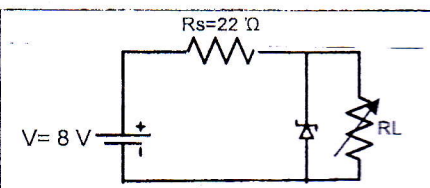
Question (1) *(20Marks)* Marks

(a)	Sketch the V-I curve of silicon diode and discus the equivalent circuit of diode in ideal, practical and complete operation cases.	[8]
(b)	Sketch the output voltage of each circuit shown in fig 	[12]

Question (2) (20Marks) Marks

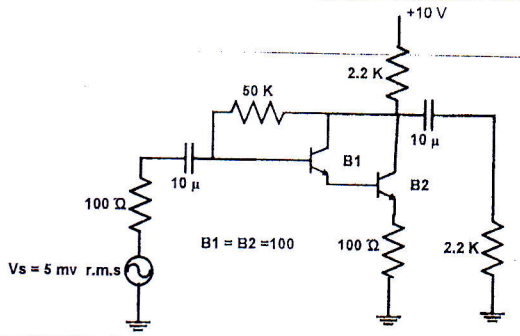
(a)	Sketch the output voltage of the voltage divider shown in fig.		[5]
(b)	Referring to fig. sketch the rectifier output voltage the load terminal voltage , load current , diode 3 current and V_{AK} of diode 2 (without capacitor) if the transformer output is 36 v (r.m.s). assume practical diode model. - Calculate the ripple factor if the capacitor connected.		[10]
(c)	Discuss the principle of operation of half wave and full wave voltage doubler		[5]

Question (3) *(20Marks)* Marks

[a]	Explain how to connect the seven segment display (common anode) to display number (5) where the maximum continuous forward current for each LED is 30 ma and a +5 volt dc source is to be used		[8]
[b]	A loaded Zener regulator is shown in fig. 6, $V_Z = 5.1$ v, at $I_Z = 49$ ma, $I_{ZK} = 1$ ma, $Z_Z = 7$ Ω and $I_{Zm} = 70$ ma. Determine the minimum and maximum possible load.		[12]

Question (4) *(15Marks)* **Marks**

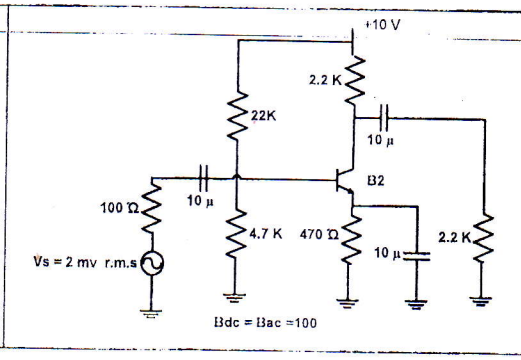
[a] **For the gain transistor circuit in fig., Draw the DC equivalent circuit, then calculate:**
1-DC transistor currents I_B, I_C and I_E
2- DC transistor voltages V_E, V_B and V_C
3- Collector saturation current $I_{C\,Sat}$
4- Collector –Emitter Cut off voltage
5- Centered operating point parameters



[15]

Question (5) *(15Marks)* **Marks**

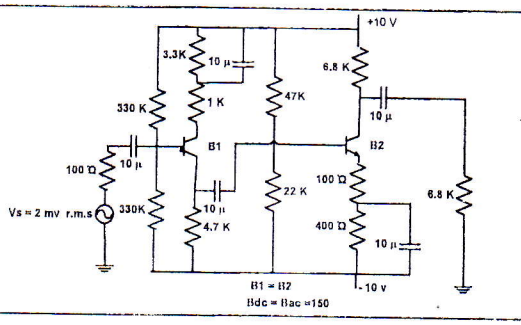
[a] **The figure shows a small-signal amplifier, drive the mathematical expression for medium frequency:**
1- Voltage gain, current gain "overall".
2- Input and output impedances.
3- Calculate A_V, A_I , Z_{in} and Z_O
4- Calculate the center frequency between medium and high frequency "f_2" C_{Jout} = 10 nF
5- Calculate the amplifier constant.



[15]

Question (6) *(18Marks)* **Marks**

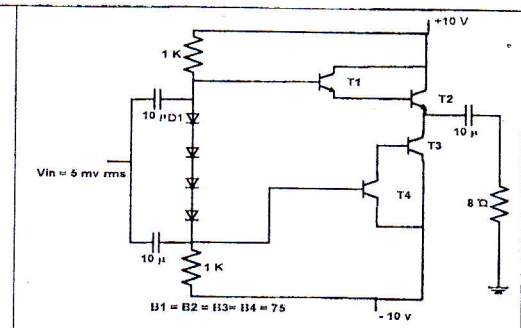
[a] **For the given multistage amplifier:**
- **Draw the complete AC equivalent circuit.**
- **Draw the medium frequency equivalent circuit .**
- **Calculate $A_{V\,mid}$, Z_{in} , and $Z_{o\,mid}$**



[18]

Question (7) *(12Marks)* **Marks**

[a] **Figure shows a push-pull large signal amplifier with Darlington transistor. Explain its function of operation, then :**
- **Calculate the amplifier input DC power**
- **Calculate the amplifier output AC power**
- **Calculate the amplifier efficiency.**



[12]

Field	National Academic Reference Standard(NARS)								
	Knowledge & Understanding				Intellectual Skills	Professional Skills			General Skills
Course ILOs	a-4-1	a-8-1	a-8-2	a-19-1	b-2-1	c-13-1	c-13-2	c-17-1	-----
Question No.	1(a), 3(b), 7	1(b), 3(a), 5(a),	1(b), 2(a,b), 4(a,b),	2(a), 3(a),	3(a), 6	1(b), 2(a), 5(b),	3(b,), 5(a,),	2(a), 3(a), 4(b), 7	------

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