



Remarks: No. of pages: 2 No. of questions: 4 Allowed Tables and Charts: (None)  
 Assume any required data

Answer the following Questions [100Mark] ( 100 درجة ) أجب عن الأسئلة التالية

Question (1)	(25Marks)	Marks
[a]	Write the tests must be used to check controlled switches power electronic circuits?	[10]
[b]	The thyristor in fig. (1), is used to control power delivered to the load, supply voltage is DC source with 300 V, maximum allowable $di/dt$ and $dv/dt$ for thristor are 60 a/ $\mu$ sec and 250 v/ $\mu$ sec respectively. D etermine the values of the inductor and snubber circuit components $R_s$ and $C_s$ .	[15]

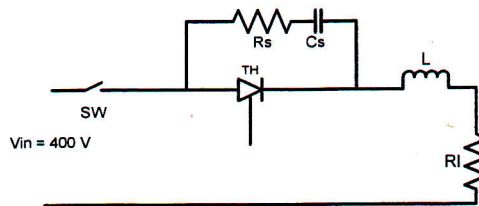


Fig.1

Question (2)	(25Marks)	Marks
[a]	Explain the principle of operation of three-phase inverter fed a resistive load from DC supply then sketch the output voltage in $120^\circ$ mode of operation.	[10]
[b]	A dc transmission line operating at 150 KV carries a current of 400 A. Calculate the approximate value of the following: - The AC line voltage at each converter station. - The AC line current -The active power absorbed by the rectifier - the reactive power absorbed by each converter. Assume the rectifier firing angle $\alpha$ is $25^\circ$ and Advance angle of The inverter $\beta$ is $35^\circ$ ( take six pulse converter and $E_d = 1.35 E_1 \cos \alpha$ )	[20]

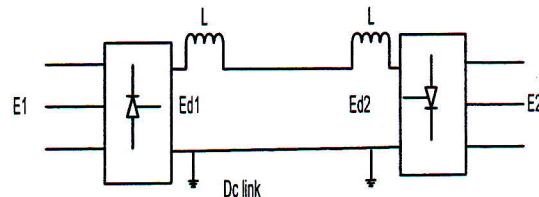


Fig. 2

Question (3)	(25Marks)	Marks
[a]	Explain the principle of operation of cyclo-converter to control the output frequency to one-third of input frequency?	[5]
[b]	Show the mode of operation of cyclo converter shown in Fig. 3	[20]

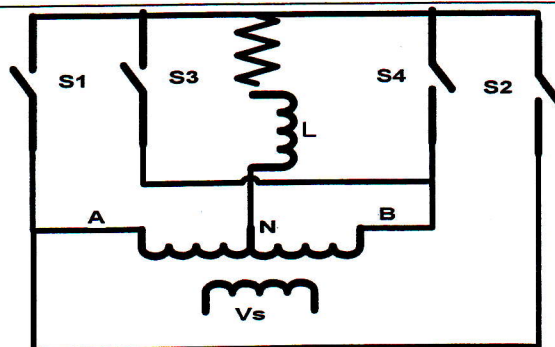
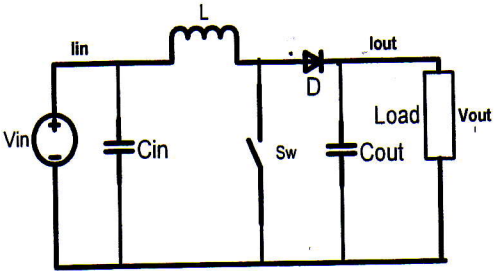


Fig. 3 cyclo converter circuit

**Question (4)**

**(25Marks)**

**Marks**

[a]	Discuss the effect of voltage fluctuation on the Dc link system performance ?	[5]
[b]	<p>Design a boost converter shown in fig.4, with input Voltage 12v to produce output constant Voltage 30V and output load current 1.5 amp. which use in design of Solar energy home applications .</p> <p>If the switching frequency is 200 Kh , ripple current at Load terminals is 200 m.amp, and the supply terminals is 500 m.amp. consider the voltage ripple at load terminals is 500 mV, and at the input terminals is 200 mv. Estimate inductance , capacitances value, then choose switches used. Then find the system efficiency.</p>	 <p>Fig.4</p>

انتهت الأسئلة مع أطيب الأمنيات بالتوفيق

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)	1(b), 3(a), 4(a),	1(b), 2(a,b), 4(a,b),	2(a), 3(a),	3(a),	1(b), 2(a)	3(b),	2(a), 3(a), 4(b),	-----

أ.د / عوض السبيع  
واللجنة