

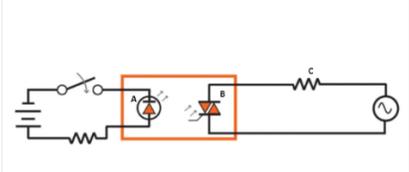
B.E. SEMESTER VIII (CBCGS-H) ELECTRONICS ENGINEERING
DEPARTMENT LEVEL OPETIONAL COURSE – IV: ADVANCED POWER ELECTRONICS
(SUBJECT CODE: ELX DLO8041)

SAMPLE QUESTION PAPER

Q. No.	Objective Questions	Marks
1	Relate in a 1-Ph full converter, the output voltage during overlap is equal to – a. Average voltage b. Source voltage c. Zero d. Infinite	1
2	The firing angle of SCR is also called as ----- . Interpret the correct angle. a. Base angle b. Overlap angle c. Triggering angle d. No angle	1
3	Identify in a single phase full converter, the number of SCRs conducting during overlap is – a. 1 b. 4 c. 6 d. 8	1
4	Find the line voltage V _{YR} when only T ₃ and T ₄ are conducting? Consider a star connected balanced R load. Select appropriate voltage. a. V _s /2 b. –V _s c. V _s d. -2V _s	1
5	What is the R phase voltage when only T ₁ and T ₂ are conducting from 60° to 120°? Consider star connected R load. a. V _s b. –V _s /2 c. V _s /2 d. 2V _s	1
6	Predict the value of slip at standstill condition – a. Infinite b. 0 c. 1 d. 2	1
7	In which of the following reason induction motor operation is stable? a. High slip region b. Low Slip region c. Medium slip region d. Average slip region	1
8	----- Is used for heating non-conducting materials. Relate the following term mentioned below. a. Induction heating b. Dielectric heating c. Arc heating d. Induction and Arc heating	1
9	The switch that has the fastest speed of operation is ----- switch. Identify the correct switch. a. Electronic b. Mechanical c. Electromechanical	1

	d. Electrical	
10	Inductor and Capacitor in Buck converter are used to _____. Identify the correct function. a. Filter out the harmonics b. Increase the harmonics c. Increase the cost d. Decrease the cost	1
Short Questions		
1	A 3-pulse thyristor converter is connected to 415V, 3-ph, 50 HZ, AC supply. Solve to get the average DC voltage for $\alpha = \pi/6$ a. Vdc = 150V b. 180V c. 242V d. 380V	2
2	A 3-ph, Fullwave fully controlled bridge converter is supplied from a 3-ph, 415V, 50 Hz, supply through a 3-ph transformer with delta connected Primary and star connected secondary. The primary to secondary turn ratio is 3:1. Solve for the average output dc voltage having firing angle $\alpha = \pi/4$. a. 220.05V b. 320.05V c. 420.05V d. 520.05V	2
3	A 3-ph, half controlled converter supplied from 400 V, 3-ph, 50 Hz supply. The firing angle is adjusted to $(\pi/3)$ radian, load is highly inductive, so that load current is continuous. Load resistance is 5 Ω . Solve to calculate Vmph. a. Vmph = 200.6V b. Vmph = 220.6V c. Vmph = 326.6V d. Vmph = 250.6V	2
4	A 3-ph, half controlled converter supplied from 400 V, 3-ph, 50 Hz supply. The firing angle is adjusted to $(\pi/3)$ radian, load is highly inductive, so that load current is continuous. Load resistance is 5 Ω . Solve to get O/P dc voltage (Vdc). a. Vdc = 125V b. Vdc = 135V c. Vdc = 145V d. Vdc = 155V	2
5	A 3-ph, half controlled converter supplied from 400 V, 3-ph, 50 Hz supply. The firing angle is adjusted to $(\pi/3)$ radian, load is highly inductive, so that load current is continuous. Load resistance is 5 Ω . Solve to get O/P dc load current (Idc) a. Idc = 12.5A b. Idc = 27 A c. Idc = 14.5A d. Idc = 15.5A	2
6	A 3-ph, bridge inverter delivers power to a resistive load from a 450V dc source. For a star-connected load of 15 Ω per phase, calculate RMS value of load current for 180 ⁰ mode. a. Ior = 14.14A b. Ior = 24.151A c. Ior = 34.15A d. Ior = 44.371A	2
7	A 3-ph, bridge inverter delivers power to a resistive load from a 450V dc source. For a star-connected load of 15 Ω per phase, calculate RMS value of thyristor current for 180 ⁰ mode. a. IT1 = 20A b. IT1 = 10A c. IT1 = 30A d. IT1 = 35A	2

8	<p>A 3-ph, bridge inverter delivers power to a resistive load from a 450V dc source. For a star-connected load of 15Ω per phase, calculate Load power for 180° mode.</p> <p>a. PL = 14.99kW b. PL = 10.99kW c. PL = 5.99kW d. PL = 15.99kW</p>	2
9	<p>In 120-degree mode operation each SCR remain on for ----</p> <p>a. 120-degree b. 150-degree c. 160-degree d. 180-degree</p>	2
10	<p>In 3-ph 120-degree mode operation of VSI, line to neutral voltage at step 4 is –</p> <p>a. $V_{ao} = -1/2V_s$; $V_{bo} = -1/2 V_s$; $V_{co} = 0$ b. $V_{ao} = -1/2 V_s$; $V_{bo} = 1/2V_s$; $V_{co} = 0$ c. $V_{ao} = 1/2V_s$; $V_{bo} = 1/2 V_s$; $V_{co} = 0$ d. $V_{ao} = -1/2V_s$; $V_{bo} = -1/2 V_s$; $V_{co} = 0$</p>	2
11	<p>In induction motor drive, rotor of SCIM is made of ----- bars short-circuited by two end rings.</p> <p>a. Copper or aluminum b. Copper or silicon c. Copper or steel d. Copper or Iron</p>	2
12	<p>In stator frequency control, the rotor current is given by -</p> <p>a. $I_2 = \frac{V_1}{\left[\left(\frac{r_2}{s} \right)^2 + (x_1 + x_2)^2 \right]^{\frac{1}{2}}}$</p> <p>b. $I_2 = \frac{V_1}{\left[\left(\frac{r_2}{s} \right)^2 - (x_1 + x_2)^2 \right]^{\frac{1}{2}}}$</p> <p>c. $I_2 = \frac{V_1}{\left[\left(\frac{r_2}{s} \right)^2 + (x_1 - x_2)^2 \right]^{\frac{1}{2}}}$</p> <p>d. $I_2 = - \frac{V_1}{\left[\left(\frac{r_2}{s} \right)^2 + (x_1 + x_2)^2 \right]^{\frac{1}{2}}}$</p>	2
13	<p>The Slip – power recover schemes has high _____.</p> <p>a. Efficiency b. Speed c. Slip d. Accuracy</p>	2

14	<p>In 3-ph IM, two important slip -power recover schemes are _____ and _____.</p> <ol style="list-style-type: none"> Static Kramer Drive, Static Scherbius Drive Dynamic Kramer Drive, Dynamic Scherbius Drive Static Kramer Drive, Dynamic Scherbius Drive Dynamic Kramer Drive, Static Scherbius Drive 	2
15	<p>Identify the names of different parts of solid state relay:</p>  <ol style="list-style-type: none"> A-Diode; B-SCR; C-Resistor A-LED; B-opt coupler; C-Load A-SCR; B-Diode; C-Resistor A-LED; B-SCR; C-Load 	2
16	<p>What is the R phase voltage and Y phase voltage when only T3 and T4 are conducting? Consider a star connected balanced R load.</p> <ol style="list-style-type: none"> $-V_s/2, V_s/2$ $V_s/2, -V_s/2$ $V_s*2, -V_s/2$ $V_s/2, -V_s*2$ <p>Ans: a</p>	2
17	<p>In DC solid state relay, when control pulse V_c is ----- Transistor gets off and load voltage is -----</p> <ol style="list-style-type: none"> Absent, zero Present, one Partially present, one Weak, One 	2
18	<p>In AC solid state relay, the function of resistor is –</p> <ol style="list-style-type: none"> To limit the flow of gate current of diode. To increases the flow of gate current of Triac To limit the flow of gate current of Diac To limit the flow of gate current of Triac 	2
19	<p>Buck-Boost acts as Boost converter for duty cycle is equal to _____. Relate the correct angle.</p> <ol style="list-style-type: none"> 0.3 0.1 0.8 0.5 	2
20	<p>The PWM control of DC motor varies ----- . Select appropriate working.</p> <ol style="list-style-type: none"> linearly with speed inversely with speed None of above Normally with speed 	2