KADI SARVA VISHVAVIDYALAYA

B.E. SEMESTER VII EXAMINATION (November 2016)

SUBJECT CODE: EE-705-A **SUBJECT NAME: Advanced Power Electronics - I**

DATE: 18/11/16 **TIME:** 10:30 to 1:30 **TOTAL MARKS:** 70

Instructions:

1. Answer each section in separate answer sheets
2. Use of scientific Calculator is permitted
3. All questions are compulsory
4. Indicate clearly the options you attempted along with the respective question number.
5. Use the last page of your supplementary for rough work

Section – I

Q-1	**Answer the following questions**	
A	Explain L type ZCS resonant inverter with neat circuit diagram and waveform.	**5**
B	Explain MOSFET gate drive circuit diagram with appropriate waveform.	**5**
C	Explain R-C triggering Circuit for SCR with appropriate waveform.	**5**
	OR	
Q-1C	Clarify zero current phenomena in ZCS converter.	**5**
Q-2	**Answer the following questions**	
A	Explain design of high frequency transformer. Discuss on the core and material.	**5**
B	Explain M type ZCS resonant inverter with neat circuit diagram and waveform.	**5**
	OR	
Q-2A	Explain working and advantages of Opto-isolator in triggering circuit	**5**
B	Explain parallel resonant inverter circuit with necessary wave form.	**5**
Q-3	**Answer the following questions**	
A	Explain the zero voltage switched half bridge multi-resonant converter.	**5**
B	Explain the working of a fly-back converter with circuit diagram and waveforms.	**5**
	OR	
Q-3A	Explain BJT base drive circuit diagram with appropriate waveform.	**5**
B	Explain series resonant inverter circuit with wave form.	**5**

Section – II

Q-4	**Answer the following questions**	
A	Explain the working of a Forward converter with a neat circuit diagram and waveforms.	**5**
B	Explain the working of a Push- Pull converter with a neat circuit diagram and waveforms.	**5**
C	Write a short note on Switch Mode power supply.	**5**
	OR	
Q-4C	Explain comparison between ZCS & ZVS.	**5**
Q-5	**Answer the following questions**	
A	Explain the working of a full bridge converter with a neat circuit diagram and waveforms.	**5**
B	Explain the working of a Bidirectional AC Power Supplies with a neat circuit diagram and waveforms.	**5**
	OR	
Q-5A	Explain magnetic saturation in high frequency inductor design.	**5**
B	Explain difference between linear voltage regulator and switch mode power supply.	**5**
Q-6	**Answer the following questions**	
A	Explain the working of a half bridge converter with a neat circuit diagram and waveforms.	**5**
B	Explain the specification of power supplies.	**5**
	OR	
Q-6A	Write a short note on resonant power supply.	**5**
B	Explain R triggering Circuit for SCR with appropriate waveform.	**5**

**********ALL THE BEST**********

KADI SARVA VISHWAVIDYALAYA

BE SEMESTER - VII EXAMINATION (DEC/2016)

SUBJECT CODE: **EE705 B** SUBJECT NAME: **ADVANCED POWER SYSTEM - 1**

DATE: **18/11/2016** TIME: **10:30 A.M. TO 1:30 P.M.** TOTAL MARKS: **70**

Instructions:

1. Answer each section in separate Answer sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number
5. Use the last page of main supplementary for rough work.

Section-1

Q-1 **(All Compulsory)**

[A] Explain Phase shifting transformers. **[05]**

[B] Define FACTS and Benefits of FACTS. **[05]**

[C] Explain emerging transmission network. **[05]**

OR

[C] Derive the equation of instantaneous power and define active and reactive power from it. **[05]**

Q-2 [A] Explain uncompensated transmission line. **[05]**

[B] Explain passive compensation. **[05]**

OR

Q-2 [A] Explain Synchronous Condensers with their applications. **[05]**

[B] Explain saturated reactor with their operating characteristics. **[05]**

Q-3 [A] Explain three phase TCR with waveforms. **[05]**

[B] Explain the operating characteristics with voltage control of TCR. **[05]**

OR

Q-3 [A] Explain FC-TCR with operating characteristics. **[05]**

[B] Comparison of different SVCs regarding their losses and performances. **[05]**

Section-2

Q-4 **(All Compulsory)**

[A] Comparison of AC and DC Transmission System. **[05]**

[B] Explain different types of HVDC systems. **[05]**

[C] Modern trends in HVDC Technology. **[05]**

OR

[C] Application of DC Transmission. **[05]**

Q-5 [A] Comparison of HVDC link with EHV AC link **[05]**

[B] What is a HVDC-VSC system? Give single line diagram of the system **[05]**

OR

Q-5 [A] What is IGBT? Draw its symbol and discuss important features of IGBT. List reason for selection of IGBT for VSC based HVDC conversion. **[05]**

[B] Analysis of six pulse Voltage source converter. **[05]**

Q-6 [A] Give schematic diagram of 12 pulse converter. Explain different conduction modes. [05]

[B] Give the comparison between CSC (classical HVDC) and HVDC-VSC system. [05]

OR

Q-6 [A] Explain the effect of source inductance on converter output voltage also obtain the expression for the dc output voltage with overlap angle. [05]

[B] Explain Inverter Extinction angle control. [05]

----------All The Best----------

KADI SARVA VISHWAVIDHYALAYA

BE SEMESTER VII (EE)

Subject code: - EE- 705B **Subject Name: - Advanced Power System - I**

Date: - 03 /12 /2015 **Time: - 3 hrs** **Total Marks: - 70**

Instructions:

1. Answer each question in separate Answer sheet.
2. Use of Scientific calculator is permitted.
3. All questions are **compulsory.**
4. Indicate **clearly,** the options you attempt along with its respective question number.
5. Use the last page of main supplementary of **rough work.**

Section – I

Q -1 (A) Explain Conventional control mechanism. **[5]**

(B) Derive power equation for lossless Distributed parameters lines. **[5]**

(C) Define FACTS and give four benefits of FACTS. **[5]**

OR

(C) Explain effect of shunt compensation and series compensation on power transfer capacity of transmission line . **[5]**

Q-2 (A) Explain Thyristor controlled Reactors with 1-phase and 3-phase. **[5]**

(B) Explain with diagram Thyristor Switched Capacitor (TSC). **[5]**

OR

(A) Difference between 6-pulse and 12-pulse TCR. **[5]**

(B) Explain operating characteristics of TCR with and without voltage control. **[5]**

Q-3 (A) Sketch the single line diagram of FC- TCR & explain its operating characteristic **[5]**

(B) Explain TSC-TCR. **[5]**

OR

(A) Explain operating characteristic of TSC. **[5]**

(B) Give Comparison of Different SVCS. [5]

Section - II

Q-4 (A) With neat schematic diagram, state the various equipment required for HVDC system. [5]

(B) Explain HVDC VSC Transmission system. [5]

(C) Give the triggering scheme, protection & voltage equalization scheme for IGBT valves. [5]

OR

(C) Give Limitations of HVDC Transmission system. [5]

Q-5 (A) Discuss operation, characteristics, features of IGBT with symbol and equivalent circuit. What are the advantages of IGBTs over SCRs for HVDC converters? [5]

(B) Discuss features, advantages and application of an HVDC-VSC system with single line diagram. [5]

OR

(A) Draw schematic diagram of a 12-pulse converter and analyze it. [5]

(B) Compare HVDC link with EHVAC link. Specify standard rated voltages of HVDC and EHVAC system. [5]

Q-6 (A) Explain ideal commutation process without gate control. [5]

(B) Give conduction sequence in six pulse converter. [5]

OR

(A) Explain 6 pulse converter used in HVDC system with necessary waveforms. [5]

(B) Explain power flow in HVDC link. [5]

---------- **All the Best** ----------

KADI SARVA VISHWAVIDYALAYA

B.E.SEMESTER VII EXAMINATION (DECEMBER 2015)

SUBJECT CODE: ME-705 SUBJECT NAME: CONTROL ENGINEERING

DATE: 03-12-15 TIME: 10.30 a.m. to 1.30 p.m. TOTAL MARKS: 70

Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted with its respective question number.
5. Use the last page of main supplementary for rough work.

Section – 1

Q-1	All questions are compulsory.	
(A)	Write requirement of a good control system. Critically compare Open loop and closed loop system.	05
(B)	What is transfer function? Derive transfer function for an armature controlled D.C. motor.	05
(C)	Explain (a) Translation mechanical and Rotational mechanical system. (b) Proportional lag and controlled lag.	05
	OR	
(C)	What does a block diagram represent? Explain 'Summing point' and 'Take off point'.	05
Q-2	Answer the following questions.	
(A)	Write a note on Programmable logic Controller (PLC) with its advantages and applications.	05
(B)	Explain components used in any hydraulic circuit. Explain vane pump with neat sketch briefly.	05
	OR	
(A)	Explain Proportional Derivative (PD) hydraulic controller with a neat sketch.	05
(B)	Explain Pneumatic nozzle-flapper amplifier with neat sketch.	05
Q-3	Answer the following questions.	
(A)	What do you mean by Stability of a control system? Explain Routh's stability criterion.	05
(B)	What is Relay ? Explain working principle of Pneumatic relay.	05
	OR	
(A)	Explain Mason's rule for determining the overall transfer function from a signal flow diagram.	05

(B) Explain theory of four way valves and pilot valves. 05

Section - 2

Q-4 All questions are compulsory.

(A) Write short note on Analogue models of mechanical and electrical system. 05

(B) Explain transient response of second order system. 05

(C) What is FRL unit in Pneumatic system? Explain in brief various components used in pneumatic circuit. 05

OR

(C) What is fuzzy logic and fuzzy control system ? Explain the concept with a suitable example. 05

Q-5 Answer the following questions.

(A) Explain boiler feed control system using neat sketch. 05

(B) Explain working of an Automatic controller with neat sketch. 05

OR

(A) With neat sketch explain Pneumatic proportional plus integral controller. 05

(B) Draw a neat sketch of microprocessor based digital control system and explain function of each element. 05

Q-6 Answer the following questions.

(A) What do you mean by mathematical modeling of a control system? Explain its importance. 05

(B) List basic types of control actions. Explain PID control action. 05

OR

(A) Explain construction and working of 4-land rotary spool valve with neat sketch. 05

(B) Write comparison between Pneumatic and Hydraulic systems. 05

-------All the Best---------