RM19002062

Registration No:

Total Number of Pages : 1   **M.TECH**
M.TECH 2ND SEMESTER (AR 18) REGULAR EXAMINATIONS, APRIL/MAY 2019
SWITCHED MODE AND RESONANT CONVERTERS
Branch: PE, Subject Code:MPEPE2031

Time: 3 Hours   **Max Marks : 70**
<div align="center"><u>PART-A</u>   (10 X 2=20 MARKS)</div>

1. Answer the following questions.
a.   What are the advantages of SMPS over factors controlled rectifiers
b.   Give the uses of resonant switching.
c.   What is the disadvantage of FM scheme compared to PWM scheme?
d.   What are the limitations of basic series resonant inverter?
e.   How to select the inductor for the buck converter?.
f.   What is effect of having more duty cycle and less duty cycle?
g.   Obtain the boundary conditions between continuous and discontinuous conduction mode of operation for boost converter
h.   Discuss flux imbalancing problem
i.   Define voltage mode control of smps
j.   What is meant by state space averaging ?
<div align="center"><u>PART-B</u>   (5 X 10=50 MARKS)</div>

Answer any five questions from the following.
Q2.
a. Illustrate the operation of Step down converter in continuous conduction mode and derive an expression for the ripple voltage [5]
b. Explain the bipolar and unipolar PWM switching schemes used in full bridge   dc-dc converter [5]
Q3.
a. Design a Buck-Boost converter circuit having parameters, input voltage =24 V, D=0.4, load resistance =5 ohm, L=20 micro H,C=80 micro F. Determine the output voltage, average inductor current, Maximum and minimum value of inductor current and the output voltage ripple. Assume a switching frequency of 100 kHz. [5]
b. With the help of neat diagram explain the three phase inverter operation, also discuss the effect of blanking time on voltage in PWM inverters [5]
Q4.
a. Explain square wave switching scheme in inverter and how to achieve the programmed harmonic elimination technique used in square wave pulse switching [5]
b. Write short note on resonant switch converters [5]
Q5.
a. Explain the operation of ZCS resonant switch converters [5]
b. List the various classification of resonant converters [5]
Q6.
a. Explain the principle operation of a fly back converter [5]
b. Explain power line disturbances caused by switching power converts [5]
Q7.
a. Explain frequency characteristics of series and parallel resonant circuit [5]
b. Explain the operation of zero current switching Quasi-resonant boost converter with neat circuit and waveforms [5]
Q8. Write Short notes on :
a. Current mode PWM control of SMPS [5]
b. Effect of EMI filter on SMPS control [5]
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