Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec– 2017**

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| **Code :** | **14EE2035** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SWITCHED MODE POWER SUPPLIES** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Compare the characteristics of a Linear regulator with Switched Mode regulator. | CO1 | 14 |
| b. | Why are Switched Mode regulator so much more efficient than Linear regulator? | CO1 | 6 |
| (OR) | | | | |
| 2. | a. | Elaborate the operation of a boost converter in continuous conduction motor. | CO1 | 12 |
| b. | How the feedback loop stability is achieved with discontinuous conduction mode of operation in boost converter? | CO1 | 8 |
|  |  |  |  |  |
| 3. | a. | Describe the working of a Push Pull Converter. | CO1 | 12 |
|  | b. | Summarize the reasons of the flux imbalance and methods of coping of flux imbalance in Push Pull topology. | CO1 | 8 |
| (OR) | | | | |
| 4. |  | Explain the operation of a forward converter, its voltage conversion ratio and forward converter with transformer equivalent circuit. | CO1 | 20 |
|  |  |  |  |  |
| 5. | a. | Design a choke for a buck regulator with the following specifications: Input Voltage = 25V, Output Voltage = 5V, Maximum Output Current = 10A, Frequency = 25kHz, Maximum Ripple Current = 20% of Output Current, Maximum Temperature Rise = 30◦C above ambient. | CO3 | 14 |
|  | b. | Discuss about the choke material used for low, medium and high AC stress application. | CO3 | 6 |
| (OR) | | | | |
| 6. | a. | Explain the steps of a designing a transformer for a forward converter based on core and bobbin area (Ae,Ab), current density, frequency and peak flux density. | CO3 | 14 |
|  | b. | How the inherent body diode is overcome in both N channel and P channel MOSFET? | CO3 | 6 |
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| 7. |  | Design a 5V, 10A Power supply with the following specifications using IC TL494: Input Voltage = 32V, Output Voltage = 5V, Output Current = 10A, Switching frequency = 20kHz, Ripple voltage = 20mV, Ripple current = 1.5A. | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Write short notes on PWM Control ICs i. SG3525 ii. UC3843 | CO2 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | Discuss in detail about the Resonant converter. Principle of operation in all modes. | CO1, CO2 | 20 |

ALL THE BEST