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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May– 2017**

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| **Code** | **14EE3037** | **Duration :** | **3hrs** |
| **Sub. Name** | **DSP BASED CONTROL OF POWER ELECTRONICS AND DRIVES** | **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. | Detail the Central Processing Unit (CPU) of a TMS320F2812 Digital Signal Processor with neat block diagram. | CO1 | 16 |
| b. | Compare and contrast a Fixed point DSP with Floating point DSP. | CO1 | 4 |
| (OR) | | | | |
| 2. | a. | What do you mean by Pipeline? How does it improve the computational speed of the processor? | CO1 | 10 |
| b. | Explain how a OTP and Flash memory be used in DSP and its peripherals. | CO1 | 10 |
| 3. |  | Thephase current (Ia, Ib and Ic) of an Induction motor need to be converted into digital form. Configure an Analog to Digital converter for implementation using TMS320F2812 DSP. Use sequencer 1and prescaling of 15 for conversion. | CO2 | 20 |
| (OR) | | | | |
| 4. |  | Elaborate in detail how a Peripheral Interrupt Expansion (PIE) of TMS320F2812 DSP handles aperipheral interrupt. | CO1 | 20 |
| 5. |  | Configure the timer of TMS320C2812 processor to generate a Space Vector Pulsewidth Modulation (SVPWM) pulses of 10kHz frequency. | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Explain how a Field Oriented Control (FOC) of three phase induction motor be implemented with DSP using coordinate transformations. | CO2 | 20 |
| 7. |  | Discuss about the DSP implementation of Permanent Magnet Synchronous Motor using TMS320F2812. | CO3 | 20 |
| (OR) | | | | |
| 8. |  | How TMS320F2812 can be used to control the output voltage of a Buck Boost converter? | CO3 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Discuss about the DSP implementation of Brushless DC (BLDC) Motor using TMS320F2812. | CO3 | 20 |

ALL THE BEST