

**End Semester Examinations - 2015-16 Even Semester - May 2016**

---

**14EE3037 DSP Based Control of Power Electronics and Drives**

**Set B**

**Time : 3 hrs**  
**Total Marks: 100**

---

1. (a) Detail the Central Processing Unit (CPU) of a TMS320F2407 Digital Signal Processor with neat block diagram. (12)
- (b) What are the advantages and disadvantages of digital control?
- (c) Write the nomenclature of a Digital Signal Processor. (2)

**OR**

2. Discuss about the steps involved in configuring a General Purpose Timer registers.
3. Configure the GPIO for the following
- i. Configure the TMS320F2812 DSP I/O pins of PWM1, PWM2... PWM6 signals. (7)
  - ii. Capture QEP1 and QEP2 for speed measurement. (5)
  - iii. Configure the three phase voltages  $V_a$ ,  $V_b$  and  $V_c$  as Input signals and  $V_d$  &  $V_q$  as output signals. (8)

**OR**

4. Elaborate in detail how a Peripheral Interrupt Expansion (PIE) of TMS320F2812 DSP handles a peripheral interrupt.
5. Evaluate the performance of a Field Oriented Induction Motor controlled by a DSP.

**OR**

6. Explain about the concept and DSP implementation of Space Vector PWM (SVPWM).
7. Discuss about the DSP implementation of Permanent Magnet Synchronous Motor using TMS320F2812.

**OR**

8. Write about the DSP implementation of BLDC Drive.
9. Develop a digital control for cascaded type three phase multilevel inverter with SPWM of 5kHz using TMS320F2812. Choose appropriate clock input prescaler and deadtime for the above.

---

**Wishing you All the Best**

---