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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV • EXAMINATION – WINTER • 2014

Subject Code: 142002 Subject Name: Basic Mechatronics		Name: Basic Mechatronics	
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	1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	What is a 'control system'? Briefly explain types of control systems with an example, advantages and disadvantages.	07
	(b)	Explain construction of Silicon Controlled Rectifier (SCR) with working and its waveform.	07
Q.2	(a)	Briefly explain (i)Hysteresis(ii)Overshoot(iii)Response time	07
	(b)	Write short note on' Working of Bourdon tube pressure gauge'. OR	07
	(b)	Derive equation for mathematical model of PMDC (Permanent Magnet DC) motor.	07
Q.3	(a)	What are various 'displacement sensors' used in a measurement system? Explain any one giving neat sketch.	07
	(b)	Elaborate 'single phase induction motor'. How to make it 'self-start'? OR	07
Q.3	(a) (b)	Briefly explain (i) spring balance (ii) proving ring used for force measurement. Explain working of relay with constructional diagrams.	07 07
Q.4	(a) (b)	Explain with neat sketch, the components of a hydraulic system. Compare the NC, CNC with the conventional system of manufacturing.	07 07
	(0)	OR	U I
Q.4	(a) (b)	Briefly explain with neat sketch, the components of a pneumatic system. How the gears are classified? Briefly explain with neat sketches.	07 07
Q.5	(a) (b)	What is a 'stepper motor'? Explain working of it with neat diagram. Explain inductive transducer.	07 07
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Q.5	(a) (b)	Explain any one method of 'DC motor control'? Write short note on(i)LED (ii)Strain gauge	07 07
