

Seat No. _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEMESTER- Ist /IInd (SPFU)• REMEDIAL EXAMINATION – SUMMER-2015

Subject Code: ENG001

Date:11/06/2015

Subject Name: Engineering System

Time:10.30AM-01.00PM

Total Marks: 70

Instructions:

1. **Question No. 1 is compulsory.** Attempt **any four** out of remaining **six** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 Objective Question (MCQ)

(a)

07

1. Cooling capacity of air-conditioning is measured in _____.
(a) tonne of refrigeration (b) weight (c) KJ/Kg (d) Temperature
2. To avoid Ozone layer depletion, use of following refrigerant/group of refrigerant is prohibited
(a) CNG group (b) CFC group (c) HCFC group (d) none of a, b, c
3. During throttling process in case of gas which property remains constant?
(a) pressure (b) temperature (c) enthalpy (d) none of a, b, c
4. The point, through which the whole weight of the body acts, irrespective of its position, is known as
(a) moment of inertia (b) centre of gravity (c) centre of percussion
(d) centre of mass
5. A couple produces
(a) translatory motion (b) rotational motion (c) combined translatory and rotational motion
(d) none of the a, b, c
6. The deformation per unit length is called
(a) tensile stress (b) compressive stress (c) shear stress (d) strain
7. Stress is proportional to strain up to its elastic limit as per ____ law.
(a) Newton's (b) Hook's (c) Gibb's (d) Johnson's

(b)

07

1. What is the unit of Power?
(a) Hertz (b) Watt (c) Joule (d) volt
2. 3 phase power for domestic purpose have voltage level of _____.
(a) 11 KV (b) 1 KV (c) 415 V (d) 230 V
3. What is the unit of energy?
(a) Watt (b) Joule (c) Volt (d) Ampere
4. Lamp load have_____ power factor.
(a) Unity (b) Zero (c) 0.5 lagging (d) 0.5 leading
5. The internal RAM memory of the 8051 is_____.
(a) 32 bytes (b) 64 bytes (c) 128 bytes (d) 256 bytes
6. 8051 microcontroller chip operates with_____ power supply.
(a) 3V (b) 5V (c) 7V (d) 12V
7. Microcontrollers often have:
(a) CPUs (b) RAM (c) ROM (d) all of the a, b, c

Q.2	(a) Explain the term “refrigeration and air conditioning”.	03
	(b) Explain working of window air conditioner with neat sketch.	04
	(c) Explain working of vapour compression refrigeration cycle with neat sketch.	07
Q.3	(a) Define stress and strain with neat sketch.	03
	(b) A steel rod of 18 mm diameter is subjected to a tensile load of 144 KN. Determine the tensile stress.	04
	(c) Define bridge, draw neat sketch of any bridge and explain components of a bridge.	07
Q.4	(a) Draw and Explain the working of MCB.	03
	(b) Explain working principal of escalator and elevator.	04
	(c) Explain Single phase and three phase AC power supply to mall.	07
Q.5	(a) List out various technical advantages of “smart home” system.	03
	(b) List out various sensors which can be used in “smart home” system.	04
	(c) Describe the architecture of the “smart home” control system	07
Q.6	(a) State different types of loads in mall.	03
	(b) Write on different types of loading used for designing of a bridge.	04
	(c) Describe the architecture and functioning of the microcontroller.	07
Q.7	(a) State applications of refrigeration.	03
	(b) Draw pin diagram of 8051 microcontroller and explain following pins: EA, ALE, PSEN and RST	04
	(c) Explain working of central air conditioning plant with neat sketch.	07
