

Roll. No.....

1211008

B.Tech 1st Semester Examination

Dec.2012 – Jan.2013

Elements of Mechanical Engineering

Subject Code: MEL-101

Time Allowed: 03 hours.

Maximum Marks: 100

Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.

Note: Attempt any five questions and all questions carry equal marks.

Section – A

- 1(a)** How much heat must be supplied to 1.5 kg of a gas to raise its temperature from 90°C to 225°C at constant pressure? Find also the external work done during the supply of heat, specific heat at constant pressure is 1 KJ/KgK and at constant volume is 0.7128 KJ/KgK.
- (b)** Explain artificial draught & natural draught & what are the advantages of artificial draught over natural draught?
- 2(a)** Sketch and briefly describe the volute and diffusion type centrifugal pump. What function is served by volute chamber in a centrifugal pump?
- (b)** Sketch stress-strain diagram for ductile material and explain its salient features. How does stress-strain curve for brittle materials differ from this curve?

- 3(a)** Explain double & triple start worm & worm wheel in detail?
- (b)** What is a dynamometer & Explain belt transmission dynamometer in detail?

Section – B

- 4(a)** Explain different types of accidents & what are the different causes of accident?
- (b)** What is the principle of working of a milling machine? Differentiate between conventional and climb milling.
- 5(a)** What is an allowance & Describe different types of allowances given on pattern?
- (b)** Mention the causes and remedies of the following sand casting defects: blow holes, hot tears, misruns.
- 6.** What is an arc welding process? Describe briefly the power source, technique & flux materials used in TIG welding process.