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B.E. 2nd Semester (CGPA) Elect. and Commun.

Engg. (Zero Sem.) Examination - 2018

BASIC MECHANICAL ENGG.

Paper-EL-203

Time : 3 Hours]

[Maximum Marks : 60

Note : Attempt all questions. Use of steam table is permitted. Use neat and clean diagram wherever required.

1. (a) What are the major differences between boiler mountings and accessories? Also give the name of essential mountings and accessories to the boiler. 6
- (b) What amount of heat would be required to produce 4.4 kg of steam at a pressure of 6 bar and temperature of 250°C from water at 30°? Take specific heat for superheated steam on 2.2 KJ / Kg K. 6

or

- (c) Explain the construction and working of Babcock and Wilcox Boiler. 6

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(1)

Turn Over

- (d) What is dryness fraction and how it is determined at constant pressure and constant volume? 6
2. (a) Write the difference between the following: 6
- (i) 2-stroke and 4-stroke IC engines.
 - (ii) Otto cycle and Diesel cycle.
- (b) A gas engine has piston diameter of 150 mm length of stroke 400 mm and mean effective pressure 5.5 bar. The engine makes 120 explosions per minute. Determine the mechanical efficiency of the engine, if its B.P. is 5 kW. 6
- or
- (c) Explain the following terms: 6
- (i) Volumetric efficiency
 - (ii) Brake Power
 - (iii) Compression Ratio
 - (iv) Clearance volume.
- (d) Explain the working process, theoretical and actual p-V diagram of a 4-stroke petrol engine. 6

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(2)

3. (a) Define the following terms: 6
- (i) Refrigeration
 - (ii) Refrigerating effect
 - (iii) Ton of refrigeration
 - (iv) COP
- (b) Explain the application of heat transfer unidirectional steady state heat conduction. 6
- or
- (c) Describe summer air conditioning. 6
- (d) What are the various modes of heat transfer? Explain. 6
4. (a) How is a lathe machine specified ? Write down the broad classification of lathe machine. 6
- (b) Enlist the mechanical properties of materials. What is Hook's law? Explain. 6
- or
- (c) Explain the following: 6
- (i) HSS
 - (ii) Cast Iron and its types
 - (iii) Surface plate
 - (iv) Parts of a lathe

- (d) Describe the construction and cure of micrometer. 6
- 5. (a) Differentiate between 6
 - (i) Soldering and Brazing
 - (ii) Arc welding and Gas welding
- (b) What are the different allowance provided on a pattern? 6
- or
- (c) What is moulding sand? Explain different types and properties of moulding sand. 6
- (d) Explain the process of metal-arc-welding process with its advantages and limitations. 6