

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMESTER END THEORY EXAMINATION, *B.Tech. Dairy Technology* 2018-19

Semester	: II (V Dean)	Academic Year	: 2018-2019
Course No.	: DE-204	Course Title	: Thermodynamics
Credits	: 1+1=2	Total Marks	: 50
Day & Date	: Saturday, 29.06.2019	Time	: 11.00 to 13.00 Hrs.

- 1) Section "A" is Compulsory.
- 2) Solve Any Three questions from Section "B"
- 3) The use of scientific tables, charts and calculator is allowed in case of engineering courses.

SECTION - 'A'

Q. 1 A) Choose the most appropriate answer from the options given below. (05)

- i) A diesel engine has
 - a) One valve
 - b) Three valves
 - c) Two valves
 - d) Four valves
- ii) Amount of heat required to raise the temperature of a unit mass of any substance through one degree is called as
 - a) Latent heat
 - b) Sensible heat
 - c) Specific heat
 - d) Enthalpy
- iii) First law of thermodynamic deals with
 - a) Conservation of mass
 - b) Conservation of heat
 - c) Conservation of momentum
 - d) Conservation of energy
- iv) Second law of thermodynamic defines
 - a) Work
 - b) Heat
 - c) Entropy
 - d) Internal energy
- v) The entropy of zero degree Celsius is assumed to be
 - a) 1
 - b) 0
 - c) -1
 - d) 10

B) Define the following. (05)

- i) Thermodynamic cycle
- ii) Power
- iii) Thermodynamic system
- iv) Heat
- v) Internal energy

Q. 2. A) Answer the following questions in one sentence. (05)

- i) Which equation is used to estimate maximum thermal efficiency (η_{\max}) of an engine?
- ii) Write the SI units of Temperature and Power.
- iii) Why work done in isochoric process is zero?
- iv) State general gas equation.
- v) The SI unit and dimensions of specific heat.

(P.T.O.)

- A) State whether True or False. If false, rewrite the statement after making necessary corrections. (05)
- i) The volume of air sucked by the compressor during its suction stroke is called swept volume.
 - ii) Normal atmospheric pressure is equal to 1.013 bar.
 - iii) A heat pump is a device used for converting heat into mechanical work.
 - iv) In heat engine, the reservoir at a higher temperature is known as sink and the reservoir at a lower temperature is called source.
 - v) The specific heat at constant pressure (C_p) is less than the specific heat at constant volume (C_v).

SECTION – 'B'

- Q. 3 A) Discuss the working of a two-stroke cycle petrol engine with the help of neat sketches. (05)
B) Explain the Diesel cycle with the help of P-V and T-S diagrams. (05)
- Q. 4 A) Define a thermodynamic system? Explain its different types. (05)
B) Write the difference between petrol and diesel engines. (05)
- Q. 5 A) Explain Second law of thermodynamics. (03)
B) Write brief note on Heat engine. (03)
C) What do you mean by '*thermodynamic equilibrium*'? (04)
- Q. 6 A) Explain the Zeroth law and First law of thermodynamics. (03)
B) What do you mean by terms *compression* and *expansion* of gases? (03)
C) Describe characteristics equation perfect gas. (04)
- Q. 7 What do you mean by term thermodynamics? Highlights its importance and applications in Dairy/Food processing. (10)
