

**BACHELOR OF SCIENCE (APPLIED
SCIENCE-ENERGY) (BSCAEY)**

Term-End Examination

June, 2026

BEY-001 : THERMAL SCIENCE

Time : 3 Hours

Maximum Marks : 70

Note : (i) Answer any **seven** questions.

(ii) All questions carry equal marks.

(iii) Use of scientific calculator is permitted

(iv) Assume suitable data, missing if any.

1. Discuss in detail Boyle's law and Charles law. Also, derive and explain the gas equation obtained after combining the above two laws. 10

2. Explain in detail the three laws of thermodynamics and their applications in day to day life. 10
3. A perfect gas for which the ratio of specific heats is 1.4, initially occupies a volume of 0.3 m^3 at 1 bar and 27°C . 10

The gas undergoes a reversible compression process to 0.06 m^3 . Find the work done by the gas for each of the following methods of compression :

- (i) $p = c$
 - (ii) isothermal
 - (iii) adiabatic
4. Define 'Entropy'. Show how property of entropy depends only upon the initial and final states of the process. 10
 5. Enumerate the various types of boiler accessories along with their functions. 10
 6. Describe in detail a 'velocity compounded impulse turbine' with a neat sketch. 10

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7. Enlist and explain the various components of a cooling tower. 10
8. (a) Discuss, in brief the three modes of heat transfer. 5+5
- (b) Define the following :
- (i) Reynolds number
- (ii) Nusselt number
9. (a) Differentiate between an 'otto' cycle and a 'Diesel' cycle using a T-S diagram. 5+5
- (b) Describe, in brief the various physical properties of refrigerants that are desirable.

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