Reg. No. : | | | | | | | | | | |

Question Paper Code: 34704

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Fourth Semester

Mechanical Engineering

01UME404 – THERMAL ENGINEERING

(Regulation 2013)

(Use of Steam table, Psychrometric chart are permitted)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What is meant by mean effective pressure?
2. Define the term Adiabatic heating.
3. Differentiate between brake power and indicated power of an IC engine.
4. What are the exhaust emissions from a diesel engine?
5. What is critical pressure ratio of a steam nozzle?
6. What is blading efficiency?
7. Define volumetric efficiency.
8. Define clearance ratio of an air compressor.
9. Give the advantages of subcooling and superheating.
10. Define Ton of refrigeration.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the various cutting tool materials used in metal cutting? (16)

Or

(b) Draw the actual and theoretical p-v diagrams of a four stroke diesel engine and compare them. (16)

12. (a) (i) Explain the working of 4-stroke cycle diesel engine with neat sketch. (10)

(ii) Differentiate between the SI and CI engines. (6)

Or

(b) (i) State the differences between capstan and turret lathes. (8)

(ii) Write short notes on automatic screw type machines. (8)

13. (a) (i) Discuss the principle of operation of a shaper with a neat sketch. (10)

(ii) Discuss the various hole making processes. (6)

Or

(b) Define compounding in Turbine. Explain Pressure and Velocity compounding with neat sketch. (16)

14. (a) (i) Explain the working principle of centerless grinding process. (8)

(ii) Explain the working mechanism of cylindrical grinding. (8)

Or

(b) A single stage single acting reciprocating air compressor runs at 350rpm is used to compress air from 1 bar pressure to 6 bar pressure according to the law $PV^{1.35} = C$. The bore and stroke length of the cylinder are 200mm and 300 mm respectively. If the clearance volume is 5% of the stroke volume, determine : (i) Power required to run the compressor (ii) Mean effective Pressure. (16)

15. (a) Explain the construction and working of vapour compression refrigeration system with neat sketch. (16)

Or

(b) Explain with neat sketch about the Vapour Li-Br vapor absorption Refrigeration system. (16)