



Regulation R18

Subject code: 2B2AE

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

## B.Tech II Semester Supplementary Examinations, January 2024

### Fundamentals of Mechanical Engineering

(Common to CE & ME)

Maximum Marks: 70

Date: 23.01.2024 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
  2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
  3. Part B consists of 5 Units. Answer any one full question from each unit.
  4. Each question carries 10 marks and may have a, b, c, d as sub questions.

#### Part-A

All the following questions carry equal marks		(10x2M=20 Marks)	CO	Bloom Tx
1	List out different sources of energy.		CO1	L1
2	How would you define specific heat, heat capacity.		CO1	L1
3	Determine the relation between $C_p$ and $C_v$ of gases?		CO2	L2
4	What is a steam calorimeter?		CO2	L1
5	What are the process of otto cycle, Carnot cycle, Diesel cycle and Rankle cycle?		CO3	L1
6	What is scavenging?		CO3	L1
7	Principle of working of reciprocating pump.		CO4	L1
8	Define the processes in vapour compression and vapour absorption refrigeration systems?		CO4	L1
9	What is an Abrasive?		CO5	L1
10	Define Internal Energy and Enthalpy?		CO5	L1

#### Part-B

Answer All the following questions.		(5X10M=50Marks)		
11	Show that for a constant pressure process, heat supplied to gas is equal to change of enthalpy. [10M]		CO1	L3
	OR			
12	Describe some few words about Fossil, Nuclear, Solar and Hydel Fuels. [10M]		CO1	L2
13	a) Enumerate the Perfect Gas Laws and analyze from thermodynamics point of view? [5M] b) Explain the Mole fraction and Mass fraction in the Mixture of Perfect gas. [5M]		CO2	L3
	OR			
14	Explain Babcock and Wilcox boiler, with neat sketch and state its applications. [10M]		CO2	L3

15	Derive expressions for efficiency of Otto cycle with neat sketch. [10M]	CO3	L3
	OR		
16	Explain characteristics for SI Engines and CI Engines? [10M]	CO3	L3
17	Explain the effect of inter cooling in a multistage reciprocating air compressor in your own words. [10M]	CO4	L3
	OR		
18	Can you give applications of air conditioning and write in your words about why air conditioner is fixed on window. why is not kept inside the room on floor. [10M]	CO4	L3
19	Can you define a coupling. What are the requirements of a good coupling ? How the couplings are classified? [10M]	CO5	L3
	OR		
20	Describe the various classifications of engineering materials with their preparation and applications. [10M]	CO5	L3