



Regulation R18

**TKR COLLEGE OF ENGINEERING AND TECHNOLOGY**

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

**B.Tech V Semester Supplementary Examinations, June/July 2023**

**Thermal Engineering-I**  
(Mechanical Engineering)

Subject code: 2P5CB

**Maximum Marks: 70**

**Date: 26.06.2023 Duration: 3 Hours**

- Note: 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)

- 1 What is the Stoichiometric air-fuel ratio?
- 2 List the advantages of valve timing diagram?
- 3 What is called flame front and flame velocity?
- 4 What is ignition delay period?
- 5 Define Indicated Power.
- 6 Define Friction Power.
- 7 What is the condition for maximum efficiency?
- 8 Define Isothermal efficiency of a compressor
- 9 What is Workdone Factor?
- 10 Define Pressure coefficient.

**Part-B**

Answer All the following questions.

(5X10M=50Marks)

- 11 Draw a neat sketch and explain the working of splash lubricating system. [10]  
OR
- 12 Analyze the stages of combustion in SI engines elaborating the flame front propagation. [10]
- 13 What are anti knock agents? Indicate the substances used and their effects on reducing of knocking. [10]  
OR
- 14 What are the types of fuel injection systems? Explain anyone with a neat sketch? [10]
- 15 Explain heat balance sheet in detail. [10]  
OR
- 16 A) What is the significance of Morse test. Explain in detail. [5]  
B) Explain Willan's line method. [5]
- 17 A) Explain the working of Axial Flow compressor with neat Sketch. [5]  
B) Explain Velocity diagram of axial flow compressor. [5]  
OR
- 18 Determine the efficiency of vane type compressor which has an air delivery of  $0.05\text{m}^3/\text{rev}$  when it compresses air from 1 bar to 1.5 bar where there is 40% pressure rise due to internal compression before back flow occurs. [10]
- 19 A) What is Air Refrigeration? Discuss Reversed Carnot Cycle in detail. [5]  
B) Give important applications of refrigeration. [5]  
OR
- 20 Differentiate between Simple Vapour compression and vapour absorption systems. [10]