R20 Regulation *Subject code: 3P4CF*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Supplementary Examinations, July 2024

Thermal Engineering-I

(ME)

Maximum Marks: 70 Date:27.07.2024 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 which carries 10M.
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	Define indicated power?	1	2
2	Differentiate cooling system and lubrication system.	1	2
3	On which principle the centrifugal pump works	2	4
4	Explain the concept of slip factor in centrifugal compressor	2	4
5	Why the axial compressors are more suitable for gas turbines? Explain	3	4
6	Explain the importance of slip factor in compressor	3	4
7	Draw p-v and T-S diagram of a Multi stage reciprocating compressors?	4	3
8	What is power input factor in compressor?	4	2
9	Define refrigeration	5	4
10	what is the effect of subcooling	5	2

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	Explain cooling system for IC engines? (10M)	2	1
	OR		
12	Explain Battery ignition system with a neat diagram? (10M)	3	3
13	Discuss the desirable characteristics of a good combustion chamber for an SI engine. (10M)	2	2
	OR		
14	Explain fuel rating with neat sketch. (10M)	2	4
15	The following date was recorded during testing of a four-stroke cycle gas engine. Area of indicator diagram = 900 mm^2; Length of indicator diagram = 70 mm; spring scale = 0.3 bar/mm; Diameter of piston = 200 mm; Length of stroke = 250mm; Speed = 300 rpm. Determine i) Indicated mean effective pressure ii) Indicated power. (10M)	3	6
	OR		

16	Analyze the air box method for the measurement of air consumption in internal combustion engine. (10M)	3	4
17	With a neat sketch explain the working of roots blower and derive the expression for roots efficiency. (10M)	4	4
	OR		
18	Explain about the reciprocating compressor and rotary compressor with neat sketch. (10M)	3	3
19	Explain the working of Vapour compression refrigeration system with a neat diagram. (10M)	5	3
	OR		
20	Explain about year –round air conditioning system with a neat labelled diagram. (10M)	5	3