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**M.E./M.TECH. DEGREE EXAMINATIONS, MAY/JUNE 2017**

**SECOND SEMESTER**

**INTERNAL COMBUSTION ENGINEERING**

**IC16007-SUPERCHARGING AND SCAVENGING**

**(Regulation 2016)**

**Q. Code: 687516**

**Time: Three Hours**

**Maximum : 100 Marks**

Answer **ALL** questions

**PART A - (10 X 2 = 20 Marks)**

1. What are engine modifications required for accommodating supercharging?
2. List any two differences between positive displacement blower and centrifugal compressor.
3. Compare naturally aspirated CI engine cycle with turbocharged CI engine cycle.
4. Sketch a pV diagram to show the gain in work obtained due to turbocharging.
5. What are different methods of scavenging?
6. What is the purpose of Sankey diagram?
7. Mention the importance of Kadenacy system of scavenging.
8. Comment on choice of Delivery ratio.
9. Define Scavenging efficiency.
10. Mention the effect of trapping efficiency on scavenging.

**PART B - (5 X16 = 80 Marks)**

11. (a) Draw the performance characteristics curves of a supercharged engine and explain. (16)

**(OR)**

- (b) (i) Explain different supercharging arrangements with neat sketches. (10)

- (ii) Describe thermodynamic analysis of supercharged engine cycle and compare it with naturally aspirated engine. (6)
12. (a) (i) Explain various turbocharging methods. (10)  
(ii) Explain the thermodynamic analysis of turbocharging. (6)
- (OR)**
- (b) (i) Describe “compressor-turbocharger matching”. (10)  
(ii) Explain surging turbocharging. (6)
13. (a) (i) Describe the perfect displacement model of the scavenging process. (8)  
(ii) Explain the Sankey diagram with suitable sketches for two stroke cycle engine. (8)
- (OR)**
- (b) (i) Explain classification of scavenging system. (12)  
(ii) The scavenging efficiency of a two stroke engine is 75%. If the scavenging efficiency is increased by 20%, what would be the % change in scavenging ratio. (4)
14. (a) Explain the procedure in determining inlet-port dimensions in separately scavenged engines. (16)
- (OR)**
- (b) (i) Discuss the port flow characteristics. (8)  
(ii) Discuss on “optimum scavenge pressure” with neat sketches. (8)
15. (a) Explain the various techniques involved in evaluating scavenging. (16)
- (OR)**
- (b) Explain direct injection two stroke concepts for improving scavenging. (16)