

GANPAT UNIVERSITY

B.TECH SEM VII MECHANICAL/MECHATRONICS ENGINEERING

REGULAR EXAMINATION NOV/DEC-2011

SUBJECT WITH CODE: INTERNAL COMBUSTION ENGINE (ME-705/4)

TIME: 3 HOURS

TOTAL MARKS-70

- INSTRUCTION:** 1. All questions are compulsory.
2. Figures to the **right** indicate full marks.
3. Use of **scientific calculator** is permitted.
4. Use the last page of main supplementary for **rough work**.
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- Q-1 A Explain briefly with neat sketches various types of supercharging arrangements. 06
B Explain the comparison between S.I and C.I engine 06
OR
- Q-1 A Define volumetric efficiency? Also explain the effect of various factors on volumetric efficiency. 06
B What is the function of governor? Enlist the methods for governing and Explain any one of them 06
- Q-2 A Derive an expression for A/F ratio taking compressibility in account. 06
B Write a short note on the air fuel ratio requirement of a petrol engine from no load to full load. 05
OR
- Q-2 A Derive an expression for the amount of fuel injected per cycle in term of brake horse power and speed of a four stroke engine. 06
B Explain with neat sketches fuel injector. 05
- Q-3 In a trial of a single cylinder oil engine working on dual cycle, the following observations were made 12
1. Compression ratio:15
 2. Oil consumption:10.2kg/hr
 3. CV of fuel":43890KJ/kg
 4. Air consumption:3.8kg/min
 5. Speed:1900rpm
 6. Torque on brake drum:186Nm
 7. Quantity of cooling water used:15.5kg/min
 8. Temperature rise:36⁰C
 9. Exhaust gas temperature:410⁰C
 10. Room Temperature:20⁰C
 11. C_p for exhaust gases:1.17KJ/kgK
- Calculate BP, B_{sf}, B_{TH} efficiency. Draw heat balance sheet on minute basis.

- Q-4 A What is ignition lag? Discuss the effect of engine variables on ignition lag. 06
 B What are the basic requirements of a good SI engine combustion chamber? 06
- OR**
- Q-4 A Explain the stages of combustion in C.I engine 06
 B What is meant by "delay period"? Classify it and describe them. 06
- Q-5 A Explain with neat sketch vacuum spark advance mechanism. 05
 B Explain with neat sketch battery ignition system 06
- OR**
- Q-5 A Compare the properties of alcohols and gasoline as engine fuels. 05
 B Enlist the basic performance parameter and define the following 06
 Volumetric efficiency
 Sp. Fuel consumption
 Thermal efficiency
- Q-6 A Explain with neat sketch wankel engine. 06
 B Briefly discuss the various methods of control for exhaust emissions from petrol engine. 06

END OF THE PAPER