



12097

13141

3 Hours/100 Marks

Seat No.

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- Instructions:** (1) **All questions are compulsory.**
(2) Answer **each** next main question on a **new** page.
(3) Illustrate your answers with **neat sketches wherever necessary.**
(4) Figures to the **right** indicate **full** marks.
(5) **Use of Non-programmable Electronic Pocket Calculator is permissible.**
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|---|--------------|
| 1. A) Attempt any six of the following : | 12 |
| a) Define the term compression ratio of an I. C. engine. | |
| b) State the material for cylinder block with justification. | |
| c) State the function of thermostat in water cooling system. | |
| d) Define the term mechanical efficiency of an I. C. engine. | |
| e) What is the use of throttle valve and choke valve ? | |
| f) State the functions of lubrication system in an I. C. engine. | |
| g) State the functions of carburettor. | |
| h) Define the term 'Flash point' of lubricating oil. | |
| B) Attempt any two of the following : | 8 |
| a) Compare in between two stroke and four stroke I. C. engine (any four). | |
| b) Explain working of two stroke petrol engine with simple sketch. | |
| c) Explain the working principle of simple carburettor. | |
| 2. Attempt any four of the following : | 16 |
| a) State the functions of following engine components. | |
| i) Flywheel ii) Crankshaft iii) Piston iv) Cylinder head | |
| b) Explain the working of Reed valve in two stroke engine. | |
| c) What are the types of camshaft drives ? Explain any one. | |
| d) Explain splash lubrication system. | |
| e) Explain with neat sketch the working of overhead valve mechanism. | |
| f) What is the necessity of I. C. engine cooling ? | |

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3. Attempt **any two** of the following : 16
- a) Explain the working of Mechanical type fuel pump with sketch.
 - b) Explain the valve timing diagram for four stroke petrol engine.
 - c) Explain the working of Inline type fuel injection pump with simple sketch.
4. Attempt **any four** of the following : 16
- a) State the materials and functions of piston rings.
 - b) Explain the acceleration system of carburettor.
 - c) Compare in between air cooling and water cooling system for I. C. engines (any four).
 - d) Explain pressurised water cooling system for I. C. engine.
 - e) Classify the I. C. engine on the basis of any four points.
5. Attempt **any four** of the following : 16
- a) Explain common rail fuel injection system for C. I. engine.
 - b) What is B. S. F. C. and give its significance ?
 - c) Explain the construction and function of radiator cap.
 - d) Explain the diesel cycle with the help of theoretical diagram.
 - e) Write the merits and demerits for horizontal engine.
 - f) Compare in between S. I and C. I. engine.
6. Attempt **any two** of the following : 16
- a) Explain how the Brake power of an I. C. engine is determined with the help of Rope Brake dynamometer.
 - b) An I. C. engine develops a brake power of 26.2 KW. Following observations are made during a trial.
Power required to motor the engine = 4.5 KW
Cooling water circulated = 7.5 Kg/min.
Specific heat of water = 4.187 KJ/KgK
Petrol consumption = 200 gm/min.
Temperature rise of cooling water = 50°C
If Calorific value of petrol is 46000 kJ/Kg, draw the heat balance sheet for the test on KJ/min basis.
 - c) How you will determine the indicated power for four cylinder petrol engine with the help of Morse test ?
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