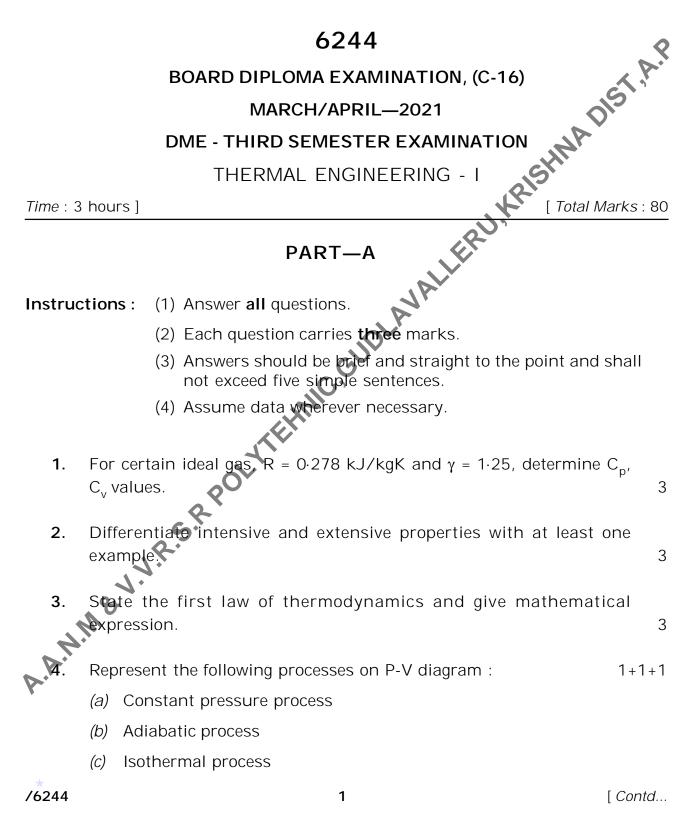
## 



- 5. Write the expression for work done in Isothermal process and state the parameters involved.
- 6. What are the assumptions made in analysis of air standard cycle?
- List various methods of lubricating system in IC Engines. 7.
- Differentiate coil ignition system with magneto ignition system. FRU, KRISH 8.
- 9. Define the following terms :
  - (a) Brake power
  - (b) Mechanical efficiency
- Write any three differences between Centrifugal compressor and 10. Axial flow compressors. 3

(1) Answer any five questions. Instructions :

- (2) Each question carries ten marks.
- (3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer. (4) Assume data wherever necessary for air R = 0.287 kJ/kg K, = 1.4, if not specified.
- 0.2 kg of gas is subjected to change of temperature from 15 °C to 11. 180 °C at constant pressure. Find the heat transfer, change of internal nergy and change of Enthalpy. If specific heat at constant pressure is 1.0 kJ/kg.K, Adiabatic index is 1.4. 10

2

- Explain the following terms with neat sketches. 12.
  - Quasi-Static work (a)
  - Flow work (b)

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5 + 5

[ Contd...

10×5=50

3

3

3

11/2+11/2

- 13. In a steady flow system, the working fluid flowing at 5 kg/sec enters the system with a velocity of 300 m/sec and it has a specific enthalpy of 390 kJ/kg. The velocity, enthalpy at exit are 150 m/s and 289 kJ/ kg respectively. The fluid loses 5 kJ/kg heat as it passes through the system. Determine the power of system stating whether it is from or to the system.
- A quantity of gas has an initial pressure, volume and temperature c 14. 150 kN/m<sup>2</sup>, 0.14 m<sup>3</sup> and 25 °C respectively. It is compressed to a pressure of  $1.5 \text{ MN/m}^2$  according to the law  $PV^{1.25}$  = constant FRU, KRISI

Determine : (a) work transfer to the gas 4+3+3

3+7

- (b) Heat transfer from the gas
- (C) The change of entropy

Take  $C_p = 1.041 \text{ kJ/kg K}, C_v = 0.714 \text{ kJ/kg K}$ 

- In an engine working, a Diesel cycle has a compression ratio 15 :1 15. and expansion ratio 8 : 1. The pressure and temperature at beginning of compression are 1 bar and 40 °C respectively. Pressure before the heat rejection is 2.4 bar. Determine :
  - (a) Air standard efficiency of the cycle
  - Maximum temperature and pressure attained in the cycle (b)

Assume ratio of specific heat,  $\gamma = 1.4$ .

- Explain the working of magneto ignition system with the help of a 16. line diagram. 10
- A four stroke petrol engine with a compressor ratio of 6.5 to 1 and total 17. displacement of  $5.2 \times 10^{-3}$  m<sup>3</sup> develops 120 kW BP and consumes 33 kg of petrol per hour of calorific value 44300 kJ/kg at 3000 rpm.
  - Brake mean effective pressure 1.
    - 2. Brake thermal efficiency
    - 3. Air standard efficiency

Take  $\gamma = 1.4$ .

Find

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3

4 + 3 + 3

[ Contd...

A two stage compressor is used to compress 1 kg of free air from 1 bar and 18. 32° C to 26 bar. The value of n = 1.3 and R = 0.287 kJ/kg K.

Find the following :

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- A.A.M. R. S.R. POLYTEINIC GUDI AVAILERUNA DISTAR

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