C14-M-**404**

4480

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL-2019

DME - FOURTH SEMESTER EXAMINATION

HEAT POWER ENGINEERING – I

Time: 3 Hours] [Max. Marks : 80

PART -A **3x10=30M**

Instructions: 1) Answer **all** questions.

2) Each question carries **Three** marks.

3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1) Define the term air standard cycle?

2) Define the term mean effective pressure?

3) Define heat engine and classify it?

4) Draw the valve timing diagaram for 4-s diesel engine.

5) State the functions of carburettor.

6) What are the objectives of supercharging?

7) State the function of air compressors.

8) Explain the meaning of positive displacement compression.

9) What are the applications of gas turbines?

10) What are the functions of diffuser and nozzle of turbojet engine?

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PART-B 10x5=50M

Instructions: 1) Answer any **five** questions.
2) Each question carries **ten** marks.
3) Answers should be comprehensive and the critertion for valuation is the content but not the length of answer.

11) In a carnot cycle, the maximunm pressure and temperture are limited to 18 bar and 400^{0}C. The ratio of isentropic compression is 6 and isothrmal expansion is 1.5. Assume the volume of air at the beginning of isothermal compression as 0.2 m^3.Determine
(a)The minimum temperature in the cycle
(b) Pressure at all salient points
(c) Thermal efficiency of the cycle.

12) Explain the working principle of 4- stroke petrol engine with neat line diagram.

13) Explain the working principle of Zenith Carburettor with neat sketch.

14) Explain with line sketch the quantity method of governig of petrol engine?

15) The following particulars are refer to a single cylinder oil engine having cylinder diameter 250mm, stroke 400mm and working on 4-stroke cycle.

Speed	=	250rpm
MEP	=	7.25bar
Net load	=	1080N
Effective brake wheel diameter	=	16m

Determine a) BP b) IP c) Mechanical Efficiency.

16) Explain the working principle of Centrifugal Compressor with neat sketch.

17) Explain the working principle of Ramjet with neat sketch.

18) a) Explain the working principle of Screw compressor with neat sketch.4M
b) Calculate the percentage change in air standard efficiency of Otto cycle if the compression ratio is increased frim 5 to 6. 6M

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