TEST-III

III Yr Mechanical Engineering

MER6C1 MACHINE DESIGN II

Maximum.Marks: 20 **Time: 70 Minutes**

Note: Attempt any one question

Assume suitable data or dimension, if necessary, clearly mention it. Neat sketches are to be drawn, wherever required. Design data book and certified charts are permitted

1a	Design an overhung crank pin for an engine having the following particulars: Cylinder diameter =300mm Stroke =500mm Maximum explosion pressure in the cylinder =1.8MPa Engine Speed =200rpm Permissible bending stress for pin =1000MPa Permissible Bending stress =85MPa	**15 marks**
1b	Mention the importance of seals and gasket	5 marks
	OR	
2a	Explain the design procedure of center crank shaft (for four cylinder),along with all stress calculations	10 marks
2b	Explain the design procedure of Valve gear mechanism (10 marks)	10 marks

Class Test II
MER6C1 : Machine Design II
III yr (Mech Engg.)

Time : 70 minutes

Max Marks : 20

Answer any one questions

Q1 Design a piston for a 4-stroke single acting engine from the following data.
Cylinder bore dia = 110 mm (D), BMEP = 0.4 MPa,
Fuel consumption = 0.15 Kg / BP (W) , Speed = 2000 rpm.

Q1	Design a piston for a 4-stroke single acting engine from the following data. Cylinder bore dia = 110 mm (D), BMEP = 0.4 MPa, Fuel consumption = 0.15 Kg / BP (W) , Speed = 2000 rpm.	**10**
Q2	Design a connecting rod for a petrol engine for the following data, Diameter of the piston (d)= 110 mm, Length of the connecting rod(2L) = 325 mm, Stroke length (L) = 150 mm, Speed (n) = 1500 rpm, Over speed = 2500 rpm, Compression ratio = 4 : 1, Maximum explosion pressure = 2.5 MPa, weight of the reciprocating mass = 2 kg	**10**

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BE III EXAMINATION APRIL MAY 2022

MECHANICAL ENGINEERING

MER6C1 Machine Design- II

Duration: 4 Hrs **Max. Marks: 60**

Note : Attempt ALL questions. Each question carries 12 marks. Design data book, certified notes, tables, charts are allowed in the examination hall. Assume Suitable data where ever required.

Q 1 A cone clutch is to be transmitting 20 HP of 1000rpm. The mean radius is 16.5 cm and the friction surface is 7.5 cm wide. Design the clutch.

OR

A V belt drive is required for a 15 KW 1440 rpm electric motor, which drives a centrifugal pump running at 360rpm for a service of 24 hours per day. For space considerations, the centre distance should be approximately 1m. Design the belt drive.

Q 2 A machine component is subjected to fluctuating stress that varies from 40 to 100 N/mm^2. The corrected endurance limit stress for the machine component is 270 N/mm^2. The material of the component is alloy steel. Find the factor of safety using

(1) Gerber Theory
(2) Soderberg theory
(3) Goodman Theory

OR

Describe the complete process for design of Double Block Brake.

Q 3 A compressor running at 300 rpm is driven by a 20 HP 1200 rpm motor. The centre distance is 37.5 cm. The motor pinion and driven gear are made up of different material. Design the gear drive.

OR

A screw press is required to exert a force of 40 KN. The unsupported length is 400mm. Design the screw press.

(PTO)

Institute of Engineering & Technology
Class Test I
MER6C1: Machine Design II
III yr (Mech Engg.)

Time : 70 minutes **Max Marks : 20**

All Questions are compulsory (Assumptions can be made wherever necessary)

Q1. A centrifugal clutch is to be designed to transmit 15 KW at 900 rpm. The shoes are four in number. The inside radius of the pulley rim is 150 mm. Determine the (i) Mass of the shoes (ii) size of the shoes. 10 marks

OR

Q2. A vertical four stroke CI Engine has the following specifications : Brake Power =4.5 kW, speed 1200 rpm, imep = 0.35 N/mm^2 Design a cylinder 10 marks
Also discuss about the engine cylinder (For eg. Material, liners etc)

Institute of Engineering & Technology
Class Test II
MER6C1 : Machine Design II
III yr (Mech Engg.)

Time : 70 minutes **Max Marks : 20**

Attempt any one (Assume required data as per standards)

Q1 A screw press is required to exert a force of 40 KN. The unsupported length is 400mm. Design the screw press. (20 marks)

OR

Q2. **Design a piston for 40 BHP and 5000 rpm.(20 marks)**

III Yr Mechanical Engineering
MER6C1 MACHINE DESIGN II
APRIL 2019

Maximum.Marks: 20 **Time: 70 Minutes**

Note: Attempt any one question from any Section.

1. Design a flat belt drives to transmit 7.5 KW power at 720 rpm to run a compressor at 300 rpm **20 marks**

OR

2. Explain the design procedure of center crank shaft (for four cylinder),along

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