DEPARTMENT OF MECHANICAL ENGINEERING
MONAD UNIVERSITY, HAPUR

Dated:- 30/09/2016

Course: EME-352 MACHINE DESIGN -I

Assignment No: 1

Due date of submission: 10/11/2016

Instructions

1. Write the responses to the assignment in your own handwriting.
2. Submit the responses to your Hod within due date.
3. Write your name, programme, and Enrollment no. clearly at the top of the page.
4. Each question's part carries 5 marks.

Q.1

a) Write the relations used for maximum stress when a machine member is subjected to tensile or compressive stresses along with shearing stresses.

b) Design a hollow shaft required to transmit 11.2 MW at a speed of 300 r.p.m. The maximum shear stress allowed in the shaft is 80 MPA and the ratio of the inner Dia. to outer Dia. is 3/4.

Q.2

a) Write soderberg's equation and state its application to different type of loadings.

b)A double riveted double cover butt joint is made in 12mm thick plates with 18 mm Dia. rivets find the efficiency of the joint for a pitch of 80 mm, if

σt=115 MPa τ=80 MPa σc=160 MPa

DEPARTMENT OF MECHANICAL ENGINEERING
MONAD UNIVERSITY, HAPUR

Dated:- 30/09/2016.

Course: EME-353 TOM-I

Assignment No: 1

Due date of submission: 10/11/2016

Instructions

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Q.1

a) Prove the equation v=r w, where v=linear velocity, w=angular velocity, r= radius of rotation path.

b) Derive an expression for simple gear train.

Q.2

a) Derive an expression for Engine Mechanism.

b) Explain Compound gear train.

DEPARTMENT OF MECHANICAL ENGINEERING
MONAD UNIVERSITY, HAPUR

Dated:-30/09/2016

Course: EME- 354, Heat and Mass Transfer

Assignment No: 1

Due date of submission: 10/11/2016

Instructions

1. Write the responses to the assignment in your own handwriting & don't copy from other's assignment.
2. Submit the responses to your HoD within due date.
3. Write your name, programme, and Enrollment no. clearly at the top of the page.
4. Each question's part carries 5 marks.

Q.1

(a) Derive general heat conduction equation in spherical coordinates

(b) Derive expressions for temperature distribution, under one dimensional steady state heat conduction, for following systems:

(i) Plane wall **(ii)** Composite wall

Q.2

(a) Derive expressions for temperature distribution and heat dissipation in a straight fin of rectangular profile for the following case

(i) Infinitely long fin **(ii)** Fin insulated at the tip **(iii)** Fin losing heat at the tip

(b) Explain the following:

(i) Efficiency of fin **(ii)** Effectiveness of fin

DEPARTMENT OF MECHANICAL ENGINEERING
MONAD UNIVERSITY, HAPUR

Dated:-30/09/2016

Course: EME-355 internal combustion engine

Assignment No: 1

Due date of submission: 10/11/2016

Instructions

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4. Each question's part carries 5 marks.

Q.1

(a) Drive the expression for Thermal efficiency of Otto cycle.

(b) In an Otto cycle air at 17°C and 1 bar is compressed adiabatically until the pressure is 15 bar. Heat is added at constant volume until the pressure rises to 40 bar. Calculate the thermal efficiency, the compression and the work done for the cycle. (γ=1.4, C_v=0.717 kJ/kgK)

Q.2

(a) What are the differences between S.I engine and C.I engine?

(b) Drive an expression for air-fuel ratio of a carburetor.

DEPARTMENT OF MECHANICAL ENGINEERING
MONAD UNIVERSITY, HAPUR

Dated: - 30/09/2016

Course: EME-356 Manufacturing Science-II

Assignment No: 1

Due date of submission: 10/11/2016

Instructions

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2. Submit the responses to your HoD within due date.
3. Write your name, programme, and Enrollment no. clearly at the top of the page.
4. Each question's part carries 5 marks.

Q.1

(a) Define Unconventional Machining Processes & also classify the Unconventional Machining Processes.

(b) Describe briefly with a neat diagram the working principle of Electrical Discharge Machining. Give also its advantages, disadvantages and applications.

Q.2

(a) Elaborate fundamental feature that distinguishes solid- state welding from liquid – state welding.

(b) Write short notes of any three of the following:

(i) Gas shield arc welding (ii) Thermite welding (iii) Plasma arc welding (iv) Atomic hydrogen welding.