VSB ENGINEERING COLLEGE, KARUR
DEPARTMENT OF MECHANICAL ENGINEERING
Assignment Questions

Academic Year : 2017-2018 (Even Semesters)

AUTOMOBILE ENGINEERING

1. Describe any one of the Fastest Car Specifications and its History behind it.
2 .Mention any three of modern engines used in Maruthi & Hyundai.
3. What are the changes in automobile parts in future makes a great impact.

MG 6851 PRINCIPLES OF MANAGEMENT

Part A

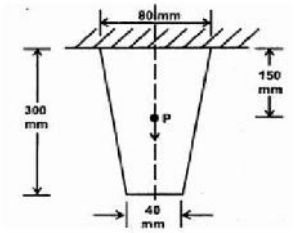
1. Define Management.
2. What are the functions of Managers?
3. What are the effective characteristics of Managers?
4. Define effectiveness.
5. Explain briefly about the various functions of Management.
6. Define planning
7. Define objectives and goals.
8. What is meant by policies?
9. Define MBO.
10. What do you understand by decision making?

Part B

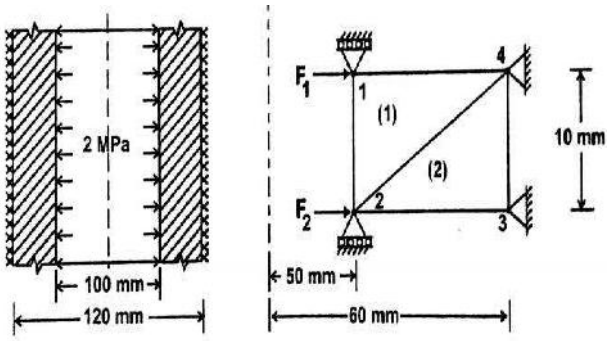
1. Explain briefly about the various functions of Management.
2. What are the Henry Fayol's 14 principles of management? Explain.
3. Management : Science or Art – Discuss.
4. Explain the process of MBO.
5. Explain in detail about the TOWS matrix and SWOT analysis.

ME 6603-FINITE ELEMENT ANALYSIS

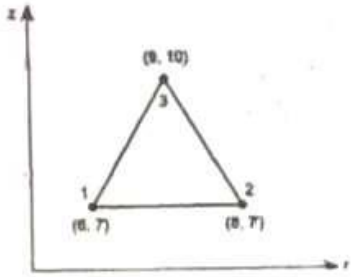
1. For a tapered bar of uniform thickness t=10mm as shown in figure. Predict the displacements at the nodes by forming into two element model. The bar has a mass density ρ = 7800 Kg/M3, the young's modulus E = 2x105 MN/m2. In addition to self-weight, the bar is subjected to a point load P= 1 KN at its centre. Also determine the reaction forces at the support.



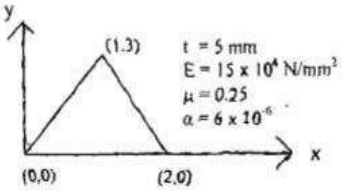
2. A long hollow cylinder of inside diameter 100mm and outside diameter 120mm is firmly fitted in a hole of another rigid cylinder over its full length as shown in fig. The cylinder is then subjected to an internal pressure of 2 MPa. By using two element on the 10mm length shown calculate the displacements at the inner radius tame E = 210 GPa. μ = 0.3



3. Calculate the element stiffness matrix for the axisymmetric triangular element shown in fig. The element experiences a 15ºC increase in temperature. The coordinate are in mm. Take α=10x10^-6/ºC, E=2x10^5 N/mm2, v=0.25



4. Calculate the element stiffness matrix and thermal force vector for the plane stress element shown in fig. The element experiences a rise of 10˚C.



5. Explain the step by step procedure of FEA.

ME 6004 UNCONVENTIONAL MACHINING PROCESSES

1. Explain the need for modern machining processes.
2. Compare conventional machining and non conventional machining
3. Classify the modern machining process in detail. Justify for its economic aspects
4. With the neat sketches discuss the working principle of main components of an ultrasonic machine.
5. Recommend a suitable machining process for (i) Cutting a glass plate in to a two pieces and Ultra precision machining in a microprocessors. Justify your answer with proper explanations
6. With neat sketch explain the process of AJM. Explain the applications, advantages & Disadvantages?
7. Briefly explain the effects of Process parameter on metal removal rate in USM
8. Explain the construction and working principle of WJM? Explain the applications, advantages & Disadvantages?
9. With the neat sketches discuss the working principle of Hydrodynamic jet machining process.
10. Ultrasonic machining used for drilling a hole in a aluminum and cast iron under same condition. Which one will have higher depth drilled? Justify.

DESIGN OF TRANSMISSION SYSTEMS

1. Explain what are the factors reducing the efficiency of the belt drives and explain how to rectify that?
2. Design a rope drive for domestic lifts.
3. Conduct a case study on transmission systems and justify which one is more efficient.

GAS DYNAMICS AND JET PROPULSION

1. 1. The following information is common to each of parts (a) and (b). Nitrogen flows through a diverging section with A_1= 1.5 ft^2. You may assume steady one dimensional flow, Q=Ws= 0, negligible potential changes, and no losses.
2. (a) If M_1= 0.7 and P_1= 70 psia, find M_2 and P_2
   (b) If M_1= 1.7 and T_1= 95^oF, find M_2 and T_2
3. 2. Write the practical applications of variable cross sectional area convergent and divergent nozzle and diffusers. Calculate actual outlet temperature, Mach number and velocity for a converging only nozzle has efficiency 96%. Air enters with negligible velocity at a pressure of 150 psia and a temperature 750 ^oF. The receiver pressure is 100 psia.
4. 3. What is Delaval nozzle? Explain with neat sketch, working principle, merits, demerits and applications.
5. 4. Water flows in a 6 in diameter with a velocity of 15 ft/sec. Within a short distance the duct converges o 3 in diameter, Find the pressure change if there are no losses between these two sections.
6. 5. A turbine extracts 300 ft-lbf/lbm of water flowing as shown in above fig. Frictional losses amount to 8 $Vp^2/2g$, Where is the velocity in a 2 – ft- dia pipe. Compute the power output of the turbine if it is 100% efficient and the available potential I 350ft.