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06ME81

**Eighth Semester B.E. Degree Examination, June / July 2013**  
**Industrial Management**

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO question from each part.

**PART – A**

- 1 a. List out pioneers of different schools of management thought. Briefly explain the contributions of F.W. Taylor and F.B. Gilbreth to the development of school of management thought. (10 Marks)
- b. What do you mean by liability? Write briefly the difference between private limited and public limited companies. (06 Marks)
- c. Enumerate different forms of public sector organizations. Explain the salient features of any one form of government organization. (04 Marks)
- 2 a. Write briefly on different dimensions of Quality. (05 Marks)
- b. What do you mean by “cost of quality”? Explain different quality costs, with suitable examples. (05 Marks)
- c. Write different quality control methods used in the industry. (05 Marks)
- d. Define the following terms : i) Standardization ii) SQC iii) Value Engineering  
iv) Variety reduction v) Quality. (05 Marks)
- 3 a. Explain construction and use of control charts for variables. (08 Marks)
- b. With a neat sketch, explain different types of patterns present in control charts. (08 Marks)
- c. Distinguish between the following :  
i) Control limits and specification limits ii) Variables and attributes iii) Type – I error and Type – II error iv) Chance cause and Assignable cause. (04 Marks)
- 4 a. Explain different steps in method study, with a suitable example. (06 Marks)
- b. Explain briefly the principles of motion economy. (08 Marks)
- c. What are the objectives of training and development? Explain briefly various forms of training and development. (06 Marks)

**PART – B**

- 5 a. Define motivation. Explain and compare F. Herzberg theory of motivation and Maslow’s theory of motivation. (08 Marks)
- b. Explain Hawthorn studies and its important findings. (06 Marks)
- c. Write theory – X and theory – Y of motivation. (06 Marks)
- 6 a. Explain briefly skinner’s behaviour modification approach. (04 Marks)
- b. Explain skills of manager at various level in the organization. (04 Marks)
- c. Explain the terms “Directing” and “Controlling”, with reference to behavioral approach. (06 Marks)
- d. What do you mean by “changing”, with respect to behavioural management? Write various steps in the “changing process”. (06 Marks)

- 7 a. Explain in detail “The Process Management” and “Process Analysis”, with a suitable example. (06 Marks)
- b. What are major process decisions in an organization? Explain them in detail, with a suitable example. (06 Marks)
- c. Explain the following terms :
- i) Vertical Integration      ii) Resource flexibility      iii) Process design
- iv) Capital Intensity. (08 Marks)
- 8 a. Discuss the role of ‘Technology Management’ in improving business performance. (04 Marks)
- b. Enumerate various stages in Research and Development. Discuss them briefly. Write various guidelines used in implementing R and D. (08 Marks)
- c. Write various Areas of Technology management. (08 Marks)

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## Eighth Semester B.E. Degree Examination, June/July 2013

### Hydraulics and Pneumatics

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting at least TWO questions from each part.**

#### PART – A

1.
  - a. State Pascal's law. Explain with a neat sketch, the basic hydraulic power system. (06 Marks)
  - b. What are the important considerations taken while selecting a pump for a particular application? Explain procedure. (08 Marks)
  - c. A vane pump has a rotor diameter of 60 mm a cam ring diameter of 90 mm and vane width of 50 mm. If the eccentricity is 10 mm, determine the volumetric displacement. (06 Marks)
2.
  - a. Explain with a neat sketch working of linear actuator for single acting cylinder. (05 Marks)
  - b. With a neat sketch, explain second class lever system used with hydraulic cylinders to drive load. (07 Marks)
  - c. A hydraulic motor has a displacement of 165 cm<sup>3</sup>/rev and operates with a pressure of 70 bar and a speed of 2000 rpm. If the actual flow rate consumed by the motor is 6 LPS and the actual torque delivered by the motor is 170 N-m. Find:
    - i) Volumetric efficiency
    - ii) Mechanical efficiency
    - iii) Overall efficiency (08 Marks)
3.
  - a. Explain with a neat sketch how three way and four way direction control valves operate. Give graphical symbols. (10 Marks)
  - b. Explain pressure relief valve with graphical symbol also. (10 Marks)
4.
  - a. Explain briefly the principle involved in a regenerative circuit and obtain an expression for the speed of actuator. (10 Marks)
  - b. Explain with suitable circuits how single acting and double acting cylinders are controlled. (10 Marks)

#### PART – B

5.
  - a. What are desirable properties of hydraulic fluids? Explain briefly any five of them. (10 Marks)
  - b. Discuss the problems caused by the gases in hydraulic fluids. (05 Marks)
  - c. Derive an expression for beta efficiency. (05 Marks)
6.
  - a. Explain briefly with a neat sketch 3/2 way spool type direction control valve to control flow of air in pneumatic system. (10 Marks)
  - b. Differentiate hydraulic and pneumatic systems. Sketch simple hydraulic and pneumatic systems. (10 Marks)
7.
  - a. With a neat sketch, explain how following functions are generated in pneumatic systems:
    - i) AND function
    - ii) OR function (10 Marks)
  - b. Sketch and explain circuit for air-pilot control double acting cylinder. (10 Marks)
8. Write short notes on any FOUR of the following:
  - a. Accumulator as an emergency power source
  - b. Electro-pneumatic control
  - c. Sealing devices
  - d. Memory valve (function)
  - e. Meter in and meter out circuit. (20 Marks)

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06ME831

**Eighth Semester B.E. Degree Examination, June / July 2013**  
**Tribology**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting at least TWO question from each part.**  
**2. Use of Tribology data handbook is permitted.**

**PART - A**

- 1
  - a. State and explain the Newton's law of viscous flow. (06 Marks)
  - b. Derive the Hagen – Poiseuille law. Also state the assumptions made in the derivation. (10 Marks)
  - c. An oil supply line 1.2m long having an internal diameter 6.25mm and delivery  $6 \times 10^{-5} \text{ m}^3/\text{s}$  of oil having a viscosity of 0.0555 Pa·S. Calculate the pressure drop in the supply line and energy required in forcing the oil through the supply line against viscous friction. (04 Marks)
- 2
  - a. Derive the Petroff's equation for a lightly loaded journal bearing. (08 Marks)
  - b. A lightly loaded journal bearing has the following specification :  
Diameter of Journal = 50mm ; Bearing length = 80mm ; Diametral clearance ratio = 0.002  
Radial load = 750N ; Viscosity of lubricant = 10Cp ; Speed = 4000rpm. Determine  
i) Frictional torque on journal ii) Co – efficient of friction iii) Power loss. (12 Marks)
- 3 Derive the Reynold's equation in two dimensions. Also state the assumptions. (20 Marks)
- 4 Derive an analytical expression for pressure distribution along an idealized plane slider bearing with a fixed shoe. (20 Marks)

**PART - B**

- 5
  - a. Write a note on thermal equilibrium of journal bearing. (10 Marks)
  - b. A full journal bearing with circumferential oil groove is lubricated under pressure and has the following specifications :  
Journal diameter = 62.5mm ; Total length of bearing = 125mm ; Width of circumferential groove = 6.25mm ; Radial clearance = 0.04375mm ; Effective oil temperature =  $100^{\circ}\text{C}$  ;  
Lubricating oil = SAE20 ; Minimum oil film thickness = 0.004375mm.  
Determine the inlet pressure required in order to control the bearing temperature. The rate of oil flow through the bearing is to be  $4925 \text{ mm}^3/\text{s}$ . (10 Marks)
- 6
  - a. Derive an expression for the rate of flow of the oil through a hydrostatic step bearing. (10 Marks)
  - b. A hydrostatic step bearing for a turbine rotor has the following specifications :  
Diameter of shaft = 150mm ; Diameter of pocket = 100mm ; Vertical thrust of bearing = 70kN ; Shaft speed = 1000 rpm ; Viscosity of lubricant under operating condition = 0.025 fas – sec ; Desirable oil film thickness = 0.125mm. Determine i) Rate of oil flow through the bearing ii) Power loss due to viscous friction iii) co-efficient of friction. (10 Marks)

- 7 a. Enlist the properties of good bearing materials. (05 Marks)  
b. List out the commonly used bearing materials. (05 Marks)  
c. Give the classification of wear. Discuss in brief. (10 Marks)
- 8 a. Write short notes on wear of: i) Polymers ii) Ceramic materials. (10 Marks)  
b. What are the technologies involved in surface engineering to improve tribological behaviour of components. (10 Marks)

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**Eighth Semester B.E. Degree Examination, June/July 2013**  
**Foundry Technology**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

- 1 a. Define the term fluidity of molten metal. Briefly explain the various factors influencing the fluidity. (07 Marks)
- b. Sketch and explain, vacuum degassing and solid degasser methods for degassing metals. (08 Marks)
- c. What do you mean by Hot tearing in castings? What are the design remedies to avoid hot tearing in castings? (05 Marks)
- 2 a. Explain how the hot spot location is determined in castings and explain with sketches different casting designs can be used to eliminate hot spots in casting junctions. (12 Marks)
- b. What are the causes and design remedies for the following casting defects:  
i) Shrinkage cavity      ii) Misruns      iii) Blow holes      iv) Contraction cracks (08 Marks)
- 3 a. Explain with a sketch the concept of directional solidification. How it helps in producing sound casting? Briefly explain the practical measures can be used to achieve directional solidification in order to obtain sound casting. (12 Marks)
- b. Briefly discuss the followings:  
i) Nucleation      ii) Dendritic growth      iii) Solidification rate      iv) Solidification time (08 Marks)
- 4 a. Explain with simple sketch the functions of various elements of gating system. (08 Marks)
- b. With the help of sketches, explain open and blind risers. Give their advantages and draw backs. (12 Marks)

**PART – B**

- 5 a. With the help of sketches, explain the process of vacuum moulding. List out the advantages of the process. (10 Marks)
- b. Sketch and explain the working of cokeless cupola. (10 Marks)
- 6 a. List the various types of furnaces commonly used in steel making and with the help of a sketch describe the working principle of any one of them. (10 Marks)
- b. List with the imparting properties any six alloying elements that have the greatest effect on the properties of steel. (07 Marks)
- c. Write the classification of carbon steel and mention their carbon percentage. (03 Marks)
- 7 a. Write a note on production methods of magnesium. (06 Marks)
- b. Write the general characteristics of the followings:  
i) Non-ferrous alloys      ii) Aluminium      iii) Copper      iv) Magnesium (08 Marks)
- c. What are the major uses of copper? What are the alloying elements in brass and bronze? (06 Marks)
- 8 a. Briefly explain the various material handling equipments used for rapid and economic production of casting on a large scale. (12 Marks)
- b. Write notes on:  
i) Pollution control norms in foundry.  
ii) Dust collecting equipments used in foundry. (08 Marks)