USN | | | | | | | | | | 06ME81

Eighth Semester B.E. Degree Examination, June 2012
Industrial Management

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a. Explain the contributions made by the following towards the development of modern management:
    i)   Frank B Gilbreth
    ii) Henry Fayol   (10 Marks)
    b. Discuss the different types of ownerships. Distinguish between public limited and private limited companies.   (10 Marks)

2   a. Explain the major statistical methods and tools used for quality control and improvement.
                                                               (06 Marks)
    b. Define 'total quality management' and explain briefly the basic principles of TQM.
                                                               (08 Marks)
    c. Discuss the different types of quality costs.   (06 Marks)

3   a. Differentiate between chance causes and assignable causes of variations with an example.
                                                               (08 Marks)
    b. Discuss the significance of control charts.   (06 Marks)
    c. Differentiate between control chart for variables and attributes.   (06 Marks)

4   a. Explain the standard procedure of work study.   (06 Marks)
    b. List the principles of motion economy as applied to the arrangement of workplace. (08 Marks)
    c. Define 'wage incentive'. What are the objectives of incentive schemes?   (06 Marks)

PART – B

5   a. What is motivation? Compare Mc Gregor's theory X and theory Y.   (10 Marks)
    b. Write short notes on:
    i) Maslow's hierarchy of needs
    ii) Findings of Hawthrone experiments.   (10 Marks)

6   a. Explain the contributions of Elton Mayo and Skinner to behavioral sciences.   (12 Marks)
    b. Briefly explain the importance of predicting, directing and controlling the behaviour of employees in an organization.   (08 Marks)

7   a. Discuss the four major decisions for effective processes.   (06 Marks)
    b. Explain the pros and cons of customer involvement.   (06 Marks)
    c. Explain 'process reengineering' strategy for effective design of the process.   (08 Marks)

8   a. Discuss the role of technology management in improving the business performance in the present context.   (14 Marks)
    b. Explain the importance of technology fusion.   (06 Marks)

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Eighth Semester B.E. Degree Examination, June 2012

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. Define Pascal law and state one application. **(04 Marks)**
   b. A displacement type cylinder has a rod of 65 mm diameter and is powered by hand pump with a displacement volume of 5 ml per double stroke. The maximum operating pressure is 350 bar. Calculate :
   i) The number of double pumping strokes needed to extend the cylinder rod by 50 mm
   ii) The maximum load which could be raised, using the system. **(08 Marks)**
   c. With a neat sketch, explain the construction and working of a external gear pump. **(08 Marks)**

2. a. Derive an expression for volumetric displacement of inline-axial piston pump. **(08 Marks)**
   b. A hydraulic motor has a displacement of 130 cm^3, operates with a pressure of 105 bar and has a speed of 2000 rpm. If the actual flow rate consumed by the motor is 0.005 m^3/sec and the actual torque delivered by motor is 200 Nm. Find:
   i) Volumetric efficiency
   ii) Mechanical efficiency
   iii) Overall efficiency
   iv) Power delivered by motor in kW. **(12 Marks)**

3. a. Explain the control of double acting cylinder using 4/2 DCV. **(04 Marks)**
   b. Describe regenerative circuit and its application. **(08 Marks)**
   c. A double acting cylinder is hooked to an regenerative circuit. The relief valve setting is 105 bars. The piston area is 130 cm^2 and the rod area is 45 cm^2. If the pump flow is 0.0016 m^3/sec, determine the cylinder speed and load carrying capacity for:
   i) Extension stroke
   ii) Retracting stroke
   iii) Power consumed during extension and retraction **(08 Marks)**

4. a. Describe the meter-in circuit used for controlling the speed of cylinder. List the merits and demerits. **(10 Marks)**
   b. Design a hydraulic sequencing circuit used in a drilling machine for clamping work piece and drilling a hole by using logic gates. **(10 Marks)**

PART – B

5. a. List six desirable properties of hydraulic fluid and explain any two properties. **(06 Marks)**
   b. With a neat sketch, explain full flow filter. **(08 Marks)**
   c. Discuss sealing devices. **(06 Marks)**

6 a. Explain the following:
      i)   Magnetic type rodless cylinder
      ii) Cable operated rodless cylinder   (08 Marks)
   b. Describe torque cylinder.   (08 Marks)
   c. Write the graphical symbol of normally open 3/2 pneumatic direction control valve.
                                                                           (04 Marks)

7 a. Write down ISO-5599-3 coding for the following pressure port, working ports and exhaust
      ports.   (04 Marks)
   b. With a neat sketch, explain the control of extension of a double acting cylinder using OR
      and AND logic functions.   (10 Marks)
   c. Describe the diaphragm type accumulator.   (06 Marks)

8 a. What is signal overlap? Describe signal overlap in a memory device and its suppression.
                                                                           (10 Marks)
   b. Explain gas loaded accumulator.   (05 Marks)
   c. Write a brief note on chemical dryers.   (05 Marks)

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Eighth Semester B.E. Degree Examination, June 2012
Tribology

Time: 3 hrs.

Max. Marks:100

Note: *1. Answer FIVE full questions, selecting atleast*
TWO questions from each part.
2. Use of machine design data hand book is permitted.

PART – A

1 a. Define the following :
   i) Viscosity
   ii) Fluidity
   iii) Newtonian fluid
   iv) Viscosity index. **(04 Marks)**
   b. Explain briefly the factors affecting viscosity. **(06 Marks)**
   c. Explain with neat sketches the following viscosity measuring apparatus :
   i) MAC – MICHEL viscometer
   ii) Flowers viscometer. **(10 Marks)**

2 a. A lightly loaded journal bearing has the following specifications :
   Journal diameter = 100 mm; Bearing length = 80 mm; radial clearance = 0.05 mm; radial
   load = 1000 N; absolute viscosity of oil = 0.015 pas – sec.
   Using Petroff's equation, determine :
   i) Speed of journal which corresponds to a co-efficient of friction of 0.4.
   ii) Power loss at this speed. **(10 Marks)**
   b. An idealized full journal bearing has the following data :
   Diameter of journal = 50 mm; bearing length = 65 mm; speed = 1200 rpm; radial
   clearance = 0.025 mm; average viscosity = 0.001125 pas-sec; attitude = 0.8.
   Calculate :
   i) Load carrying capacity
   ii) Co-efficient of friction
   iii) Power loss in bearing. **(10 Marks)**

3 a. List the assumptions made in the derivation of Reynolds equation in two dimension.
   (06 Marks)
   b. A 120° centrally loaded bearing has the following specifications :
   Diameter of journal = 100 mm; length of bearing = 130 mm; diameter clearance = 0.15 mm;
   oil used SAE 60; minimum film thickness = 0.0045 mm; speed of journal = 600 rpm;
   bearing operating temperature = 95°C ; considering end leakage determine :
   i) Load carrying capacity
   ii) Power loss in the bearing
   iii) Expected maximum pressure in the bearing. **(14 Marks)**

4 Derive an expression for pressure distribution for a plane slider bearing with a fixed shoe.
   (20 Marks)

PART – B

5 A journal bearing operating under steady state condition has the following specifications. Diameter = 100 mm, length = 105 mm, speed = 1600 rpm, radial clearance = 0.075 mm, load = 27.3 kN, expected mean oil film temperature = 99°C, minimum film thickness must not be less than 0.015 mm. The bearing is lubricated under pressure with inlet oil temperature of 44°C. Determine :
 i) Required viscosity of lubricating oil and kind of oil which should be used
 ii) Power loss
 iii) Inlet pressure required for cooling the bearing
 iv) Corresponding rate of flow. (20 Marks)

6 a. Derive an expression for load carrying capacity of a hydrostatic step bearing. (10 Marks)
 b. A hydrostatic step bearing for a turbine rotor has the following specification :
  Diameter of shaft = 150 mm; diameter of pocket = 100 mm; vertical thrust = 70 kN; shaft speed = 1000 rpm; viscosity = 0.025 pa. sec; oil film thickness = 0.125 mm.
  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. List any ten properties desirable for a typical bearing material. (10 Marks)
 b. Define wear. Discuss the different types of wear. (10 Marks)

8 a. Briefly discus behaviour of tribological components. (10 Marks)
 b. Briefly explain the improved design and surface engineering. (10 Marks)

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