

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Mechanical Engineering

B. Sc. Engineering 4th Year 2nd Term Examination, 2018

ME 4057

(Material Handling & Maintenance)

Time: 3 Hours.

Total Marks: 210

N.B. i) Answer any THREE questions from each section in separate scripts.

ii) Figures in the right margin indicate full marks.

iii) Assume reasonable data if any missing.

SECTION – A

- 1(a) What are the objectives and limitations of material handling system? 08
- 1(b) Classify with examples conveying machines which are used in material handling? 10
- 1(c) What factors are responsible in the design features of conveying equipments? 06
- 1(d) Deduce the relation between efficiency (η) and friction factor (ω) for a conveying machine. 11
- 2(a) Draw a neat sketch of a belt conveyor and label its important parts. 09
- 2(b) Explain the functions of idler and driving unit in a belt conveyor. 07
- 2(c) Why apron conveyor is used? Differentiate between apron conveyor and flight conveyor. 09
- 2(d) What are the steps to be considered for safer operation of cranes? Describe in brief. 10
- 3(a) Describe the operation principle of a vibratory conveyor with necessary sketches. 10
- 3(b) Explain the working principle of screw conveyor. 08
- 3(c) Write a short note about swing tray conveyor. 05
- 3(d) What is pneumatic conveyor? Describe low pressure pneumatic system in a pipe line conveyor. 12
- 4(a) What is a hopper? Why is it used? Classify with necessary figures. 10
- 4(b) Discuss the purpose of using of industrial trucks and tractors? 08
- 4(c) Describe with neat sketches a ladder chute 08
- 4(d) Draw a typical escalator step and label its important components. 09

SECTION - B

- 5(a) What is meant by maintenance engineering? Briefly describe the classification of maintenance engineering. 12
- 5(b) Discuss the factors that are essential in developing a sound maintenance department of an organization. 08
- 5(c) Explain the advantages and disadvantages of a reactive maintenance. 08
- 5(d) Discuss the preventive maintenance of an internal combustion engine. 07

- 6(a) Discuss the importance of lubricant in maintenance engineering. 06
- 6(b) Briefly describe the effect of temperature and pressure on viscosity of lubricant. 10
- 6(c) State the advantages and disadvantages of synthetic oil. What are the applications of greases? 09
- 6(d) Why seals are used? Explain different types of seals. 10
-
- 7(a) What are the main wears out problem in steam turbines? And how can detect and inspect them? 10
- 7(b) Explain the maintenance procedure of gear. 08
- 7(c) What are factors responsible for shorter life of bearing? 07
- 7(d) Diagnosis for the following defects of an engine: 10
 (i) Engine overheat (ii) Poor Ignition (iii) Excessive oil consumption
-
- 8(a) What is meant by the term tribology? Discuss the importance of tribology in industries. 07
- 8(b) Define 'running in' and 'planned obsolescence'. Explain the causes of mechanical failures. 10
- 8(c) Why condition monitoring system is necessary? Draw a block diagram of monitoring of a hydraulic system. 10
- 8(d) Explain the procedure to maintain an industrial boiler. 08

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Mechanical Engineering

B. Sc. Engineering 4th Year 2nd Term Examination, 2018

ME 4207

(Tool Engineering & Machine Tools)

Time: 3 Hours.

Total Marks: 210

N.B. i) Answer any THREE questions from each section in separate scripts.

ii) Figures in the right margin indicate full marks.

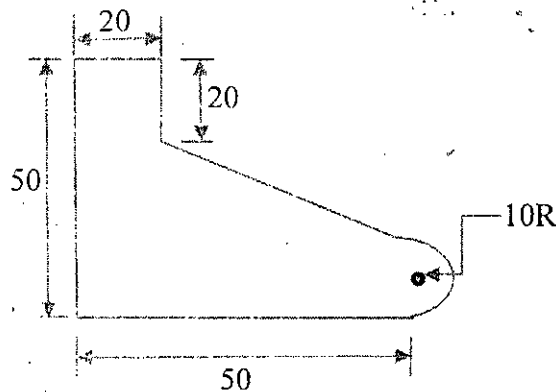
iii) Assume reasonable data if any missing.

SECTION – A

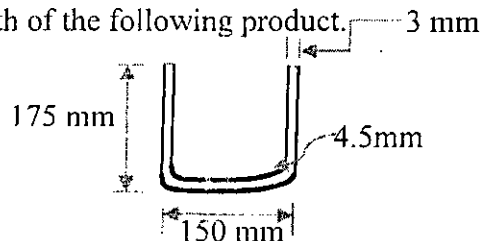
- 1(a) Describe in brief the basic principle of clamping. With the help of sketches show the different types of clamps generally used in machine tool and describe in brief. 12
- 1(b) Explain the 3-2-1 principle of work piece location in case of a cube. 10
- 1(c) Explain the degrees of freedom play an important role in designing job locator? Also explain the three principles of pin location. 13

- 2(a) Describe the working principle of a leaf jig with appropriate sketches. 12
- 2(b) Classify drill bushings according to ANSI. Also describe them with necessary sketches. 11
- 2(c) Explain the working principle of the following clamps with the help of necessary sketches; 12
(i) Cam clamp and (ii) Latch clamp

- 3(a) What is a die? What are the metal shaping operations? Write down the basic differences among them. 10
- 3(b) Determine the center of pressure for the following blank. All dimensions are in mm. 15



- 3(c) Describe various bending operations with figures. 10
- 4(a) What are the different types of forming dies? 05
- 4(b) Explain the method of determination of the blank size, number of draws required and press capacity for a drawing operation. 15
- 4(c) Determine the blank length of the following product. 15



SECTION - B

- 5(a) What are the kinematic function of machine tools? Explain the essential requirements of a machine tool. 10
- 5(b) Explain: 10
(i) Stepped drive and stepless drive (ii) Ray diagram and structure diagram
Prove for a G.P. the useful value of common ratio lies between 1 and 2.
- 5(c) Design a gear box for a drilling machine to give speed variation between 100 to 250 rpm in nine steps. The driving shaft is to run at a constant speed of 300 rpm. Assume GP series. 15
- 6(a) Discuss in brief the cone pulley drive system used in a machine tool. 08
- 6(b) Explain numerical control of machine tools. Also write down the advantages and disadvantages of NC system. 10
- 6(c) Differentiate between closed-loop and open-loop system of numerical control. 09
- 6(d) Write short note on MCU. Also write down the function of MCU. 08
- 7(a) What are the steps required for developing the CNC part program? Discuss in short. 10
- 7(b) Illustrate the two basic systems of numerical control of machine tool with figures. 12
- 7(c) Differentiate CNC and DNC. Mention the functions of MCU. 13
- 8(a) What are meant by the following terms; 12
(i) Robot (ii) Automation (iii) Transfer machine (iv) CAM
- 8(b) What is chatter in machine tools? What are the causes of vibration in machine tools and how does it affect the performance? 10
- 8(c) Enumerate the advantages and disadvantages of hydraulic drive system in a machine tool. 06
- 8(d) Explain the power transfer mechanism of a lathe machine. 07

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Mechanical Engineering

B. Sc. Engineering 4th Year 2nd Term Examination, 2018

ME 4229

(Industrial Management)

Time: 3 Hours.

Total Marks: 210

N.B. i) Answer any THREE questions from each section in separate scripts.

ii) Figures in the right margin indicate full marks.

iii) Assume reasonable data if any missing.

SECTION – A

- 1(a) What is meant by management? Write down the principles of scientific management theory proposed by Taylor. 12
- 1(b) Illustrate the concept of Max Weber's bureaucracy. 12
- 1(c) Define organization. Enlist the types and importance of an organization. 11
- 2(a) Draw the organogram of line, line and staff and functional organization. Mention their advantages and disadvantages. 15
- 2(b) What is meant by span of control? Mention the conditions that influence the selection of span. 10
- 2(c) Illustrate functional base and service base personnel management. 10
- 3(a) Define job evaluation. Explain point rating method of job evaluation. 13
- 3(b) Compare and contrast job enlargement and job enrichment. 12
- 3(c) Explain why Merrick differential price rate system is beneficial for skilled worker over Taylor's differential price rate system. 10
- 4(a) Define moral and motivation. Explain the impact of high moral of employees in an organization. 10
- 4(b) Describe Maslow's Hierarchy needs theory and modern Vroom expectancy theory of motivation. 20
- 4(c) What are the objectives of job rotation? 05

SECTION - B

- 5(a) Describe leadership according to the authority and discuss the application of each of them. 10
- 5(b) Distinguish between trait theory and Fiedler's contingency theory of leadership. 10
- 5(c) What are the basic difference between leader and manager. 05
- 5(d) Explain the steps for decision making as an industrial manager. 10

- 6(a) Explain the purpose of budgetary control? How budget and budgetary control help in achieving efficiency in management? 15
- 6(b) Distinguish between controllable and non-controllable expenditures. Explain how budgets are used to plan allocation of resources and to control over the actions of various departments of an industry. 14
- 6(c) What is budget? Mention the requisites and advantages of budget. 06
- 7(a) Define marketing. What are the effects of advertisement on a new product in marketing? Explain. 15
- 7(b) What are the benefits of 'Market Research'? Explain its necessity in modern industries. 10
- 7(c) Define purchasing? Enlist purchase parameters and purchasing methods. 10
- 8(a) Define: 10
 (i) Certainty (ii) Risk (iii) Uncertainty. Explain a product life cycle.
- 8(b) Define management information system. What are the types and characteristics of a good MIS. 10
- 8(c) What is strategic planning process? Distinguish between patent and royalty. 15