DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

End SemesterExamination – December - 2018

Course: M. Tech. (MEP/ME/MPE/Production)   Semester:- I
Subject with Subject Code:-Theory of Machining (MMF101)
Marks:60   Date: 24/12/2018   Time:- 3 Hr.

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram, etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately
*   assume it and should mention it clearly*

                                                                    (Marks)
Q.1. Solve any Two of the following: (6×2=12)

(a) In a finish surface grinding operation on a horizontal spindle surface grinder, the length of the workpiece is 100 mm and its width is 50 mm. The cross feed is applied every stroke of the work table and is set at 0.25 mm, the back engagement is 0.1 mm and the maximum traverse speed is 250 mm/s. The frequency of worktable reciprocation is 1 per sec. Calculate -
1. The machining time
2. The maximum metal removal rate

(b)Define the following:
1. Built up Edge formation 2. Bulk ratio of chip 3. Stabler's chip flow criteria

(c) Derive the correlation between the chip strain and the material properties as a chip breaking criteria.

Q.2.Solve any Two of the following: (6×2=12)

(a) Explain the method of measuring the cutting force using piezo-electric dynamometer.
During shaping like single point machining a steel plate at feed 0.20 mm per stroke and depth 4 mm by a tool of rake and inclination angle of 0° and ϕ = 90°. Pz and Pxmeasured were 800 N and 400 N respectively, chip thickness is 0.4 mm. Using MCD determine the yield shear strength of the work material in the machining condition.

(b) Derive the expression for determining the shear zone temperature in machining. Assume the suitable assumptions. Also write the various methods of measurement of temperature in machining.

(c) Define surface integrity. Explain the unit event occurred during grinding operation. How it will affect the quality of the generated surface?

Q.3. Attempt the following: (6×2=12)

(a) List the essential properties of cutting fluid required as machining coolants and lubricants. Explain the methods of delivery of cutting fluids in machining.

(b) How does a cutting tool fail? Explain in brief the plastic deformation and stability criteria of a cutting tool. Explain how thermo chemical wear occurs on cutting tool.

Q.4. Attempt any one of the following: (12×1=12)

(a) Derive the expression for cutting speed that gives minimum production cost. Write the suitable assumptions and define the terms used in the expression.

(b) Show with an appropriate graph how the production rate vary with the cutting speed. Label all the points on the graph and discuss its relevance.
In an attempt to appraise the cost-cutting speed relationship, the following three tests were conducted:

Test 1	V_1=100 m/min	$C_p = 8$
Test 2	V_2=200 m/min	$C_p = 12$
Test 3	V_3=300 m/min	$C_p = 10$

Assuming a parabolic relationship, write an equation that describes the operation between the given points.

Q.5. Solve any two of the following. (6×2=12)

(a) Explain with a neat sketch the characteristics of grinding process. Describe with a neat diagram the three modes of grit-workpiece interaction in grinding.

(b) Explain the concept of critical depth of cut with respect to grinding velocity and the force. Show the variation of the above with the critical depth of cut using graphs.

(c) Explain the micro milling analogy of surface grinding process using a neat sketch.

Q.6. Solve any two of the following: (6×2=12)

(a)Discuss the effects of the following parameters on working accuracy and MRR in abrasive jet machining. 1) Grain size 2) jet velocity 3) Stand off Distance

(b) Write the advantages and limitations of Electro-discharge machining. At least four each.

(c) Describe the working principle of Ultrasonic machining. Explain how the magneto-strictive generators works in case of USM. What are its advantages over the piezo electric transducers.

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End Semester Examination – December - 2018

Branch: M. Tech. (Manufacturing Engg.)   **Sem.:- I**
Subject with Subject Code: - CNC Technology (MME12)
Marks: 60   **Date: 27/12/2018**   **Time: - 3 Hr.**

Instructions to the Students
1. *Each question carries 12 marks.*
2. *Attempt any five questions of the following.*
3. *Illustrate your answers with neat sketches, diagram etc., wherever necessary.*
4. *If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.*

	(Marks)
Q1. What are the different components of CNC systems? Explain.	(12)
Q2. Explain different drives used in CNC machines.	(12)
Q3. What is a CNC turret punch press? Explain in detail.	(12)
Q4. What is CNC Programming with CAD/CAM? Explain.	(12)
Q5. What is computer assisted part programming? Explain.	(12)
Q6. Explain maintenance of CNC system in detail.	(12)
Q7. What is free from surface machining? Explain.	(12)

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Winter Semester Examination – December – 2018

Branch: M. Tech (Manufacturing Engineering) **Sem.: I**
Subject with Subject Code: Advanced Joining Technology **Marks: 60**
MMF103
Date: 29/12/2018 **Time: 3 Hrs**

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

(Marks)

Q.1. Answer the following questions, **(12)**

A] Explain submerged arc welding (SAW) process with neat sketch. (6)

B] What is the effect of power density of heat source on heat input required for welding? Explain by considering gas welding, arc welding and laser beam welding processes. (6)

Q.2. Answer the following questions, **(12)**

A] Explain the effect of changes in the following parameters on laser welding? (6)
   a. Welding speed
   b. Beam power
   c. Focal point position

B] Explain the sequence of processes taking place at the weld interface in the ultrasonic welding process. Enlist the various ultrasonic variables. (6)

Q.3. Answer any two of the following questions, **(12)**

A] Write a short note on the hot gas welding method of welding plastics. (6)

B] Draw pulse energy versus pulse duration plot for laser welding and show the following zones, (6)
   a. Appropriate zone
   b. Cutting effect zone
   c. Incomplete penetration zone

C] Explain any two methods used for joining ceramic (6)

D] Draw schematic diagram to show weld geometry and clearly mention face, root, throat, penetration, etc. (6)

Q.4. **Answer the following questions,** (12)

A] Why residual stresses are developed in welded structure? What are the different stress relieving methods? (6)

B] What is the effect of variation of heat input in the different zones of welded joints on the microstructure? (6)

Q.5. **Answer the following questions,** (12)

A] What are the different failure modes of welded joints? (6)

B] Explain the penetrant testing used for testing welded joints. What are its limitations? (6)

Q.6. **Answer the following questions** (12)

A] Explain the aspects considered for selecting a particular adhesive for bonding of two elements. (6)

B] Explain schematically following processes. (6)
   1. Dip brazing
   2. Torch soldering.

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
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Semester Examination – December - 2018

Branch: M. Tech Manufacturing Process   **Sem.:- I**

Subject with Subject Code: Manufacturing   Planning and Control. Marks: 60
MMECH15A - Elective II
Date: 03/01/2019   **Time:- 3 Hr.**

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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(Marks)

Q.1. . Attempt any **two** of the following   **(6x2 =12)**

a] . What are different manufacturing systems and their characteristics ?What are the criteria for evaluating them?

b] What is Cellular manufacturing? What was the need for developing this concept? What are its advantages?

c] Choose suitable manufacturing system for a machine shop machining eight different types of pistons in batch size 1500 to 8000 numbers per month with total requirement of 50,000 pistons per month. Each piston undergoes 3 different operations namely turning, boring and grooving. Give reasons for your choice. Make suitable assumptions if required.

Q.2. a] What is pre planning? What are aspects considered in this activity?   **(6)**

b] Explain what is long term and short term capacity planning . Give examples   **(6)**

Q.3. a] What is plant layout ? What are factors to be considered in finalizing plant layout?   **(6)**
b] Draw a plant layout for medium scale machine shop engaged in batch production .
The shop contains general purpose machines like lathes, milling machines, drilling machines and   grinding machines in multiple numbers eg 6 lathes, 5 milling machines etc.
Make suitable assumption where ever required.   **(6)**

Q.4. a] Define what is inventory. What are costs of carrying inventory ? Explain each one in details . **(6)**
b] Explain in details what is Materials Requirement Planning [M R P] Explain its working. **(6)**

Q.5. a] What is assembly line balancing? Explain in details ranked position weights method for assembly line. **(6)**

b] Explain in detail concept of economic lot size for a manufacturing batch? Derive expression for economic lot size. Make suitable assumptions if required. **(6)**

Q.6. a] Define Quality from various perspectives and state significance of each approach. **(6)**

b] What are ingredients of cost of quality? Explain each one in detail. **(6)**

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Winter Semester Examination – December 2018

Branch: M.Tech. (MECHANICAL ENGINEERING)   **Semester: I**

Subject with Subject Code: - Research Methodology - MMDE204A/MHP12E5A/MMF204A/MME11E3C

Date: 05/01/2019   **Marks: 60**   **Time: 3 Hrs.**

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. (a). Define the following terms (i). Sample size. (ii). Co-efficient of variance	3 x 4M = 12 M
(b). Define Skewness and sampling.	
(c). Explain in detail sampling theory.	
Q.2. (a). Explain the alternative hypothesis in detail.	2 x 6M = 12M
(b). Explain the following terms. (i). Type I and Type II Errors. (ii). Measures of dispersion	
Q.3. (a) Explain the following terms: (i). Measures of central tendency, (ii). Correlation	2 x 6M = 12M
(b) State the Empirical relationship between mean, median and mode?	
Q.4. (a) Determine the average, median, mode, range and standard deviation for the height of seven People. Data are 1.83, 1.91, 1.78, 1.80, 1.83, 1.85, 1.87 meters	2 x 6M = 12M
(b) What do you understand by interpretation of data? Write a detailed note on its utility.	
Q.5. (a) Describe the various criterion of test evaluation?	2 x 6M = 12M
(b). Write detailed notes on data collection and data analysis.	
Q.6. (a). Explain the various steps of writing of research report in detail?	2 x 6M = 12M
(b). What are various points to be kept in mind while selecting and formulating a research problem?	

---The End---

Dr. Babasaheb Ambedkar Technological University Lonere-Raigad
Semester Examination: Dec 2018

Class: M. Tech. in Manufacturing Engineering   Semester: II

Subject: Metal Forming Processes (MMF201)

Time: 3 hours   Maximum Marks: 60

Instructions: 1. Attempt ANY FIVE question.
2. Assume suitable data wherever necessary and mention it clearly.
3. Write your specific instruction, if any.
4. Each question carries 12 marks.

Q. 1   What do you understand by the rolling operations? Elaborate with various types of rolling operations. Describe the various rolling forces acting during the rolling operations.

(12)

Q. 2   What is meant by elastic behavior of the materials? Explain the importance of the metal forming processes with different metal forming processes.

(12)

Q. 3   What do you understand by work hardening? Elaborate: hot, cold and warm working processes. How will you differentiate slab, billet and bloom?

(12)

Q. 4   Draw slip lines for different stresses. What is the importance of extrusion and wire drawing processes in the MFP?

(12)

Q. 5   Explain few latest developments in the metal forming process and simple case study of the metal forming processes.

(12)

Q. 6   What do you meant by near net shape and net shape manufacturing? Explain with suitable examples.

(12)

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