

CS/B.TECH/ME(O)/ODD/SEM-7/ME-702/2019-20



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL**

Paper Code : ME-702

PUID : 07188 (To be mentioned in the main answer script)

**ADVANCED MANUFACTURING
TECHNOLOGY**

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own
words as far as practicable.*

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$
- i) Jigs and fixture are used for
 - a) mass production
 - ☒ b) identical part production
 - c) both (a) and (b)
 - d) none of these.
 - ii) Material removal rate in ECM is governed by
 - a) Fleming's rule
 - b) Newton's law
 - ☒ c) Faraday's law
 - d) None of these.
 - iii) Which of the following is the function of jig ?
 - a) Holding
 - b) Guiding
 - c) Locating
 - ☒ d) All of these.

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- iv) In USM the rate of penetration is dependent on
 - a) action of slurry -
 - b) action of the abrasive grains
 - c) reduction of the chemical
 - d) all of these.
- v) Jigs are not used in
 - a) Drilling
 - b) Shaping
 - c) Milling
 - d) Taping.
- vi) Flexible manufacturing is economical for production.
 - a) batch
 - b) mass
 - c) flow
 - d) none of these.
- vii) Work study is concerned with
 - a) improving present method and finding standard time
 - b) motivation of workers
 - c) improving production capability
 - d) improving production planning and control.
- viii) Basic tool in work study is
 - a) graph paper
 - b) process chart
 - c) planning chart
 - d) stop watch.
- ix) What does symbol 'O' imply in work study ?
 - a) Operation
 - b) Inspection
 - c) Transport
 - d) Delay / temporary storage.
- x) What does symbol D imply in work study ?
 - a) Inspection
 - b) Transport
 - c) Delay / temporary storage
 - d) Permanent storage.
- xi) Locating and clamping device made by
 - a) low carbon steel
 - b) high carbon steel
 - c) high speed steel
 - d) tool steel.

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Write down the advantages and disadvantages wire cut EDM over conventional EDM.
3. Draw the basic electrical waveform and describe spark initiation and MRR mechanism in EDM.
4. Write short notes on the following :
 - i) Cellular Manufacturing Systems
 - ii) Flexible Manufacturing System. $2\frac{1}{2} + 2\frac{1}{2}$
5. Estimate the Material removal rate (MRR) in Abrasive jet machining (AJM) of a brittle material with flow strength of 5 GPa. The abrasive flow rate is 3 gm/min, velocity is 205 m/s and density of the abrasive is 4 gm/cc. <http://www.makaut.com>
6. Write the advantages and limitations of Ultrasonic process.

GROUP - C

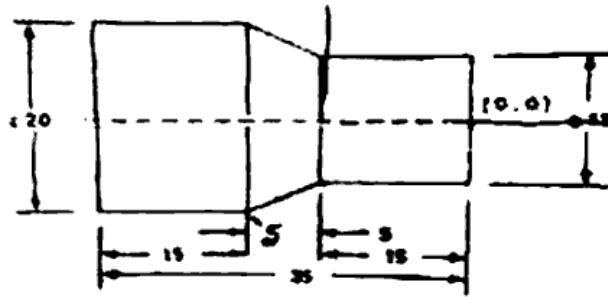
(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. Write down the need of non-traditional machining process. Write the difference between traditional and non-traditional machining process. Explain with figure the ultrasonic machining process with its various components. $3 + 5 + 7$

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8. Describe with neat sketch the working principle of Laser beam machining process. Draw the schematic diagram of Abrasive Jet machining process set up. 8 + 7
9. State the Faraday's law of electrolysis. Describe with figure Electrochemical Machining process. Write the advantages and limitation of it. 2 + 5 + 8
10. Explain with a neat sketch the operation of the canned cycle G81 as per ISO. Write the part programming for the component shown in the figure, keeping maximum depth of cut 2 mm. (All dimensions are in mm): 5 + 10



11. Write part programming for the component shown in the figure. Diameter of the milling cutter is 28 mm. (All dimensions are in mm).

