	Utech
Name :	
Roll No.:	A Page of Exercising 2nd Explant
Invigilator's Signature :	

CS/B.TECH (AUE)/SEM-3/AUE-304/2009-10 2009

MANUFACTURING METHODS

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)

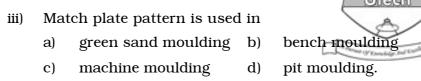
1. Choose the correct alternatives of the following:

 $10 \times 1 = 10$

- i) In arc welding arc is created between the electrode and work by
 - a) flow of current
 - b) voltage
 - c) material characteristics
 - d) contact resistance.
- ii) Preheating is essential in welding
 - a) high speed steel b) stainless steel
 - c) cast iron d) aluminium.

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- iv) In which of the following operation of lathe, the spindle speed is minimum?
 - a) Knurlingb) Taper turningc) Thread cuttingd) Finishing.
- v) The cutting edges of a standard twist drill are called
 - a) flutesb) lipsc) wedgesd) flanks.
- vi) The helix angle of a HSS twist drill for drilling cast iron is of the order of

a)
$$14^{\circ} - 22^{\circ}$$
 b) $24^{\circ} - 32^{\circ}$ c) $35^{\circ} - 40^{\circ}$ d) $40^{\circ} - 50^{\circ}$.

- vii) In which type of milling maximum friction is caused ?
 - a) Up millingb) Down millingc) End millingd) Climb milling
- viii) Total signature comprises
 - a) 4 elementsb) 5 elementsc) 6 elementsd) 7 elements.
- ix) In drawing operation the metal flows due to
 - a) Plasticityb) Ductilityc) Shearingd) Yielding.
- x) Core prints are used to
 - a) Strengthen core
 - b) Form seat to support and hold the core in place
 - c) Fabricate core
 - d) All of these.



GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. What are the common allowances provided on pattern and why?
- 3. Define the term welding and explain its different types. What do you understand by weldability of metal?
- 4. What are the principles of operation of resistance welding?

 Describe spot welding giving their relative merits and limitations.
- 5. Explain cutting tool signature with a suitable example.
- 6. Explain with schematic diagram the principle of thread cutting on a lathe.

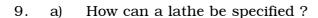
GROUP - C

(Long Answer Type Questions)

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

- 7. a) What are the requirements of gating system? Draw neat sketch of a gating system showing its all components and discuss on their functions in brief.
 - b) Explain in detail 'Investment casting method' with its advantages and applications.
 - c) Mention any two common defects in casting ? State their causes and remedies. (2 + 5) + 4 + 4
- 8. a) State the principle of arc welding. Describe in detail the formation of arc in arc welding.
 - b) What are the functions of coating on shielded electrode?
 - c) Write short notes on (i) soldering and (ii) brazing.
 - d) What are the principles of operation of resistance welding? (2+3)+3+5+2

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- b) What are the basic parts of a lathe ? Explain briefly with a neat sketch.
- c) How can speed variations be obtained in an all geared headstock of a centre lathe? Explain with figure.

$$3 + (2 + 6) + 4$$

- 10. a) Name and describe the principal parts of a column and knee type milling machine with neat sketch.
 - b) Distinguish between Up milling and Down milling.
 - c) What is indexing? Explain with neat sketch the working of universal dividing head during indexing. Determine the crank movement and gear ratio required to index 83 divisions. 5 + 3 + (1 + 3 + 3)
- 11. a) What is the fundamental difference between a shaper and planer?
 - b) How is the grinding wheel specified? Explain with an example.
 - c) Describe twist drill nomenclature using sketches.
 - d) Find the time required for taking a complete cut on a MS plate of 600×900 mm² by a shaper if the cutting speed is 9 m/min. The return time to cutting time ratio is 1: 4 and the feed is 3 mm. The clearance at each end is 75 mm. 2 + 4 + 4 + 5

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