



Name :

Roll No. :

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 × 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.



- iii) Match plate pattern is used in
 - a) green sand moulding b) bench moulding
 - c) machine moulding d) pit moulding.
- iv) In which of the following operation of lathe, the spindle speed is minimum ?
 - a) Knurling b) Taper turning
 - c) Thread cutting d) Finishing.
- v) The cutting edges of a standard twist drill are called
 - a) flutes b) lips
 - c) wedges d) 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 milling b) Down milling
 - c) End milling d) Climb milling.
- viii) Total signature comprises
 - a) 4 elements b) 5 elements
 - c) 6 elements d) 7 elements.
- ix) In drawing operation the metal flows due to
 - a) Plasticity b) Ductility
 - c) Shearing d) 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 ? $(2 + 3) + 3 + 5 + 2$



9. a) How can a lathe be specified ?
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 $600 \times 900 \text{ mm}^2$ 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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