*Name* : .....

*Roll No.* : .....

*Invigilator's Signature* : .....

**CS/B.Tech(AUE-Old)/SEM-3/AUE-304/2011-12**

**2011**

# 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 for the following : $10 \times 1 = 10$

i) In arc welding operation current value is decided by

a) thickness of plate

b) length of welded portion

c) voltage across the arc

d) size of the electrode.

ii) In sand moulding middle part of the flask is called

a) Cope b) Drag

c) Cheek d) Flask-middle.

iii) The optimum point angle of the twist drill for drilling mild steel is

a) 108° b) 110°

c) 118° d) 120°.

iv) In which kind of the following operations on lathe, the spindle speed will be minimum ?

a) Knurling b) Taper turning

c) Thread cutting d) Parting off.

v) Lathe bed is usually made of

a) Stainless Steel b) Structural Steel

c) Cast Iron d) Mild Steel.

vi) Dovetail ways are used in

a) lathes b) planners

c) milling machines d) grinders.

vii) Projection welding is

a) multi-spot welding process

b) continuous spot welding process

c) used to form mesh

d) none of these.

viii) Hobbing process is not suitable for cutting which type of gear ?

a) Spur b) Helical

c) Worm d) Bevel.

ix) Which one of the following is not a part of a shaper ?

a) Cross-slide b) Ram

c) Table d) Clapper box.

x) Sprue in casting refers to

a) Gate b) Riser

c) Vertical Passage d) Horizontal Passage.

## GROUP – B

### ( Short Answer Type Questions )

Answer any *three* of the following. 3 × 5 = 15

2. Explain the principle of centrifugal casting with its advantages and area of application.

3. Describe with neat sketch tool angles and cutting tool nomenclatures for a single point cutting tool.

4. 1 mm pitch screw thread is to be cut on a centre lathe having 6 TPI lead screw. Calculate the gearing arrangement for the driver and driven, assuming the usual change gear availability.

5. Describe with neat sketch the quick return mechanism ( any one ) as used in shaper.

6. Compare between closed die forging and open die forging.

## GROUP – C

### ( Long Answer Type Questions )

Answer any *three* of the following. 3 × 15 = 45

7. a) Explain hot chamber and cold chamber die casting method with necessary figures. Discuss on advantages and disadvantages of die casting.

b) Explain in detail on the common pattern allowances provided on pattern.

c) What are the common defects in casting ? State their causes and remedies. 5 + ( 5 + 2 ) + 3

8. a) What are the different types of flames used in gas welding ? Explain in brief.

b) Discuss Tungsten Inert Gas ( TIG ) welding method on the following :

i) Principle of operation with neat sketch

ii) Advantages

iii) Limitations

iv) Specific applications.

c) What are the functions of coating on shielded electrode ?

d) Explain the following terms :

i) Constant current arc welding

ii) Constant potential arc welding

iii) Constant power arc welding. 3 + 5 + 3 + 4

9. a) How speed variations can be obtained in an all geared headstock of a centre lathe ? Explain with figure.

b) Explain with schematic diagram the principle of thread cutting on a lathe.

c) Explain the method of taper turning by taper turning attachment with a suitable sketch. 5 + 5 + 5

10. a) Describe twist drill momenclature using sketches.

b) In a shaper work the length of the stroke is 300 mm, number of double strokes per minute is 40 and the ratio of return time to cutting time is 1 : 2. Find the cutting speed.

c) Show with schematic diagrams the process of forward and backward extrusions. Give two examples of components produced by extrusion. 5 + 5 + 5

11. a) Calculate the change gears for indexing to give 83 divisions.

b) Distinguish between the following :

i) Upmilling and Downmilling

ii) Boring and Reaming

iii) Shaper and Planer.

c) Calculate the change gears for indexing to give 153 divisions. 5 + ( 3 × 2 ) + 4