

**MODEL QUESTION PAPER . I**  
**[ME/IP/IM/MA/AU]**

**MANUFACTURING PROCESS - I**

Time: 3 Hrs.

Max. Marks: 100

Answer any Five Questions, at least taking Two from Part A and C and One from Part B)

PART - A

- a) With the help of schematic representation give the classification of manufacturing process. (10)
  - b) Define casting process and explain the different types of patterns with neat sketches. (8)
  - c) Write a note on BIS color coding for patterns. (4)
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- a) Enumerate the functions of the pattern and explain shrinkage, draft and distortion allowances. (10)
  - b) Briefly explain the desirable characteristics of foundry sand. (5)
  - c) Write a note on core making and core baking. (5)
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- a) Sketch and explain the jolt - squeeze moulding machine. (6)
  - b) Explain briefly 'CO<sub>2</sub>' moulding process. (4)
  - c) With neat sketches explain
    - i) Investment casting
    - ii) Centrifugal casting
 (10)

PART - B

- a) Explain 'Straight Sprue' and 'Tapered Sprue' with sketches. (4)
  - b) With a neat sketch explain the constructional features of 'CUPOLA'. (8)
  - c) Explain the pressurized gating system and list the advantages of it. (8)
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- a) Explain Indirect Arc Furnace with the help of a neat sketch and list its advantages and disadvantages. (10)
  - b) Explain the various types of casting defects and suggest remedies for the same. (10)

PART - C

- a) Define welding and how are welding process classified? (6)
  - b) Write a note on Heat Affected Zone (HAZ) in welding (4)
  - c) Explain Tungsten Inert Gas welding (TIG) with the help of a neat sketch and list its advantages and limitations. (10)
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- a) Explain Automatic Hydrogen welding and Laser welding with suitable sketches. (10)
  - b) With neat sketch explain the principle of operation of resistance welding process. (10)
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- a) Define weldability of metals. Explain how weldability is determined. (5)
  - b) Explain various types of welded joint defects. (5)
  - c) Explain the principle of brazing operation and compare brazing with adhesive bonding. (5)
  - d) List the advantages and limitations of Electron Beam welding. (5)

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**MODEL QUESTION PAPER 2**  
**[ME/IP/IM/MA/AU]**

**MANUFACTURING PROCESS - I**

Time: 3 Hrs.

Max. Marks: 100

(Answer any Five Questions, at least taking Two from Part A and C and One from Part B)

PART - A

1. a) Explain the factors to be considered in the selection of a process for production. (10)  
b) Explain the steps involved in casting process. (6)  
c) Write a note on disposable patterns. (4)
2. a) What is the necessity of allowances on pattern ? Explain the pattern allowances with suitable sketches. (10)  
b) With the help of a neat sketch explain the Core Blowing Machine. (10)
3. a) With the help of a neat sketch explain Shell Moulding process. (8)  
b) Write a note on sand slingers with a suitable sketch. (6)  
c) Explain the desirable properties of a moulding sand. (6)

PART - B

4. a) with suitable sketches explain the different types of gating system. (8)  
b) Write the functions of 'RISER' and explain 'OPEN RISER' and 'BLIND RISER' with sketches. (6)  
c) With a neat sketch explain the working of an Induction Furnace. (6)
5. a) Explain different zones of CUPOLA with neat sketches. (8)  
b) Write a note on Fetting and Cleaning of castings. (4)  
c) Explain The Magnetic Particle Inspection of castings with their advantages and disadvantages. (8)

PART - C

6. a) Explain with a neat sketch  
i) Fillet weld                      ii) Bead weld                      iii) Gas weld  
iv) Seam weld.                      v) Spot weld (10)  
b) Explain with the help of a neat sketch the Metal Inert Gas welding (MIG) process with its advantages and disadvantages. (10)
7. a) Write a note on Base metal preparation for welding. (4)  
b) With a neat sketch explain Thermit welding process. (8)  
c) Explain Laser welding process and mention its advantages over other welding processes. (8)
8. a) Explain Welding, Soldering and Brazing with examples. (6)  
b) With a neat sketch explain the principle of operation of Electro slag welding and mention its applications. (10)  
c) Write a note on Welding defects. (4)

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Third Semester B.E. Degree Examination, January/February 2004

ME/IP/IM/MA/AU

**Manufacturing Processes I**

3 hrs.]

[Max.Marks : 100

Note: Answer any FIVE full questions, atleast taking two from Part A and C and One from Part B.

**Part - A**

- a) Classify production processes. Briefly explain the factors to be considered in selecting a process for production. (10 Marks)
- b) Enumerate the different steps involved in making a casting. (6 Marks)
- c) Write a note on pattern materials. (4 Marks)
- d) What is draft allowance? Discuss briefly why draft allowance is important for patterns. (6 Marks)
- e) With the help of a neat sketch explain the process of dielectric baking of cores. (8 Marks)
- f) Briefly explain the desirable properties of foundry sand. (6 Marks)
- g) With neat sketches briefly explain the different steps involved in a shell moulding process. (12 Marks)
- h) With a neat sketch explain continuous casting process. (8 Marks)

**Part B**

- i) Explain top gate and bottom gate with neat sketches. (8 Marks)
- j) With a neat sketch describe the operation of cupola furnace. (8 Marks)
- k) With neat sketches explain open riser and blind riser. (4 Marks)
- l) Give a detailed classification of furnaces. (6 Marks)
- m) With a neat sketch explain ultrasonic inspection of castings. Also list its advantages & limitations. (10 Marks)
- n) Write a note on gating ratio. (4 Marks)

**Part C**

- o) Define & classify welding process. (4 Marks)
- p) Explain with a neat sketch submerged arc welding process, mentioning its advantages & disadvantages. (10 Marks)
- q) Briefly explain the process of atomic hydrogen welding. (6 Marks)

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7. (a) With a neat sketch explain electron beam welding process. (6 Marks)
- (b) With neat sketches explain thermit welding process and list its advantages. (10 Marks)
- (c) Write a note on seam welding process. (4 Marks)
8. (a) Define weldability. Classify different weldability test. (4 Marks)
- (b) With a neat sketch explain laser welding process. (6 Marks)
- (c) Draw a neat sketch to show the various regions (zone), of a welded joint, along with the grain structure. (6 Marks)
- (d) Write a note on adhesive bonding. (4 Marks)

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Third Semester B.E. Degree Examination, July/August 2004

ME/IP/IM/MA/AU

## Manufacturing Process I

Time: 3 hrs.]

[Max.Marks : 100

- Note: 1. Answer any FIVE full questions. choosing atleast ONE question from each Part.  
2. All questions carry equal marks.  
3. Draw neat pencil sketches wherever necessary.

## Part - A

- (a) Give the list of classification of production processes. (5 Marks)  
(b) With a simple flow chart show the salient steps involved in casting process. (5 Marks)  
(c) Explain the need for different allowances in the pattern, with sketches. (10 Marks)
- (a) What are the requirements of a moulding sand? (5 Marks)  
(b) Differentiate between a mould and a core. (5 Marks)  
(c) What type of binders are used in core making? Explain dielectric baking of cores. (10 Marks)
- (a) With neat sketches explain high pressure diecasting process. (10 Marks)  
(b) With a neat sketch explain the working of a Jolt-squeeze machine. (10 Marks)

## Part B

- (a) Draw a neat sketch of a gating system showing all the elements. (5 Marks)  
(b) Explain what is gating ratio with examples. (5 Marks)  
(c) With a neat sketch show the constructional details of a cupola. Briefly explain. (10 Marks)
- (a) What is the function of a Riser. What is the principle used? (5 Marks)  
(b) List 4 important casting defects and for two of them explain the features causes and remedy. (5 Marks)  
(c) What is NDT? Explain clearly x-ray radiography with a neat sketch. What are the advantages and limitations of the method? (10 Marks)

## Part C

- (a) Give the classification of the welding process. What are its advantages and limitations? (5 Marks)  
(b) What is the principle of arc welding? Explain clearly of the function of a flux. (5 Marks)

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- (c) What is inert gas welding? Explain TIG welding process, with a neat sketch. Mention its advantages and limitations. (10 Marks)
7. (a) What is the principle of resistance welding? How are they classified? Explain with a neat sketch any one of them. What are the limitation of resistance welding? (10 Marks)
- (b) Explain with a neat sketch electron beam welding process. What are its advantages, limitations and its applications? (10 Marks)
8. (a) Differentiate clearly between soldering, brazing and welding. (6 Marks)
- (b) With a neat sketch explain the metallurgical aspects of welding highlighting changes in the structure of the weld at different zones. (10 Marks)
- (c) What is weldability? How is it assessed? Explain. (4 Marks)

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6. (a)  
(b)

(c)

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**NEW SCHEME**

**Third Semester B.E. Degree Examination, July 2006**

**ME/IP/IM/MA/AU**

**Manufacturing Processes - I**

Time: 3 hrs.]

[Max. Marks:100

Note : 1. Answer any FIVE questions, taking atleast TWO from Part A and C and ONE from Part B.

**PART - A**

- 1 a. Give the general classification of manufacturing processes. (06 Marks)  
b. Discuss the advantages and disadvantages of the casting process. (06 Marks)  
c. What is the difference between match plate pattern and cope and drag pattern? With a neat sketch explain any one of them. (08 Marks)
- 2 a. Briefly explain the mechanism of bonding in clay bonded sands. (06 Marks)  
b. Discuss the desirable properties of moulding sand. (06 Marks)  
c. With neat sketches explain a cold chamber die casting machine. (08 Marks)
- 3 a. Discuss the ingredients and properties of the following types of organic no-bake sand systems.  
i) Oil Urethane system. ii) Phenolic Isocyanate system. (08 Marks)  
b. Discuss the various ingredients of shell moulding sand. (04 Marks)  
c. How investment casting differs from conventional sand moulds? (04 Marks)  
d. Explain the setting reaction in CO<sub>2</sub> – Sodium Silicate process. (04 Marks)

**PART - B**

- 4 a. Define gating ratio. (02 Marks)  
b. Differentiate between pressurized and non-pressurized gating systems. (06 Marks)  
c. With a sketch show how blind riser is located. What are its advantages and disadvantages? (06 Marks)  
d. Explain the terms coke bed height, Well Zone and coke charge with respect to a cupola. (06 Marks)
- 5 a. With a neat sketch explain in detail the basic melting of steel using a direct type arc furnace. (10 Marks)  
b. Give the classification of casting defects based on the contributing causes or origin. (05 Marks)  
c. Briefly explain X-ray radiography technique of non destructive testing. (05 Marks)

**PART - C**

- 6 a. Discuss in detail the different types of fluxes used in gas welding and arc welding. (05 Marks)  
b. Explain with a neat sketch flux covered arc welding process. What are its advantages, disadvantages and applications? (10 Marks)  
c. How is MIG welding different from TIG welding? Explain. (05 Marks)
- 7 a. Explain the principle of resistance welding. (04 Marks)  
b. With neat sketches explain friction welding process. What are its advantages, disadvantages and applications? (10 Marks)  
c. With a neat sketch explain electron beam welding. (06 Marks)
- 8 a. With the help of sketches explain the solidification of the weld and the resulting structure of low carbon steel. (08 Marks)  
b. Briefly explain the welding characteristics of:  
i) Cast iron ii) Stainless steel iii) Aluminium. (06 Marks)  
c. With neat sketches explain induction brazing process. List out its advantages. (06 Marks)

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Third Semester B.E. Degree Examination, January/February 2005

ME/IP/IM/MA/AU

**Manufacturing Processes - I**

Time: 3 hrs.]

[Max.Marks : 100

Note: Answer any FIVE full questions out of Eight questions.

**Part - A**

1. (a) Classify the various production processes. Briefly explain the factors to be considered in selecting a process for production. (5 Marks)
- (b) List and explain different steps in casting process. (5 Marks)
- (c) Explain the terms pattern, core, mould and casting in casting process. (4 Marks)
- (d) List the advantages and limitations of casting process. (6 Marks)
2. (a) List the different types of patterns and explain any two types of patterns with neat sketches. (2+5+3 Marks)
- (b) Explain five types of pattern allowances. (5 Marks)
- (c) Write a note on pattern materials. (3 Marks)
- (d) Explain the desirable properties of moulding sand. (4 Marks)
3. (a) With a neat sketch explain Jolt-squeeze moulding process. (4 Marks)
- (b) With a neat sketch explain the principle process, application and limitations on any two of the following casting processes.
  - i) Pressure die casting process.
  - ii) Centrifugal casting process.
  - iii) Shell moulding process.
 (8 × 2 = 16 Marks)

**Part - B**

4. (a) Explain the functions of a gating system. (6 Marks)
- (b) With a neat sketch describe the operation and reaction taking place in different zones of a Cupola. (6 Marks)
- (c) Explain the various types of casting defects and suggest remedies for the same. (6 Marks)

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**Third Semester B.E. Degree Examination, Dec. 07 / Jan. 08**  
**Manufacturing Process - I**

Time: 3 hrs.

Max. Marks: 100

Note : Answer any FIVE full questions.

1. a. Briefly discuss the steps involved in making a casting. (06 Marks)  
b. Discuss the different materials used in making a pattern. (07 Marks)  
c. What are the different allowances given on a pattern? Explain briefly. (07 Marks)
2. a. With a sketch, explain the process of making a given sand mould. (10 Marks)  
b. Sketch and explain a Jolt moulding machine. (10 Marks)
3. a. Explain the procedure of shell moulding highlighting its advantages. (10 Marks)  
b. Sketch and explain a centrifugal casting machine, highlighting its application. (10 Marks)
4. Write explanatory notes on:  
a. Cupola and its working. (12 Marks)  
b. Casting defects, its causes and remedies. (08 Marks)
5. Explain the following welding process with necessary sketches and its field of application:  
a. Tungsten inert gas welding. (10 Marks)  
b. Submerged arc welding. (10 Marks)
6. Sketch and explain the following welding processes and its uses:  
a. Spot welding (10 Marks)  
b. Thermit welding. (10 Marks)
7. a. Explain the different types of electrodes in use and the importance of coating. (10 Marks)  
b. Explain the different welding defects, its causes and remedies. (10 Marks)
8. Explain the following types of non destructive methods of inspection, with necessary sketches:  
a. X rays. (10 Marks)  
b. Magnetic particle inspection. (10 Marks)

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**Third Semester B.E. Degree Examination, Dec.08/Jan.09**  
**Manufacturing Process - I**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions  
selecting at least two questions from each part.**

**Part A**

- 1 a. With a simple flow chart, show the different steps involved in casting process (sand moulding). (05 Marks)
- b. List down the functions of a pattern. (05 Marks)
- c. What is a binder? How are they classified? Which is the common binder employed for regular castings. (05 Marks)
- d. Explain the need for an additive in moulding sand. Mention the type of additives used for different requirement, as an example. (05 Marks)
- 2 a. With a neat sketch show all the details of green sand mould (cross section), which is ready to receive molten metal. (05 Marks)
- b. With a neat diagram show how carbon dioxide core is made. Give the reaction involved in bonding. (05 Marks)
- c. Show the different components of a horizontal gating system for a large plate casting with a neat figure. (05 Marks)
- d. Draw a neat sketch of a Jolt type molding machine. Show all the details on it, including the pattern and mould box. (05 Marks)
- 3 a. Describe investment shell moulding process. Give all the details with neat sketches. What are the advantages of the process? (10 Marks)
- b. Explain cold chamber die casting process with neat sketches. Include all the details on the sketch. What are the limitations of the process. (10 Marks)
- 4 a. How are melting furnaces classified? Give the basis. (05 Marks)
- b. With a neat sketch, explain the melting operations involved in a Cupola furnace. Show various zones in it. Mention the popular metal/alloy that can be produced in the furnace. (10 Marks)
- c. What are casting defects? Explain the cause for any two defects. (05 Marks)

**Part B**

- 5 a. Explain clearly the principle of Arc Welding Process. (05 Marks)
- b. Briefly highlight submerged arc welding process with a neat figure. (07 Marks)
- c. What is oxy-acetylene welding? Explain the reaction involved. Identify the different zones in the gas flame. (08 Marks)
- 6 a. What is the principle of resistance welding? Mention the major application of the process. (05 Marks)
- b. Differentiate between Butt and Seam welding with neat figures. (05 Marks)
- c. Describe laser-welding process with a neat figure. List the advantages and limitations of the process. Identify the important application. (10 Marks)
- 7 a. Write a short note on electrodes and filler rods. (05 Marks)
- b. After welding a medium carbon steel, what changes are observed in the microstructure. Explain in detail the different zones formed with a neat and clear figure. What is its influence on the weld properties? (10 Marks)
- c. Write a note on shrinkage and residual stresses in welds. (05 Marks)
- 8 Write short notes on any four:
  - a. Parameters in soldering.
  - b. Furnace brazing.
  - c. Chemicals and fluxes in brazing and soldering
  - d. Significance of inspection methods (NDT)
  - e. Ultrasonic inspection.
  - f. Eddy current inspection. (20 Marks)



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**Third Semester B.E. Degree Examination, June-July 2009**  
**Manufacturing Process – I**

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Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting at least Two full questions from each part.**

**PART – A**

- 1 a. Show the classification of manufacturing processes with a neat schematic diagram. (05 Marks)  
b. List and explain different steps involved in casting process. (08 Marks)  
c. What is pattern? Explain the importance of pattern allowances. (07 Marks)
- 2 a. What are the types of moulding sands? Discuss the properties of moulding sand. (08 Marks)  
b. With sketch explain the concept of gating and risering system. (08 Marks)  
c. Mention various casting defects. (04 Marks)
- 3 a. Explain the following  
i) Sweep mould;      ii) CO<sub>2</sub> mould;      iii) Shell mould. (12 Marks)  
b. What is die-casting? Explain with sketch high pressure die casting process. (08 Marks)
- 4 a. Write a note on classification of melting furnaces. (04 Marks)  
b. Explain the working principle of a gas fired pit furnace with a sketch. (06 Marks)  
c. With help of sketch show the constructional detail of a cupola. Show different zones and reactions taking place in each zone. (10 Marks)

**PART – B**

- 5 a. What are the advantages and limitations of welding process? (04 Marks)  
b. Sketch and explain TIG and MIG welding. (08 Marks)  
c. Discuss the characteristics of neutral flame, carburising flame and oxidizing flame along with suitable sketches. (08 Marks)
- 6 a. Explain the principle of resistance welding. (02 Marks)  
b. Sketch and explain following;  
i) Seam welding  
ii) Spot welding  
iii) Butt welding  
iv) Projection welding (16 Marks)  
c. What are the advantages of electron beam welding? (02 Marks)
- 7 a. What is HAZ? Discuss the parameters, which affect HAZ. (08 Marks)  
b. Explain the welding characteristics of  
i) Cast iron;      ii) Stainless steel;      iii) Aluminium. (09 Marks)  
c. Write a note on welding defects. (03 Marks)
- 8 a. Explain with suitable sketches soldering and brazing processes. What are their advantages and limitations? (08 Marks)  
b. What is non-destructive testing? Explain any two non-destructive testing techniques. (12 Marks)

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Explain the following types of non destructive methods of inspection, with necessary sketches:  
a. X rays. (10 Marks)  
b. Magnetic particle inspection. (10 Marks)

Explain the different types of electrodes in use and the importance of coating.  
a. Explain the different types of electrodes in use and the importance of coating. (10 Marks)  
b. Explain the different welding defects, its causes and remedies. (10 Marks)

Sketch and explain the following welding processes and its uses:  
a. Spot welding (10 Marks)  
b. Thermit welding. (10 Marks)

Explain the following welding process with necessary sketches and its field of application:  
a. Tungsten inert gas welding. (10 Marks)  
b. Submerged arc welding. (10 Marks)

Write explanatory notes on:  
a. Cupola and its working. (12 Marks)  
b. Casting defects, its causes and remedies. (08 Marks)

Explain the procedure of shell moulding highlighting its advantages.  
a. Explain the procedure of shell moulding highlighting its advantages. (10 Marks)  
b. Sketch and explain a centrifugal casting machine, highlighting its application. (10 Marks)

With a sketch, explain the process of making a given sand mould.  
a. With a sketch, explain the process of making a given sand mould. (10 Marks)  
b. Sketch and explain a jolt moulding machine. (10 Marks)

Briefly discuss the steps involved in making a casting.  
a. Briefly discuss the steps involved in making a casting. (06 Marks)  
b. Discuss the different materials used in making a pattern. (07 Marks)  
c. What are the different allowances given on a pattern? Explain briefly. (07 Marks)

Note : Answer any FIVE full questions.

Max. Marks:100

Time: 3 hrs.

### Manufacturing Process - I

Third Semester B.E. Degree Examination, Dec. 07 / Jan. 08

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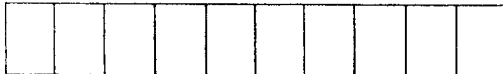
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**Third Semester B.E. Degree Examination, Dec.09/Jan.10****Manufacturing Process – I**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting at least TWO questions from each part.**

**PART – A**

- 1 a. What do you understand by the term 'manufacturing'? Discuss the factors to be considered in the selection of a process for production. (05 Marks)
- b. Define the casting process. Discuss the advantages and disadvantages of the casting process. (05 Marks)
- c. List the different allowances given on a pattern. Sketch and explain the loose piece pattern. (05 Marks)
- d. Write a note on binders and additives, used in moulding. (05 Marks)
- 2 a. What are the desirable properties of a moulding sand? (05 Marks)
- b. What is meant by a core? Sketch and explain a balanced core. (05 Marks)
- c. Draw a neat sketch of a gating system showing all the elements. (05 Marks)
- d. Explain with a sketch, the working of jolt type moulding machine. (05 Marks)
- 3 a. With neat sketches, briefly explain the different steps involved in shell moulding process and mention its advantages. (10 Marks)
- b. With a neat sketch, explain continuous casting process and mention its advantages. (10 Marks)
- 4 a. Explain the construction and working principle of a Cupola furnace, with a sketch. (12 Marks)
- b. Explain with a sketch, working of a direct arc electric furnace. (08 Marks)

**PART – B**

- 5 a. Define welding process. What are the advantages of welding over other manufacturing processes? List the industrial applications of welding. (08 Marks)
- b. Explain the following welding processes with necessary sketches and their field of applications. i) Tungsten inert gas welding (TIG) ii) Atomic hydrogen welding (AHW). (12 Marks)
- 6 a. With neat sketches, explain:  
i) Seam welding ii) Projection welding (12 Marks)
- b. With a sketch, explain the electron beam welding. Mention its applications. (08 Marks)
- 7 a. Discuss the need for the following, in welding:  
i) Flux ii) Filler material iii) Electrodes. (06 Marks)
- b. Explain the different welding defects, their causes and remedies. (10 Marks)
- c. Write a note on residual stresses, in welding. (04 Marks)
- 8 a. Explain soldering and brazing, with examples. Mention their advantages and disadvantages. (08 Marks)
- b. Explain the following, with neat sketches:  
i) X-ray radiography  
ii) Optical holography. (12 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 4x + 3 = 50, will be treated as malpractice.

