

Set. I

Mtg. by Shriping & Jyoti

A
C
D
C
A
A
B
A
B
A
A

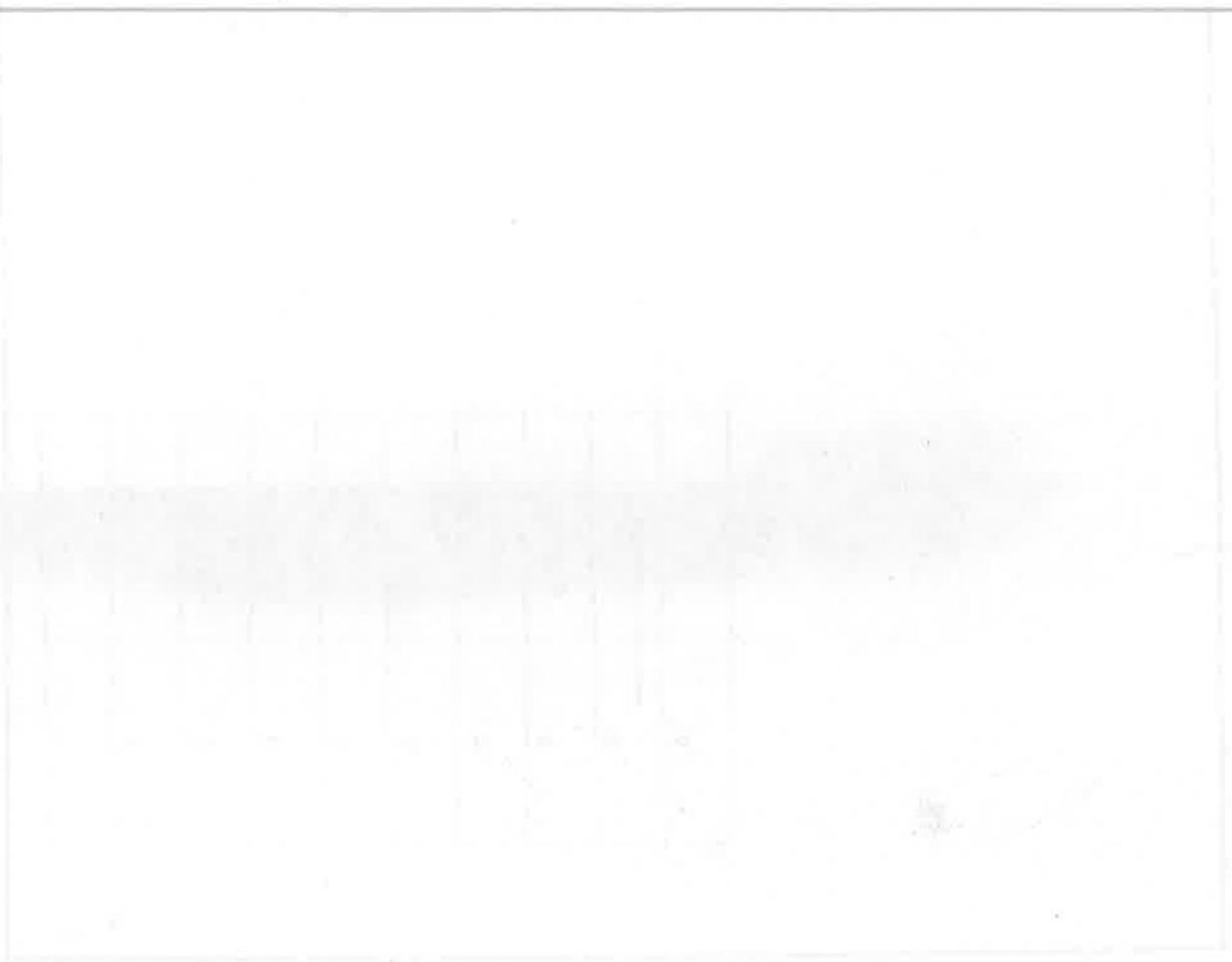
1

I.	A
II.	C
III.	D
IV.	C
V.	A
VI.	A
VII.	B
VIII.	A
IX.	B
X.	A

1

BY

THE UNIVERSITY OF CHICAGO
LIBRARY



B.Tech 4th Semester Examination, 2014
Model Answer

Subject:- Manufacturing by shaping and joining

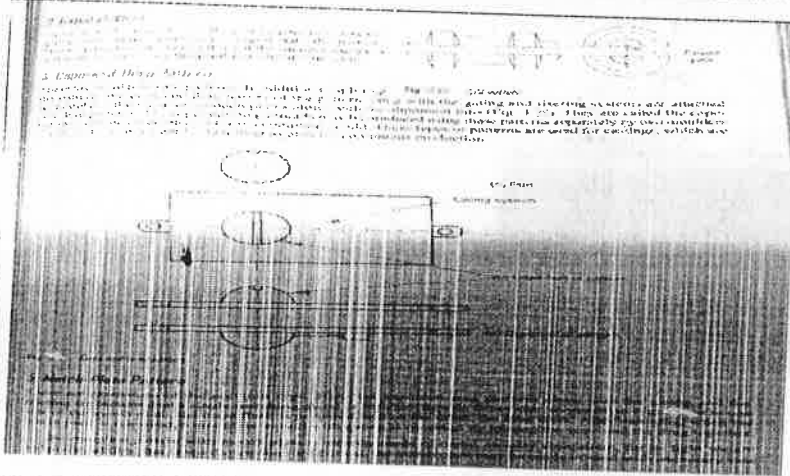
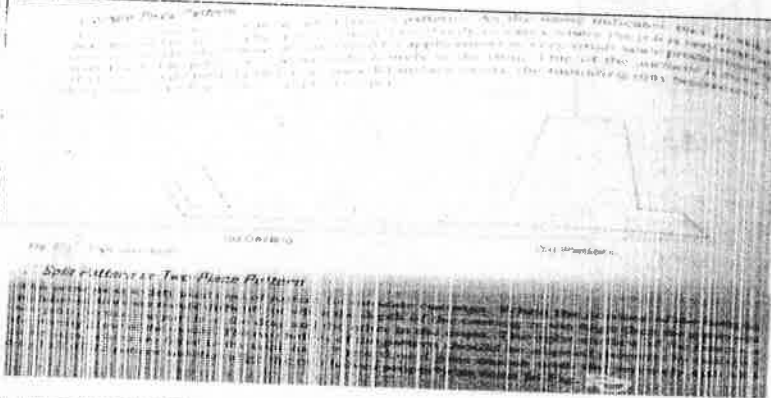
Paper Code:- 021409

Guideline 2 (a)

Sets (I) / (II)

Replica of the casting object to be made with some modifications is known as pattern.

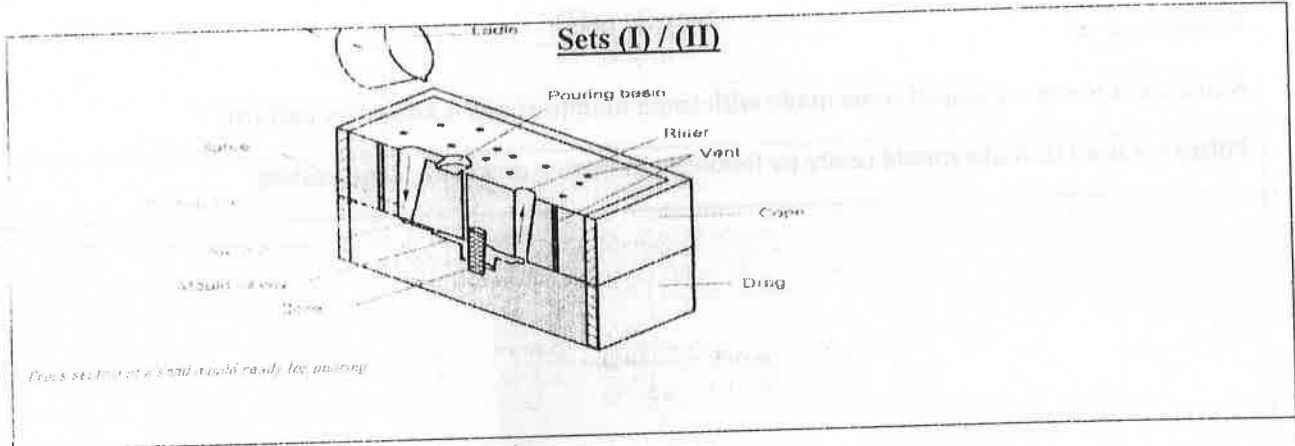
Pattern is used to make mould cavity by following moulding process in sand casting.



B.Tech 4th Semester Examination, 2014
Model Answer

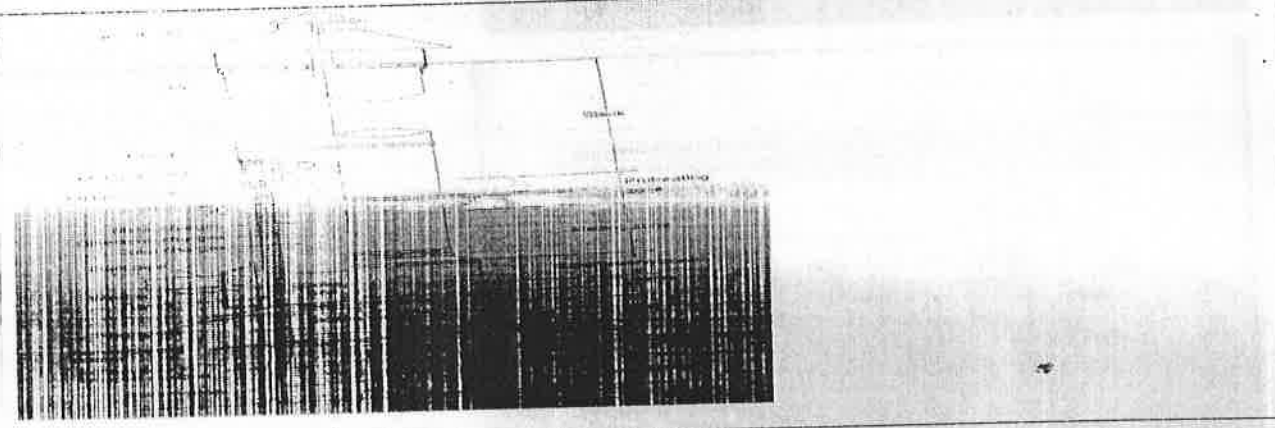
Subject:-

Paper Code:-



Explanation of important parts is needed.

(b)



Capota

The ladle is lined with heat-resisting fire bricks. It is prepared with a proper sand bed. This sand bed is prepared by mixing sand and coke. Immediately remove the sand bed from the ladle. The ladle is then filled with molten metal. The slag hole is located opposite to it. The slag hole, through which the slag goes out.

The ladle is connected to the air blowers supplying the required air. The air flows through the tuyeres. A little above the charging part, there is a charge consisting of a combination of pig iron, scrap iron, etc. The refractory lining above the charge door need not necessarily be very thick. It is necessary to maintain the necessary proper temperature in the ladle.

The ladle is prepared with a sand bed with a gentle slope towards the tapping end. Then a coke bed of suitable height is prepared above the sand bed. The coke bed is properly ignited. Alternate layers of coke and sand are prepared above the coke bed through the charge door maintaining the necessary proper temperature in the ladle.

B.Tech 4th Semester Examination, 2014
Model Answer

Subject:- Manufacturing by Shaping and Joining

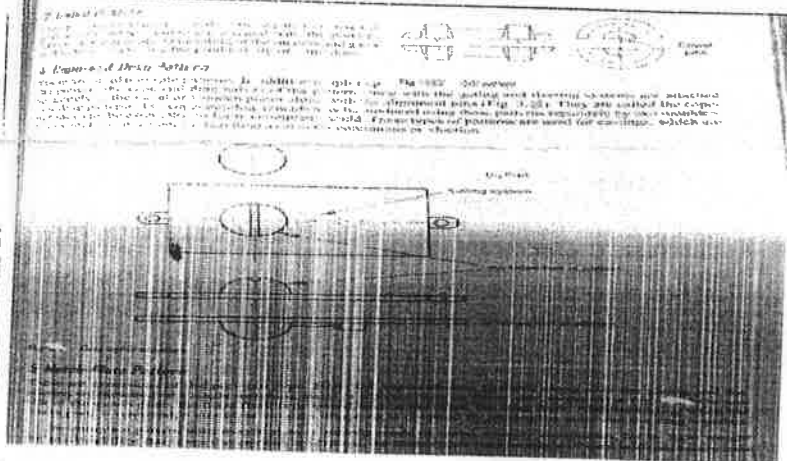
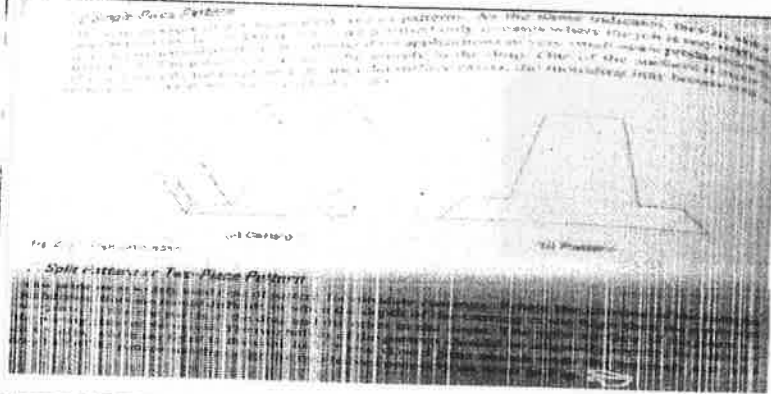
Paper Code:- 021409

Guideline 2 (a)

Sets (I) / (II)

Replica of the casting object to be made with some modifications is known as pattern.

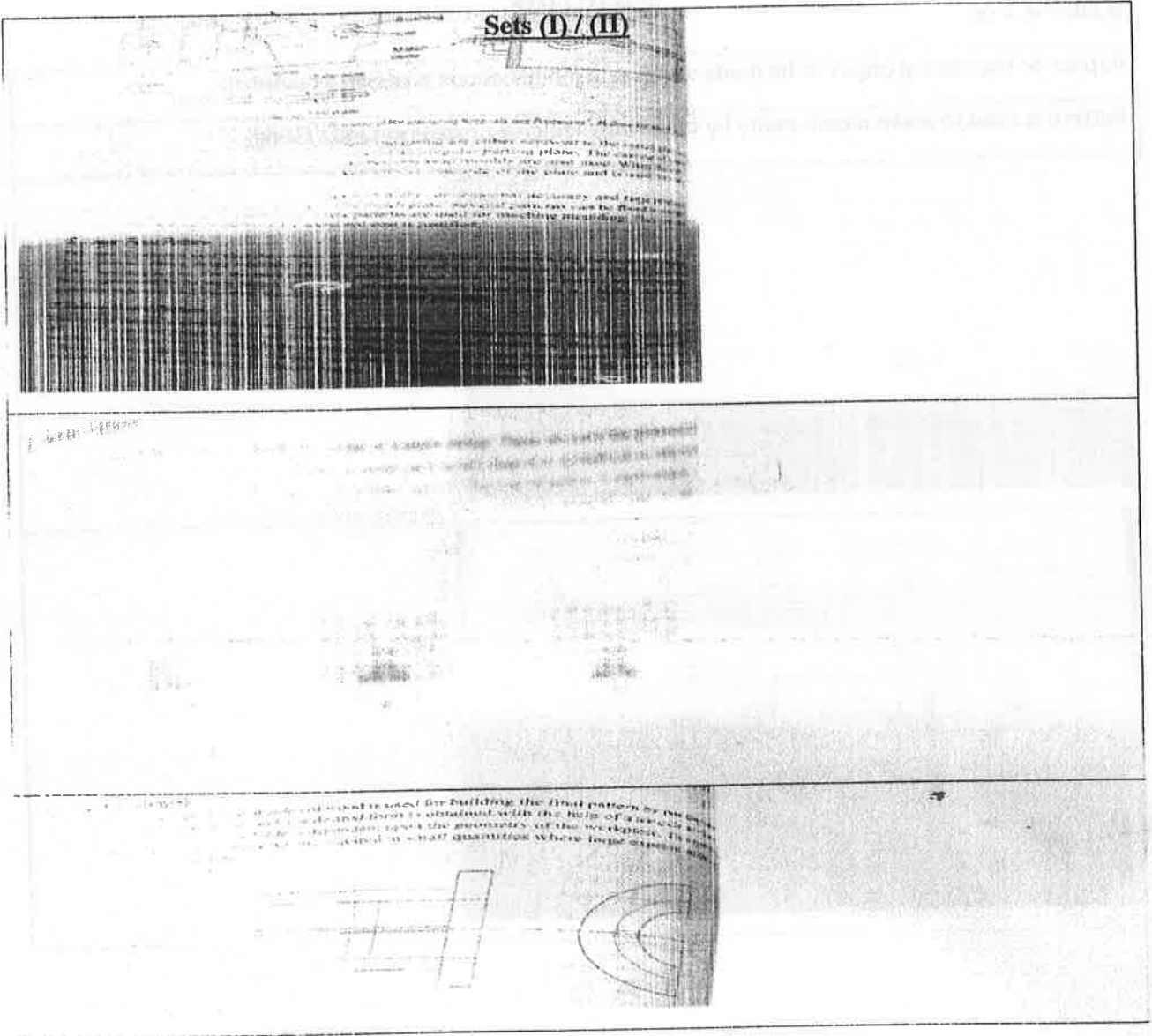
Pattern is used to make mould cavity by following moulding process in sand casting.



B.Tech 4th Semester Examination, 2014
Model Answer

Subject:-

Paper Code:-



(b)

B.Tech 4th Semester Examination, 2014
Model Answer

Subject:-

Paper Code:-

...Setups (I) / (II) produced by
...any complicated contour or cavity can be made by means of cores so that really intricate
...be obtained. These are generally made of sand and are even used in permanent moulds. In
...on all sides by the molten metal and are, therefore, subjected to much more
...as a result, the core sand should be of higher strength than the
...are the following:

- (i) **Green Strength** - A core made of green sand should be strong enough to retain the shape all it goes
- (ii) **Dry Strength** - It should have an quite dry strength so that when the core is placed in the mould, it
- (iii) **Retr. strength** - Since in most cases the core is surrounded all around, it is desirable that the core
- (iv) **Permeability** - Some of the gases evolving from the molten metal and generated from the mould may
- (v) **Collapsibility** - As the casting cools, it shrinks, and unless the core has good collapsibility (ability to

...the ability to ...
...should be smooth so as to provide a good fit,
...to which a core is subjected
...such that voids in the castings can be eliminated

Guideline 5 (a)

ELECTRIC ARC WELDING

...of the metal in the electrode and the metal in the workpiece. The metal in the electrode is heated to a temperature above the melting point of the metal in the workpiece. The metal in the workpiece is heated to a temperature above the melting point of the metal in the workpiece. The metal in the workpiece is heated to a temperature above the melting point of the metal in the workpiece.

Principal Arc

...the cathode moves towards the anode and an arc is established. The arc is maintained by the ionization of the metal in the electrode and the metal in the workpiece. The arc is maintained by the ionization of the metal in the electrode and the metal in the workpiece.

...the larger the gap requires higher potential differences. In the case of a large gap, the arc is maintained by the ionization of the metal in the electrode and the metal in the workpiece. The arc is maintained by the ionization of the metal in the electrode and the metal in the workpiece.

Name of Setter: -

Designation:-

Address:-

Am
Signature of Setter

B.Tech 4th Semester Examination, 2014
Model Answer

Subject:-

Paper Code:-

Sets (I) / (II)

...material is ...
...also, it can be easily shaped and ...
...absorption of moisture as a result of which fibers ...
...be able to reduce the warpage to some extent ...
...prerequisite for large-scale use of wood as a pattern ...
...making patterns are pine, mahogany, teak, ...
...the veneer type as well as the particle boards are ...
...their higher strength and ...
...However, they can be used only in patterns which are of the ...
...dependence on the size of the casting, the number of castings ...
...For very large castings, wood may be ...
...wood may be ...
...metal patterns are extensively used for ...
...Though many materials such as cast iron, brass ...

Guideline 3 (a)

Name of Setter: -

Address:-

Designation:-


Signature of Setter

B.Tech 4th Semester Examination, 2014
Model Answer

Subject:-

Paper Code:-

Guideline 4 (a)

Sets (I) / (II)

The mixture of sand, clay and moisture that is used to make mould is known as mould mix.

The image shows a page from a textbook with text and diagrams. The text describes the process of ramming sand into a flask. It mentions that the sand is generally poured from an overhead hopper and falls onto a solid bed plate. This process is suitable for horizontal surfaces but can lead to uneven packing. A better method is 'squeeze ramming', where the flask is lifted and then squeezed, creating a uniform pressure. This is particularly useful for shallow flasks. The diagrams (a), (b), and (c) illustrate these different ramming techniques.

(b)

Name of Setter: -

Designation:-

Address:-

Signature of Setter

B.Tech 4th Semester Examination, 2014
Model Answer

Subject:-

Paper Code:-

Sets (I) / (II)

Guideline 6 (a)

Powder metallurgy is the name given to a process in which metallic powders are heated below their melting temperatures to achieve the bonding. In reality the Powder-Metallurgy (P/M) process involves the initial or intermediate sintering, followed by hot-chamber die casting after blending, and then heated in a controlled atmosphere at a temperature above the sintering point in order to achieve the bonding of the particles to get the desired properties. The powder-metallurgy process enables to produce parts in their final shape eliminating the need for any additional machining. Raw material is not wasted during the processing while unusual materials or mixtures can be utilized. It is possible to get parts with unique properties not possible by any other manufacturing process. Most of the powder-metallurgy parts are in the size range of less than 2 kg, though parts as large as 20 kg were made. Large parts require very expensive tooling and as such are not widely made by powder metallurgy.

1. **State-Stage 4 Induction**

The process of powder metallurgy involves the following stages:

1. **Raw Material Selection**
2. **Blending**
3. **Compaction**
4. **Sintering**


The process of powder metallurgy involves the following stages:

1. **Raw Material Selection**
2. **Blending**
3. **Compaction**
4. **Sintering**

Name of Setter: -

Designation:-

Address:-

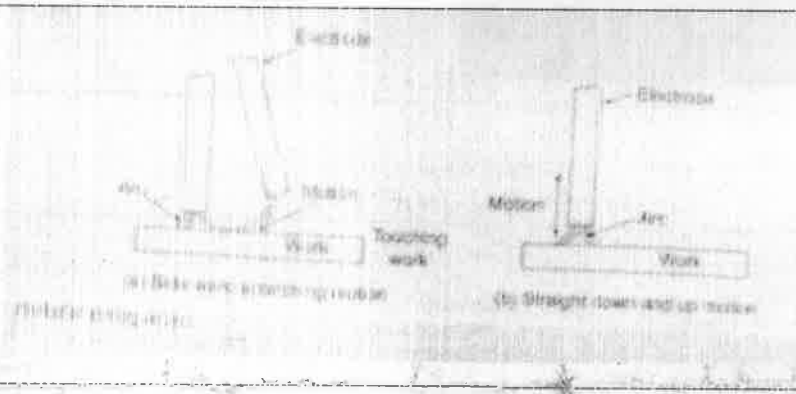
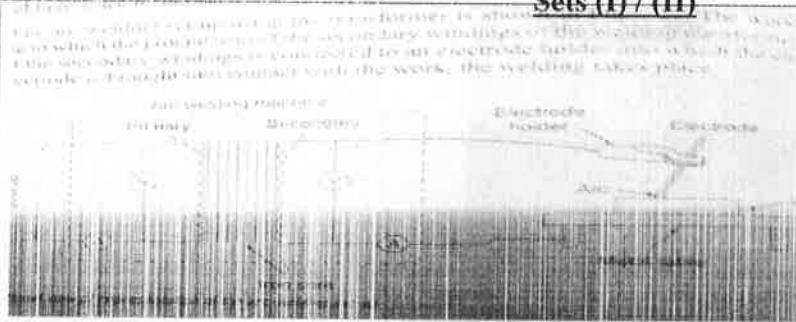

Signature of Setter

B.Tech 4th Semester Examination, 2014
Model Answer

Subject:-

Paper Code:-

Sets (I) / (II)



(b)

The electrode case contains gases such as carbon dioxide under the arc flame, which shields the molten metal from the atmosphere from the absorption of oxygen, hydrogen, and nitrogen pick-up, thus reducing the oxidation of the metal.

The coating also acts as a flux, which mixed with the oxides and other impurities present in the molten metal, forming a slag. The slag being lighter, floats on the top of the puddle and protects it from solidification during the weld metal solidification. The slag covering also helps the metal to cool slowly and uniformly throughout the weld. When the weld is sufficiently cooled, the slag can be removed exposing the smooth finished metal.

Some elements that are essential for stabilization of the arc are also added in these coatings. The coatings are different for AC welding and the DC welding.

Special alloying elements can be introduced through these coatings to improve the strength and physical properties of the weld metal.

Since the electrode coating is consumed at a slower rate compared to the core filler metal, the coating would be extended beyond the electrode as shown in Fig. 9.21. This helps in concentrating the arc the drawing the filler metal to the point, also, for thermal losses to the atmosphere from the electrode tip (arc action). This would increase the arc heat for melting the electrode and thus help in improving the metal quality.

The electrode coating also acts as an insulator of electricity and thus, prevent the electrode as being an electric conductor. This is very important as it prevents any short circuiting problems.

The electrode coating also acts as a flux, which mixed with the oxides and other impurities present in the molten metal, forming a slag. The slag being lighter, floats on the top of the puddle and protects it from solidification during the weld metal solidification. The slag covering also helps the metal to cool slowly and uniformly throughout the weld. When the weld is sufficiently cooled, the slag can be removed exposing the smooth finished metal.

Some elements that are essential for stabilization of the arc are also added in these coatings. The coatings are different for AC welding and the DC welding.

Special alloying elements can be introduced through these coatings to improve the strength and physical properties of the weld metal.

Since the electrode coating is consumed at a slower rate compared to the core filler metal, the coating would be extended beyond the electrode as shown in Fig. 9.21. This helps in concentrating the arc the drawing the filler metal to the point, also, for thermal losses to the atmosphere from the electrode tip (arc action). This would increase the arc heat for melting the electrode and thus help in improving the metal quality.

Name of Setter: -

Designation:-

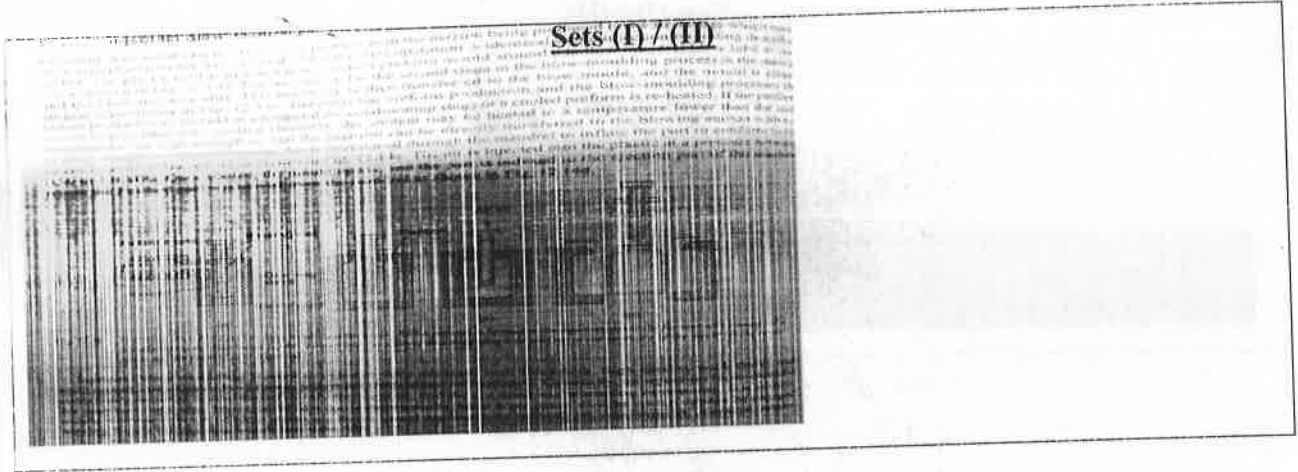
Address:-

Signature of Setter

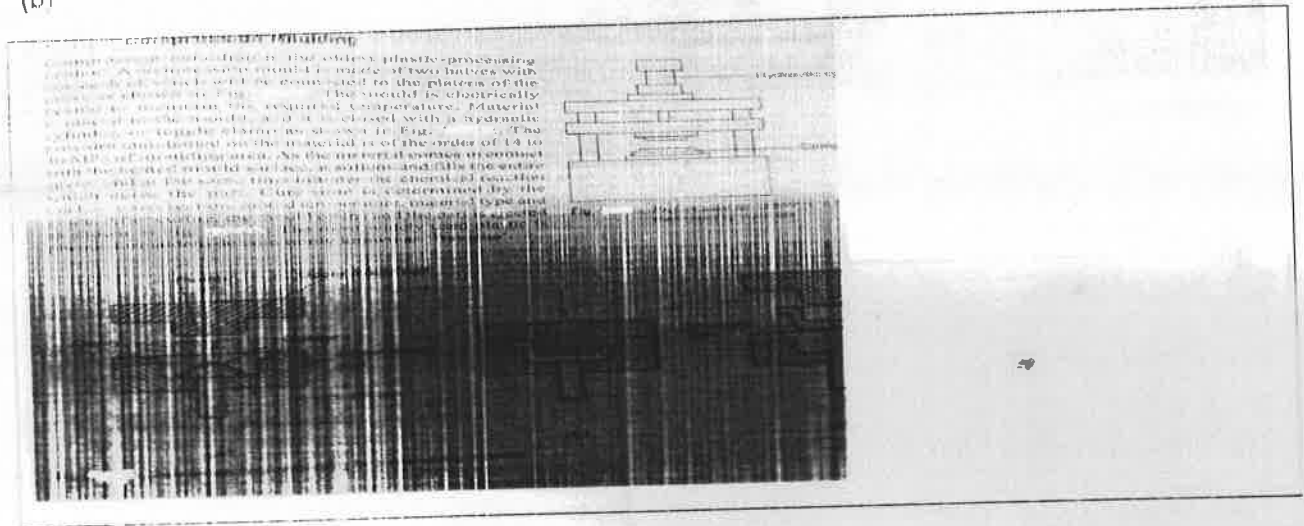
B.Tech 4th Semester Examination, 2014
Model Answer

Paper Code:-

Subject:-



(b)




Guideline 8 (a)

Name of Setter: -

Address:-

Designation:-

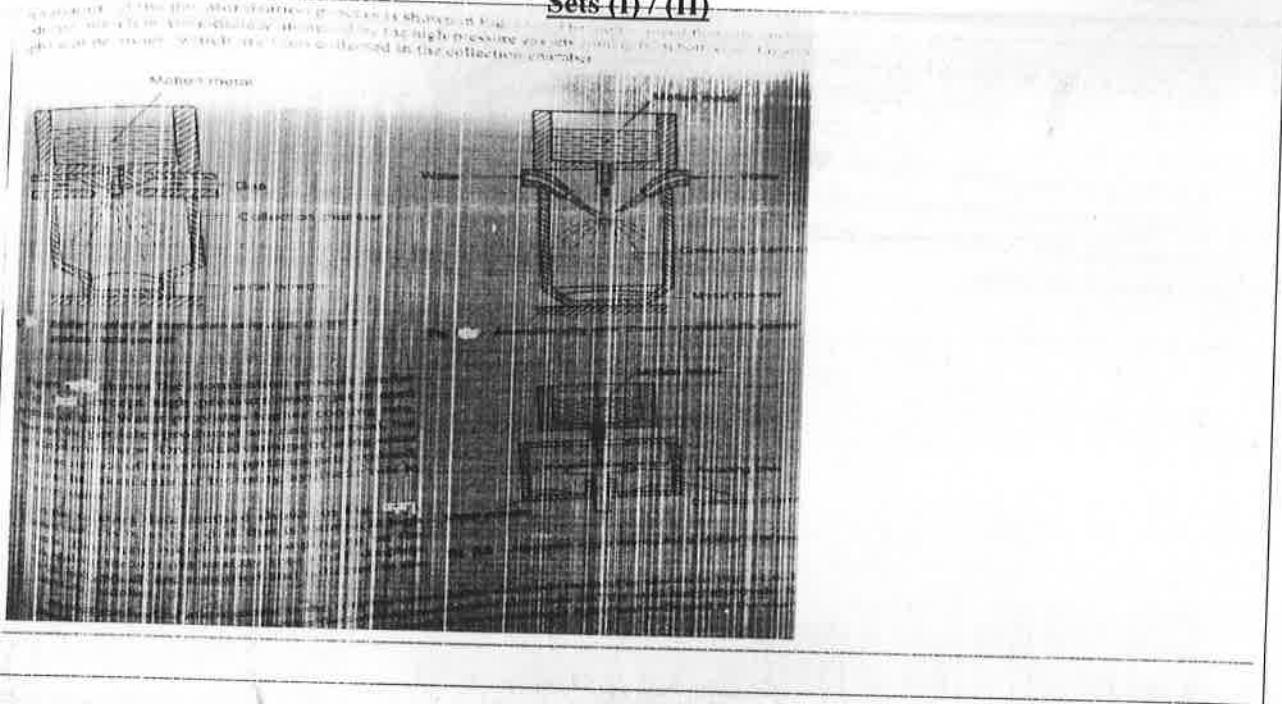

Signature of Setter

B.Tech 4th Semester Examination, 2014
Model Answer

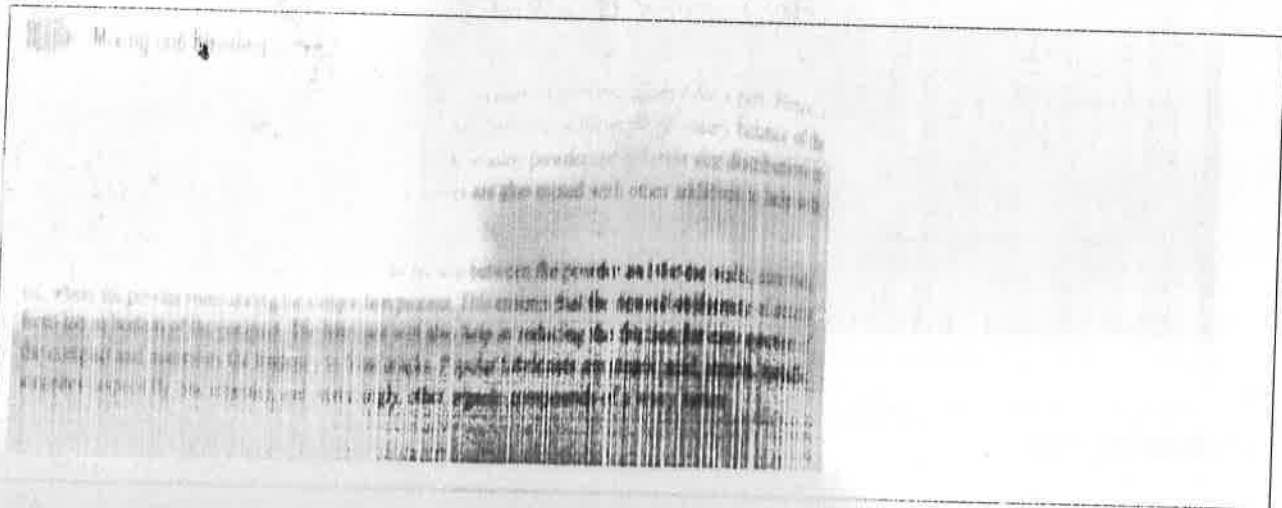
Subject:-

Paper Code:-

Sets (I) / (II)



(b)



Guideline 7 (a)

Name of Setter: -

Designation:-

Address:-

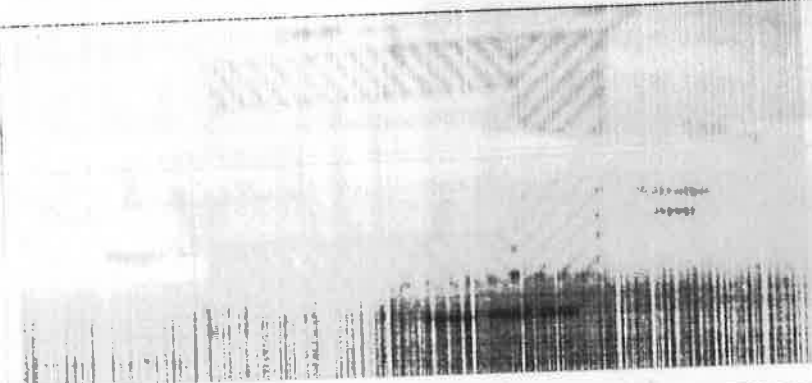
Signature of Setter

B.Tech 4th Semester Examination, 2014
Model Answer

Paper Code:-

Subject:-

Due to the relative motion between the heated metal billet and the die, particularly in the case of steel, because of their higher extrusion temperatures. To reduce this friction, lubricants are used. At lower temperatures, a mixture of oil and graphite is generally used. The problem of later casting compounds at the higher operating temperatures. Molten glass is generally used for extruding steel. It stays in liquid form at the operating temperature and provides necessary heat insulation to the hot metal. In addition to lubrication, to reduce the damage to equipment, extrusion is finished quickly and the cylinder is cooled before further extrusion.

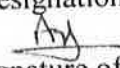


Backward Hot Extrusion

Backward hot extrusion, as shown in Fig. 12.10, is a process in which the extrusion die is fixed and the plunger moves to the right. The metal is forced to flow to the left through the die hole. The extrusion pressure is not uniform, but the extrusion is finished quickly and the cylinder is cooled before further extrusion.

Guideline 9 (a)

Name of Setter: -
Address:-

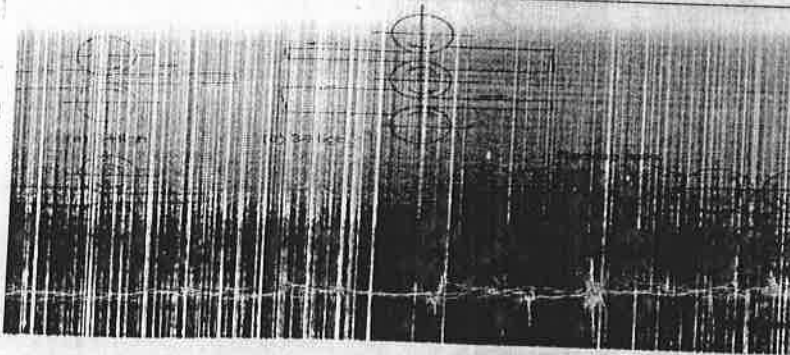
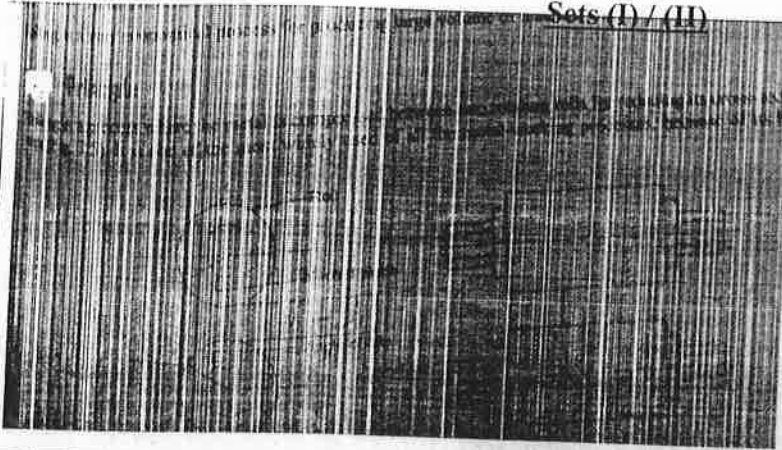
Designation:-

Signature of Setter

B.Tech 4th Semester Examination, 2014
Model Answer

Subject:-

Paper Code:-

Sets (I) / (II)



rolling stand (a) is a 2-high reversing rolling stand, where the direction of rotation can be reversed. This type of stand is particularly useful in reducing the handling of the metal between the rolling passes. When all the metal has reached the right side of Fig. 7.7, the direction is reversed and the metal is allowed to enter into the next pass. These stands are more expensive than the non-reversible type because of the reversible drive needed.

The 3-high rolling stand arrangement, shown in Fig. 7.7(c), is used for rolling of the metal in a rolling sequence without reversing the drives. After all the metal has passed through the rollers, the end of the metal is moved into the roller set of the next pass. For this type of stand, an arrangement is required to bring the metal to the level with the rolls.

(b)

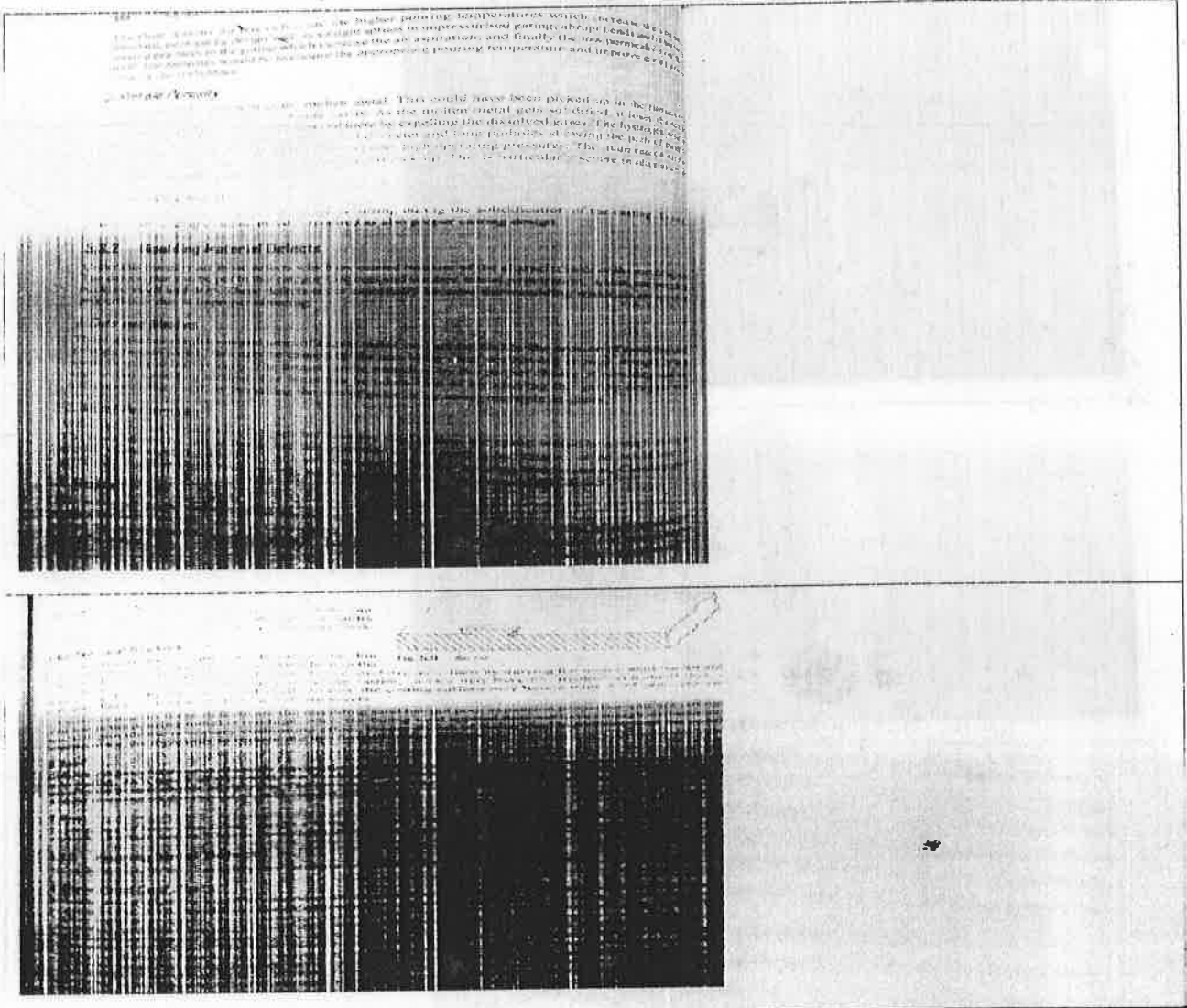
Forward hot extrusion

Name of Setter: -

Address:-

Designation:-

Ans
Signature of Setter



The first section of the report discusses the higher printing temperatures which, in view of the...
 (The text is mostly obscured by the blacking out process.)

...the higher printing temperatures which, in view of the...
 (The text is mostly obscured by the blacking out process.)

5.2.2 (b) ...
 (The text is mostly obscured by the blacking out process.)

...the higher printing temperatures which, in view of the...
 (The text is mostly obscured by the blacking out process.)

(c)

[Handwritten scribbles and markings]

[Handwritten signature]

SECRET

Page 3

Page 3