



Note: answer five questions only

Q1
What are the major and the minor sources of the iron?
(20) marks

Q2:
A) What are the main types of sand classification depending upon the purity and other constituents present? Show that in detail.
B) What are the important characteristic should take in the consideration when prepare a sand casting mold?
(20) marks

Q3:
Explain in detail and drawing the effect of grain size and grain shape of the sand on the green permeability property?
(20) marks

Q4:
A) 300mm x 300mm plate is to be machined on a scraper by a HSS cutting tool the cutting speed of the tool is 20 m/min, the return to cutting ratio is 2:5, the feed of tool is 4mm and clearances at each end is 70 mm. find the time required for taking a complete cut on the plate ?
B) Define the industrial safety and what are the general objectives for it?
(20) marks

Q5:
A hot rolling process used to reduce the thickness for steel rectangular plate, the reduction percentage was 15%. The original thickness for the plate was (50 mm), the coefficient of the friction between the rolling and the plate was (0.3) and the frictional force (50 N).
Find
- The appropriate roll radius for the process?
- The approximate contact length
- Find whether the process is possible if the friction angle of the rolls above is (40°)
(20) marks

Q6:
A peripheral milling operation is performed on the top surface of the rectangular work-part which is (300 mm) long and (60mm) wide. The milling cutter has 8 teeth overhangs the width of the part on both sides. Cutting speed was (60 m/min), chip load (0.5 mm/tooth) and the materials removal was (100000 mm³/min). Calculate the depth cut was (2 mm).
- The best diameter for the milling cutter
- The actual machining time required
(20) marks

Examiner signature

Good Luck