

Prince of Songkla University

Faculty of Engineering

Final Examination : Semester I

Academies Year : 2006

Date : 12 October 2006

Time : 09.00-12.00

Subject : 226-316 Foundry Engineering

Room : R200

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ทฤษฎีในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้นและพักการเรียน 1 ภาคการศึกษา

Instructions :

1. *Do all 24 questions.*
2. *Each of no. 1-20 scores 3 and the marks of others appear at the end of questions.*
3. *Total score is 100.*
4. *You must answer on the question sheets.*
5. *During the time of exam, you are not allowed to ask anyone.*
6. *Calculator, book and notes are allowed.*
7. *Put your name and ID on every page.*

Asst. Prof.Sane Thanthadalug



1. What is the relation of 1,218 °F to pure Al ?
2. There are 3 metals as followings: carbon steel, white iron and pure aluminum. Which one is the largest solidification shrinkage ?
3. Where should you put a riser?
4. During pouring to room temperature, how many stages of alloy contraction are there? What are they?
5. How many zones are there after pouring liquid alloy into a mold? What are they?
6. What do you call the point which provide the lowest liquidus temperature of alloy?
7. A, B and C are normal, exothermics topping and sleeve with exothermics topping open riser. What is the smallest riser?

8. Why is grey iron contraction so small?

9. There are 3 carbon steel castings with 0.08, 0.26 and 0.57 %C. Which one is the longest freezing time?

10. What are the advantages of blind riser?

11. How many types of Al-alloy casting are classified? What are they?

12. A foundryshop has to produce ferrous and non-ferrous alloys : Only one melting furnace could be used. What is the furnace?

13. What main factor does metal castability depend?

14. What elements is their chemical composition changed during melting in cupola?



15. What factors should the molding sand of cast steel be required?

16. What is inoculation?

17. How is ductile iron produced?

18. Which stages of solidification could hot tears of cast steel occur?

19. How is malleable iron produced?

20. What furnace should be used for Cu-alloy melting with low cost investment?

21. Given carbon steel ring with inside \emptyset of 16 in., outside \emptyset of 25 in., 4.5 in. thickness and the ratio of height and diameter of riser = $3/4$. Find

(a). the position of each riser. (3)



(b). number of risers. (3)

(c). the shape factor of each casting part. (4)

(d). the diameter of each riser. (6)

22. A, B and C are 3 bell metal castings. The weights and surface areas of A, B, C are 8, 9, 10 kgs and 500, 570 and 630 cm².

(a). Find their moduli. (6)

(b). Which one is the least freezing time? (2)

23. The C.E. of a grey iron casting is 4.5 % and 4 %C. What is the approximate value of silicon? (3)

24. Given a standard cupola with inside \emptyset of 18 in., the ratio of iron and coke = 8/1 and coke charge = 22 lbs.


(a). the approximate melting rate. (3)

(b). the metal charge. (3)



(c). the percentage of flux charge based on coke. (3)

(d). number of metal charges for 3 tons of molten iron. (4)

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