

GANPAT UNIVERSITY
B. TECH SEM- IV (Mechanical)
REGULAR EXAMINATION- APRIL-JUNE 2017
2ME404 Manufacturing Technology

TIME: 3 HRS

TOTAL MARKS: 60

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.
 (2) Figures on right indicate marks.
 (3) Be precise and to the point in answering the descriptive questions.

SECTION: I

- Q.1** A Enlist and explain importance of molding sand ingredients. Explain effects of additives also. (04)
- B Explain characteristics of molding sands. (03)
- C What is pattern? Enlist different types of pattern and also explain any two of them. (03)

OR

- Q-1** A What do you mean by pattern allowances? Explain following pattern allowances. (04)
 (i) shrinkage allowance (ii) machining allowance
- B Differentiate between top, bottom and parting line gating system. (03)
- C What is gating ratio? Differentiate between pressurized and unpressurized gating system. (03)

- Q-2** A Enlist sand testing methods. Also explain following: (04)
 (i) moisture content test (ii) permeability test
- B Explain importance of law of continuity and Bernoulli's theory in gating system design. (03)
- C A down sprue of 210 mm length has a diameter of 21 mm at its top end. The liquid method in pouring cup is maintained up to 60mm height. What should be the diameter of the down sprue at its lower end to avoid air aspiration? (03)

OR

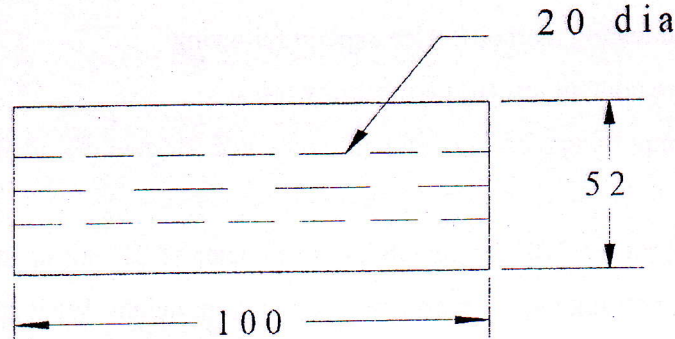
- Q-2** A Explain gating system with neat sketch. Also list its main functions. (04)
- B Explain riser and directional solidification. (03)
- C Explain importance of melt treatment in case of Al-Si alloy. (03)
- Q-3** Write short notes on any two of following. (10)
- A Investment casting process
- B CO₂ molding
- C Centrifugal casting process

SECTION: II

- Q-4 A Write a short note on : “ Apron Mechanism” (04)
B List out the various work holding devices of lathe machine. Describe any two with neat sketch. (03)
C What are the different machining operations performed on a lathe by holding work piece between centres or chucks? Describe any two with neat sketch. (03)

OR

- Q-4 A Define taper. How is the amount of taper expressed? Name the different methods of taper turning done on a Centre lathe with sketch. (04)
B What is the function of back gear? With a neat sketch explain working of back gear arrangement on the lathe machine. (03)
C What are the lathe accessories and attachments? List the various lathe accessories and attachments. Explain any two lathe accessories. (03)
- Q-5 A A job shown in Figure (all dimensions in mm) is to be produced from a raw material having 110 mm length and 60 mm diameter. For turning and facing operations, rpm is 250 and for drilling rpm of the cutter are 200. Drilling operation is carried out on a drilling machine. Assume 2 passes for turning operation and 5 passes for facing operation. Assume feed of 0.5 mm/rev. for all operations. For drilling assume approach and over travel distance as 20 mm. Calculate Total time required to manufacture 1000 components. (05)



- B Explain with neat sketch up milling and down milling process. Describe its advantages and limitations. (05)

OR

- Q-5 A Draw neat sketch of radial drilling machine and name its parts, explain its working (05)
B Enlist different types of milling cutters. Explain any three with neat sketch. (05)
- Q-6 A Name and describe the various work holding device in shaper. (04)
B Explain the specifications of a grinding wheel. Explain why a hard wheel is recommended for grinding a soft material and vice versa. (03)
C Write a short note on: Lapping. (03)

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