Morn...
Date: 25/05/2015.

Student Exam No._____

GANPAT UNIVERSITY

B.Tech Semester IV Mechanical Engineering

CBCS Regular Examination April-June 2015

2ME406 Manufacturing Technology

TIME:-3 HOURS **TOTAL MARKS-70**

INSTRUCTION: - (1) Attempt all questions.

(2) Assume suitable data if necessary.

(3) Figures to the right indicate full marks.

(4) Draw the figure where it required.

Section-I

Que.-1	(a)	What is nucleation? Differentiate between homogeneous and heterogeneous nucleation.	04
	(b)	Briefly discuss why draft allowance is important for patterns. Also explain how it is provided on pattern with suitable example.	04
	(c)	Explain the functions of following terms required in gating system. (i) Runner extension (ii) Vent (iii) Riser (iv) In-gate	04

OR

Que.-1	(a)	Enlist the control of solidification for obtaining sound casting.	04
	(b)	Draw sketch the cross section of a sand mould which is ready for pouring and label the various important parts. Also write procedural steps for making sand casting.	04
	(c)	List out various type of pattern. Explain the use of match plate pattern with a neat sketch.	04
Que.-2	(a)	Give brief note on following moulding sand: (i) Parting sand (ii) Baking sand (iii) loam sand (iv) Oil Sand	04
	(b)	What is gating ratio? Also differentiate between pressurized and unpressurized gating system with suitable neat sketch.	04
	(c)	Discuss the effects of following casting parameter to improve quality of casting: (i) Pouring Temperature (ii) Pouring Time	03

OR

Que.-2	(a)	Differentiate between open riser and blind riser with suitable neat sketch.	04
	(b)	Discuss the functions served by pouring basin and sprue. Also designs a neat sketch of them for improve properties of casting.	04
	(c)	Mention the causes and remedies of the following sand casting defects: (i) Blow holes (ii) Misruns (iii) Cold shuts	03

Que.-3 **Write short note on Following: (Any three)** 12

(i) Cupola furnace (ii) Shell moulding

(iii) Investment casting (iv) Core prints

Section-II

Que.-4 (a) Explain with schematic diagram the principle of thread cutting on a lathe. Find out the relation between ratio of change gears to work piece and lead screw. The pitch of a lead screw is 4 threads per inch and pitch of the thread to be cut is 7 mm. Find the change gears. 04

(b) Differentiate between a capstan and turret lathe. 04

(c) Explain working of whitworth quick return mechanism of shaper machine. 04

OR

Que.-4 (a) Define taper. How is the amount of taper expressed? Name different methods of taper turning done on a centre lathe. Explain with neat sketch method used for machining small taper turning over long bar. 06

(b) (i) Define and derive formula of cutting speed for shaper machine. 06

(ii) Find the machining time required for machining a surface 600 x 800 mm on a shaping machine. Assume, cutting speed as 8 m/ min. Also forward stroke is completed in 216°, and feed is 2 mm/ double stroke. The clearance at each end is 70 mm.

Que.-5 (a) Explain the difference between face and plain milling operation done on milling machine with suitable neat sketch. 04

(b) List the methods of broaching and write the advantages and limitation of broaching. 04

(c) Define the following terms of drilling machine: 03

(i) Cutting speed (ii) Feed (iii) Depth of cut

OR

Que.-5 (a) Define following drilling operation with suitable neat sketch: 06
(i) Trepanning (ii) Counter boring (iii) Counter sinking

(b) Determine the cutting time for cutting a 125 mm long keyway using HSS end mill of 20 mm diameter having four cutting teeth. The depth of keyway is 4.5mm. Feed per tooth is 40 m/min. Assume approach and over travel distance as half of the diameter of a cutter and a depth of 4.5 mm can be cut in one pass. 05

Que.-6 **Attempt any three of following:** 12

(a) Differentiate between shaper, planer and slotter machine.

(b) Describe in detail "All geared head stock" used in lathe machine.

(c) Write short note on : "Centerless grinder"

(d) Explain with suitable sketch "Honing" surface finishing process.

END OF PAPER