

Evening.

Date: - 26/11/2014.

Student Exam No: _____

GANPAT UNIVERSITY

B.TECH SEM. V - MECHATRONICS ENGINEERING

REGULAR EXAMINATION NOV/DEC-2014

2MC501 - CASTING & MACHINING PROCESSES

Time: 3 Hours

Total Marks: 70

Instructions: 1) All questions are compulsory.

2) Figures to the **right** indicate full marks.

3) Answers of the **section-I** and **section-II** must be written in **separate** answer books.

4) Use **HB pencil** only to draw figures and give proper notations.

SECTION - I

- Que:-1 (a) List the various lathe operations and explain with neat sketch any four lathe operations. [04]
- (b) Differentiate between Capstan and Turret lathe. [04]
- (c) List various types of drilling machine and explain with a neat sketch gang drilling machine. [04]

OR

- Que:-1 (a) Draw a neat sketch with label of following operation and indicate direction of cutting parameters on it. [04]
- i) Reaming ii) Boring iii) Counter boring iv) Countersinking
- (b) Explain tumbler gear mechanism used in a lathe with neat sketch. [04]
- (c) Can slotter be called as vertical shaper? Justify your answer. With neat sketch explain operations performed on slotter. [04]

- Que:-2 (a) With the help of neat sketch explain Column & Knee type milling machine. [06]
- (b) Explain the different milling operations. [05]

OR

- Que:-2 (a) Explain the differences between the following : [06]
- (i) Up milling and Down milling (ii) Steady rest and follower rest.
- (b) A taper pin of length 90 mm has a taper length of 50 mm. the larger diameter of taper is 95 mm and the smaller diameter is 85 mm. Determine (i) taper in mm/m and in degrees. (ii) The angle to which the compound rest should be set up. (iii) The tailstock setting over. [05]

Que:-3 Attempt any three.

- (a) List the types of metal cutting saws. Describe the working of circular sawing machine.
- (b) List various types of grinding machines and with a neat sketch explain centreless grinding machine.
- (c) Enlist types of taper turning methods used on a lathe machine. Explain with neat sketch tailstock set over method for taper turning.
- (d) Explain with neat sketch Horizontal pull type broaching machine.

SECTION – II

- Que:-4**
- (a) Write a short note on : i) Sweep pattern ii) Shrinkage allowance [04]
 - (b) Enlist any two casting defects and give their causes and remedies. [04]
 - (c) Define following terms: [04]
i) Core ii) Core print iii) Chaplet iv) Cope

OR

- Que:-4**
- (a) List out the materials commonly used for pattern. State advantages of wood as pattern material. [04]
 - (b) Differentiate between open riser and blind riser. [04]
 - (c) Write a short note on binders. [04]

- Que:-5**
- (a) Explain different types of gate with neat sketch. [06]
 - (b) Enlist the essential properties of moulding sand. State the effect of each properties on casting. [05]

OR

- Que:-5**
- (a) State the principle of centrifugal casting and explain its working with neat sketch. Give its advantages. [6]
 - (b) Write a short note on Die casting. [05]

Que:-6 Attempt any two.

- (a) Explain cupola furnace with neat sketch. [12]
- (b) Define gating ratio and also differentiate between pressurized and unpressurized gating system.
- (c) Compare the solidification time of two optimum side risers of same volume one is having cylindrical shape and another is square shape.

END OF PAPER