Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester: III (MARINE) Engineering

Regular Examination November / December - 2013

2MR301: WORKSHOP TECHNOLOGY

Time: 3 Hours **Total Marks: 70**

Instruction: (1) All questions are compulsory.

(2) Assume suitable data if necessary.

(3) Figure to the right indicates full marks.

(4) Scientific calculator is allowed.

Section - I

Que. – 1 (A) List various types of taper turning methods on a lathe. Derive the equation to calculate machining time for taper turning operation. **06**

(B) Explain the following workshop tools with sketch **06**

(a) Face plate, (b) V-Blocks, (c) Calipers

OR

Que. – 1 (A) From the following data relating to orthogonal cutting **06**

Thrust force = 850 N; Cutting force = 1600 N; tool rake angle = 10° ; Chip thickness ratio = 0.26

Calculate (a) Shear force and Normal shear force, (b) coefficient of friction between tool face and chip.

(B) What is the main difference between jigs and fixtures? Discuss the common principal used in design of jigs and fixtures. **06**

Que. – 2 (A) Explain cutting ratio in single point cutting and derive following relation between cutting ratio and velocity. **06**

$$r = \frac{V_f}{V_c} = \frac{\sin \emptyset}{\cos(\emptyset - \alpha)}$$

(B) Give the difference between planer and shaper machine. **05**

OR

Que. – 2 (A) Name the different types of planer machine. Explain the open and cross belt mechanism with sketch for planer machine. **06**

(B) Give the classification of different types of grinding machine. Explain self-sharpening of grinding wheel. **05**

Que. – 3 **Attempt any three.** **12**

(A) Explain normal stress and shear stress developed on shearing zone in orthogonal cutting.

(B) What is a chip? How it is formed during machining?

(C) Find the time required for shaping a plate 600×900 mm, if the cutting speed is 9 m/min. The return time to cutting time ratio is 1:4 and feed is 2 mm. The clearance at each end is 70 mm.

(D) Explain punching and blanking operation in brief.

Section – II

Que. – 4 (A) Write short note on following: **06**

(a) Snap gauge, (b) Wire gauge, (c) Dial gauge

(B) Explain the least count for vernier's scale and micro-meter scale. Show by sketches the following readings. **06**

(a) Vernier caliper reading 2.415 inch

(b) Micrometer reading 0.391 inch

OR

Que. – 4 (A) Give the classification of different types of welding process. List various application of welding process. **06**

(B) What is the principal of resistance welding operation? Explain spot welding operation. **06**

Que. – 5 (A) Write short note on packing and joining materials and their uses. **06**

(B) Write short note on fire safety. **05**

OR

Que. – 5 (A) List different types of arc welding operation and explain carbon arc welding operation with sketch. **06**

(B) Give the difference between AC and DC arc welding processes. **05**

Que. – 6 **Attempt any three.** **12**

(A) Explain following:

(a) Torch angle, (b) Arc recovery time

(B) Explain different types of welding joints with sketch.

(C) Explain "Factory Act-1948" and "Workmen's compensation Act-1923".

(D) What is the difference between soldering and brazing processes?

END OF PAPER