

**QP Code : 6254**

Total Marks:80

Duration:3 Hours

N.B:-

1. Question No.1 is compulsory
2. Solve any three Questions from remaining questions
3. Assume suitable data if required and mention it clearly

- Q1 A] Differentiate between precision and accuracy. [5]  
 B] What do you mean by quality of design? [5]  
 C] What do you mean by waviness and roughness? [5]  
 D] Explain advantages and limitations of pneumatic comparators. [5]
- Q2 A] Explain Taylors Principle of Gauge design with suitable example. [10]  
 B] Explain principle, construction and working of Parkinson's Gear Tester. [10]
- Q3 A] Explain principles of interference. How flatness can be checked with the help of optical interferometer. [10]  
 B] How will compromise between quality and cost. Explain different types of cost of quality with suitable examples [10]
- Q4 A] Explain following terms with respect to surface roughness parameters -  
 i.  $R_a$   
 ii.  $R_z$   
 iii. RMS [10]
- B] Control Chart for  $\bar{X}$  and R are kept on the weight in kilograms of a colour pigment for a batch process. After 25 subgroups with subgroup size of 4  
 $\sum \bar{X} = 52.08 \text{ kg}$   
 $\sum R = 11.82$
- Assuming process is in state of control, Compute the  $\bar{X}$  and R chart central line and control limits.  
 (For subgroup size of 4,  $A_2=0.729$   $D_4=2.282$   $D_3=0$   $d_2=2.059$ ) [10]
- Q5 A] Explain two wire method used in screw thread measurement [10]  
 B] Explain various modern SQC tools. [10]
- Q6 A] Explain single and double samplings plans. Also Explain concept of OC curves [10]  
 B] Explain construction and working and applications of 3D coordinate measuring machine. [10]

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