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Part B

Please provide answers within given space only

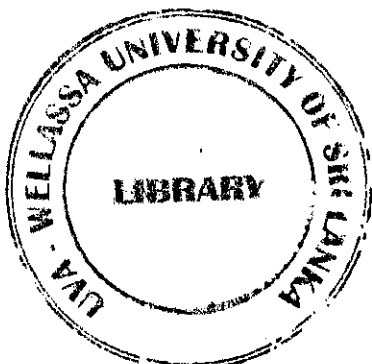
01. Grinding is the last stage in the process of comminution. In this stage, the particles are reduced in size by a combination of impact and abrasion, either dry or in suspension in water. Ball mill is one of the grinding mills commonly used in the industry.

a. What are the other types of grinding devices used in the mineral processing industry?

[15 marks]

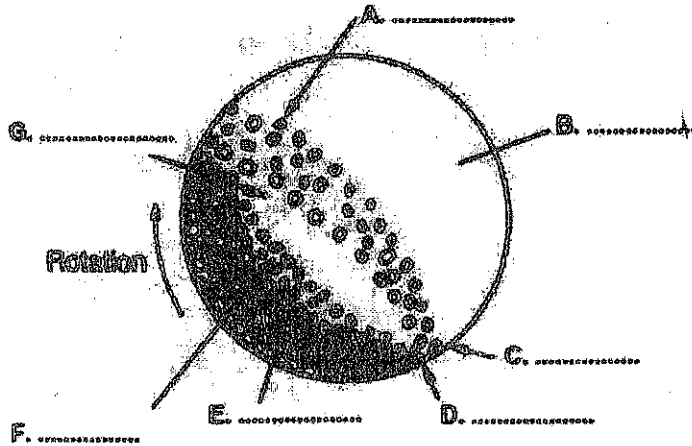
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b. State the mechanisms of breakages inside a ball mill with aid of diagrams. [9 marks]



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c. The following figure shows a diagram of motion inside a ball mill. Name the parts of the diagram. [14 marks]



d. Consider a ball, which is lifted up the shell of a mill of radius R meters, revolving at N rev min^{-1}

I. State the equation when the ball abandons its circular path to a parabolic path at point p . [7 marks]

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II. Derive an equation for the critical speed of the ball mill using above equation (Do not consider the size of the ball, consider only the diameter of the mill). [35 marks]

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e. Calculate the critical speed of a ball mill if the diameter is 5m. [20 marks]

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