5) Deflection

$$\text{Actual } \frac{\text{Span}}{\text{effective depth}} = \frac{4200}{456} = 9$$

(larger span is critical)

$$\frac{\text{Basic Span}}{\text{effective depth ratio of beam}} = 26 \quad (\text{Table 3.9 BS 8110})$$

Service Stress,

$$f_s = \frac{5}{8} f_y \frac{A_{s,req}}{A_{s,provided}} = \frac{5}{8} * 400 * \frac{212}{226}$$

$$= 234 \text{ N/mm}^2$$

$$\text{modification factor} = 0.55 + \frac{477 - f_s}{120\left(0.9 + \frac{M}{bd^2}\right)}$$

$$= 0.55 + \frac{(477 - 234)}{120\left(0.9 + \frac{32 \times 10^6}{250 * 456^2}\right)}$$

$$= 1.88$$

$$\text{Permissible } \frac{\text{Span}}{\text{effective depth}} = \text{basic ratio} * \text{modification factor}$$

$$= 26 * 1.88$$

$$= 48.88$$

Since permissible ratio (48.88) > Actual ratio (9) Hence OK