3 (a) Cost of the current ordering policy

Order size = 10% of 160,000 = 16,000 units per order
Number of orders per year = 160,000/16,000 = 10 orders per year
Annual ordering cost = 10 x 400 = $4,000 per year
Holding cost ignoring buffer inventory = 5·12 x (16,000/2) = $40,960 per year
Holding cost of buffer inventory = 5·12 x 5,000 = $25,600 per year
Total cost of current policy = 4,000 + 40,960 + 25,600 = $70,560 per year

Cost of the ordering policy using the EOQ model

Order size = $(2 \times 400 \times 160,000/5{\cdot}12)^{0{\cdot}5}$ = 5,000 units per order
Number of orders per year = 160,000/5,000 = 32 orders per year
Annual ordering cost = 32 x 400 = $12,800 per year
Holding cost ignoring buffer inventory = 5·12 x (5,000/2) = $12,800 per year
Holding cost of buffer inventory = 5·12 x 5,000 = $25,600 per year
Total cost of EOQ policy = 12,800 + 12,800 + 25,600 = $51,200 per year

Change in costs of inventory management by using EOQ model
Decrease in costs = 70,560 − 51,200 = $19,360

Examiner's Note
Since the buffer inventory is the same in both scenarios, its holding costs do not need to be included in calculating the change in inventory management costs.

(b) Holding costs can be reduced by reducing the level of inventory held by a company. Holding costs can be reduced to a minimum if a company orders supplies only when it needs them, avoiding the need to have any inventory at all of inputs to the production process. This approach to inventory management is called just-in-time (JIT) procurement.

The benefits of a JIT procurement policy include a lower level of investment in working capital, since inventory levels have been minimised: a reduction in inventory holding costs; a reduction in materials handling costs, due to improved materials flow through the production process; an improved relationship with suppliers, since supplier and customer need to work closely together in order to make JIT procurement a success; improved operating efficiency, due to the need to streamline production methods in order to eliminate inventory between different stages of the production process; and lower reworking costs due to the increased emphasis on the quality of supplies, since hold-ups in production must be avoided when inventory between production stages has been eliminated.

(c) Evaluation of changes in receivables management   *It is the credit policy evaluation question, as you solve earlier.*
The current level of receivables days = (18/87·6) x 365 = 75 days
Since 25% of credit customers will take the discount, 75% will not be doing so.
The revised level of receivables days = (0·25 x 30) + (0·75 x 60) = 52·5 days ← *average number days based on new policy.*

Current level of trade receivables = $18m *given in the question*
Revised level of trade receivables = 87·6 x (52·5/365) = $12·6m   *25% customer will pay in 30 days to get early*
Reduction level of trade receivables = 18 − 12·6 = $5·4m   *settlement discount and rest will pay in 60 days.*

before deducting cost of discount → Cost of short-term finance = 5·5% *given in the question*
Reduction in financing cost = 5·4m x 0·055 = $297,000
Administration and operating cost savings = $753,000   *given in the question*
Total benefits = 297,000 + 753,000 = $1,050,000

after deducting cost of discount → Cost of early settlement discount = 87·6m x 0·25 x 0·01 = $219,000   *25% of customer or sales will obtain 1% early*
Net benefit of early settlement discount = 1,050,000 − 219,000 = $831,000   *settlement discount.*

The proposed changes in receivables management are therefore financially acceptable, although they depend heavily on the forecast savings in administration and operating costs.

Maximum early settlement discount
Comparing the total benefits of $1,050,000 with 25% of annual credit sales of $87,600,000, which is $21,900,000, the maximum early settlement discount that could be offered is 4·8% (100 x (1·050/21·9)).

The purpose of calculation is to find out the maximum % of discount above which there will be no benefit. At 4.8% discount cost of discount will be $1,050,000 which is the same as benefit from discount

(d) Factors that should be considered when formulating working capital policy on the management of trade receivables include the following:

The level of investment in trade receivables
If the amount of finance tied up in trade receivables is substantial, receivables management policy may be formulated with the intention of reducing the level of investment by tighter control over the way in which credit is granted and improved methods of assessing client creditworthiness.

The cost of financing trade credit
If the cost of financing trade credit is high, there will be pressure to reduce the amount of credit offered and to reduce the period for which credit is offered.