Question - 1

1) E + F + G + F B + C + E + F

A + B + C + E

A + B + D + E

A + E + F + G

2) Fitness level

B + C + E + F = 39 44

A + B + C + E = 36

A + B + D + E = 28

A + E + F + G = 44

B + C + E + F 13

A + E + F + G

3) B + C + E + F — A + C + E + F

A + E + F + G — A + E + F + G

A + B + D + E

Mutation

↓

A + C + E + F ⟶ B + C + E + F - 44

A + E + F + G ⟶ A + E + F + G - 44

2) B → D → F → E → C → A → 25

C → F → E → D → B → A → 23

A → B → C - D → E - F → 13

2) A - B - C - D - E - F

C - F - E - D - B - A - 23

3) After cross over

A B C - D - B - A

No, as all cities are not visited

4) A → B → C - D - E - ~~F~~ - ~~get~~ chromosome

~~represents~~ genes.

Question 3

1) Genetic algorithm proposes a population of candidate solution to an optimization problem is evolved toward better solutions. Thus, genetic algorithm is appropriate

2) $M + N + O + R = 33$

$P + Q + R + M = 26$

$P + O + M + R = 35$

$N + O + Q + R = 29$

3) $P + O + M + R$

$M + N + O + R$

1)

Crossover

P+O+M+R → P+O+M+R

M+N+O+R → M+N+O+R

N+O+Q+R → M+N+O+R

N+O+Q+R

↓

selecting the first 3 and final 1.

Mutation

~~P+O+~~ Q+N+O+R = 29

~~M+~~

M+N+O+R = 33

M+N+O+Q = 36

N+O+Q+R = 29