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SUPERVISOR'S USE ONLY

OUTSTANDING SCHOLARSHIP EXEMPLAR

NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Scholarship 2015
Geography

9.30 a.m. Thursday 19 November 2015
Time allowed: Three hours
Total marks: 24

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

Pull out Resource Booklet 93401R from the centre of this booklet.

Carefully read the instructions on page 2 of this booklet.

Answer ALL three questions in this booklet. Each question is worth 8 marks.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–24 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

INSTRUCTIONS

The materials in Resource Booklet 93401R will enable you to become familiar with the theme and contexts of this examination: **Agriculture**.

Your answers to ALL three questions must incorporate a wide range of case studies from around the world, as well as information and ideas BOTH from the materials provided in the resource booklet and from your studies in geography.

Note: Key ideas should not be repeated in your answers to different questions.

Space for planning has been provided on pages 4, 10, and 16 of this booklet that will help you prepare your responses. These notes will not be marked. The questions on page 3 are repeated on their respective planning pages.

Begin your answer for Question One on page 5, for Question Two on page 11, and for Question Three on page 17.

QUESTION ONE (8 marks)

Discuss the importance of agriculture.

Your answer must include and refer to relevant, effective, original visuals.

Use page 4 to plan your ideas, and begin your answer to Question One on page 5.

QUESTION TWO (8 marks)

Justify the most significant challenges facing the agricultural industry today, with reference to different perspectives.

Your answer must include and refer to relevant, effective, original visuals.

Use page 10 to plan your ideas, and begin your answer to Question Two on page 11.

QUESTION THREE (8 marks)

Critically analyse the extent to which the future for agriculture in more economically developed countries (MEDCs), is similar to that for agriculture in less economically developed countries (LEDCs).

Use page 16 to plan your ideas, and begin your answer to Question Three on page 17.

QUESTION ONE (8 marks)

Discuss the importance of agriculture.

Your answer must include and refer to relevant, effective, original visuals.

PLANNING

jobs
food
social

food security
consistency
sustainability

tech
branding
NZ

Begin your answer for **Question One** here:

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In our vastly modernised contemporary society, agriculture acts a fundamental beacon for the sustenance of ~~future generations. Aside from this,~~ past, present and future generations. ~~As~~ As the world's population grows, so too does the importance of agriculture. ~~The growth~~ This importance branches across variegated realms of society; most notably in social, economic ~~and~~ and environmental ~~and political~~ spheres. Though importance ~~is~~ is qualitative and therefore difficult to quantify, ~~arguably the most imp~~ agriculture arguably holds utmost importance in economic influence.

Socially, agriculture acts as a harbinger of community and ~~spiri~~ spirit, especially in LEDCs. ~~For many~~ ~~depen~~ Further to this agriculture has held importance as a means for female empowerment. Such sentiment is demonstrated in ~~the~~ Rakiraki, Fiji where agriculture ~~has acted~~ acts as a vehicle for domestic violence ~~surv~~ victims ~~living in~~ finding new purpose in ~~society~~ society. Roughly 7,000 women and their children residing in government funded 'HART' Housing walk ~~on~~ in pastoral ~~farms~~ small-scale farms ~~as~~ not just as a means of finance, but as a place to seek salvation and make new friends. With a new sense of purpose and vitality, these women are able to sell their goods to small businesses,

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engaging in ~~activity that~~ marketing and accounting strategy- ~~that~~ activities that, until previously, were heavily male-dominated. Some of these women are then able to fund further education for themselves and their children following the financial rewards reaped of agriculture. Small-scale agriculture accounts for 70% of employment in the Rekireki region, and though outside perspectives may argue that such a domestic setting cannot result in female empowerment, Fig 1.1 ~~so~~ reveals how.

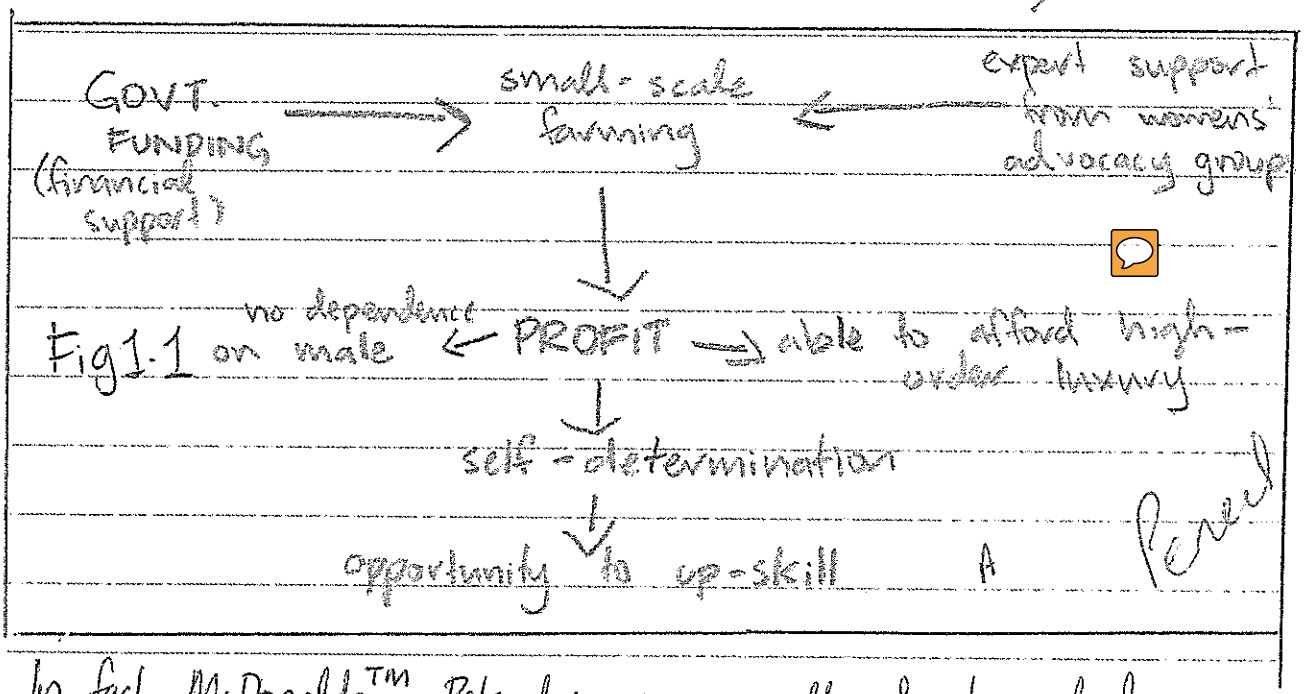

Fig 1.1

In fact, McDonalds™ Rekireki receives all of its salad ingredients from this female-run agricultural venture.

The example of women in Rekireki evinces the importance of agriculture not only in social implications but also that of economic output. There are ~~two veins~~ two veins to economic importance: one in employment and another in monetary output. In 2010 agriculture provided jobs - and therefore a sense of purpose - to as much as 35% of the ~~poor~~ world's

economically active population – 75% in some LEDCs. It is the largest provider of jobs globally – some perhaps not obvious at first. Beyond farming and cultivation in the primary sector, jobs in the tertiary sector developing new fertilisers ~~and~~ and ~~the~~ feats of geo-engineering, agriculture is vital to the livelihood of a wide ~~array~~ array of workers. Some statistics ~~show~~ argue that only 4.2% of MEDCs workers are employed directly by agricultural sectors, ~~a~~ a more inclusive perspective (perhaps one of the FAO who argues agricultural is gaining most importance in MEDCs) shows how the rise of the third wave of agricultural revolution (Fig 1.2) has brought an increasingly variegated workforce

Fig 1.2

1ST REVOLUTION → ~~2ND~~ 2ND REVOLUTION → 3RD REVOLUTION → ??? FUTURE

1ST REVOLUTION: hunter-gatherer

2ND REVOLUTION: subsistence farming etc.

3RD REVOLUTION: commercialisation, new technology.

which ~~indirectly~~ makes great contributions to agriculture. Such careers are alluded to in Fig 1.3. ~~The tertiary sector of NZ is made up of~~ 38% of NZ's tertiary sector is comprised of scientific discovery and modern manufacturing of goods and services ~~for~~ that correlate with agricultural necessity. ~~There~~

Fig 1.3

GREEN HOUSE technicians

Fertiliser/pesticide manufacturers

GMO technology – scientists

~~THE~~ NEW JOBS RESULTING FROM AGRICULTURE

engineers, ~~manufacturers~~ manufacturers of new MACHINERY

URBAN FARMING – builders, urban planners, land consent officers

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Moreover, agriculture accounts ~~for 25% of~~ for a large proportion of GDP in ~~many~~ both LEDCs ~~and MEDCs~~ and NICs and NICs, most notably in Uganda (26%) and ~~Cairns~~ Indonesia (15%). The fact that agriculture is able to provide such return means countries may use this as capital for more advanced business ventures — perhaps in factory and educational industry. From the perspective of makers, high GDP means ~~from~~ low-income families may use their earnings in order to seek a better standard of living, like that of the women in Rakiraki, Fiji. However, some argue that the importance of agriculture is diminishing in MEDCs where ~~high the manufacture of high-value~~ many seek to find employment in secondary and tertiary sectors. In Australia, where arable agriculture ~~does~~ dominates ~~as~~ land usage (60%), agriculture accounts for just 2% of GDP. In MEDCs, the economic importance of agriculture is decreasing as the multi-billion dollar price-tag cedes less income as time progresses, dropping from 3% of GDP in 1995.

While, from an economic standpoint, ~~agriculture~~ agrobusiness is becoming less of an important commodity in MEDCs, ~~it will always~~ agriculture's food production ~~the~~ weighs greatly in importance globally — and it will continue to do so for as long as mankind exists. Food security is maintained through all forms of agricultural — subsistance, commercial, marine, animal, plant. The very backbone of our wellbeing rests on the continuation of agricultural

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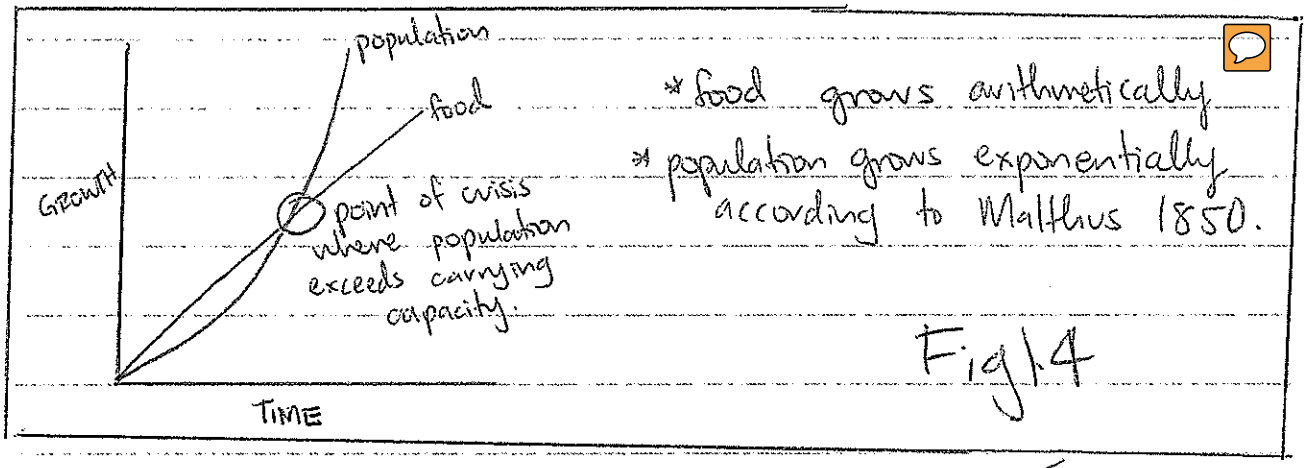
processes. ~~The~~ The second Sustainable Development Goal stipulates a desire to maintain food security ~~and environ~~ through sustainable agriculture. ~~The only The po~~ The world population is ever-growing, and so ~~the~~ agricultural output must continue if we are to avoid a crisis like that seen in Fig 1.4.



* food grows arithmetically
* population grows exponentially according to Malthus 1850.

Fig 1.4

~~Less important is~~ Less visited in the environmental importance of agriculture. Though methane and agriculture accounts for 25% of the world's greenhouse gases, deforestation is on the rise - leading to more CO_2 accumulation. In urban areas where population density is high (averaging 6.2/km^2 in Boston) ~~ag~~ pastoral agriculture is important to absorb CO_2. For the betterment of the environment, planting more vegetation also decreases the likelihood of slope failure and landslides by the action of roots stabilising soil. Here agriculture ~~it~~ has positive impacts for

extra page.

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Question Number 1

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the environment and ~~natural~~ composition ~~of the and state~~ and lessens the likelyhood of natural disaster ~~state~~ and rainfall increases impacting slope stability and sheer strength.

With variegated examples of ~~any~~ agricultures role in society as a cohesive structual concept ~~that~~ that uplift ~~its~~ economy, social strata and environmental management, it is clear that only one conclusion can be made: agriculture is the foundation upon which civilisation has built, and although its importance may rise, fall, and plateau economically, it will always hold utmost importance in the maintenance of food security and nutrition.

Agricultural importance is noted in the manufacture of high-order goods too — luxury cottons and leathers. The hide-tanning industry makes a significant role in consumerism, and cash crops provide revenue in not only Oregon, but ~~countries~~ NICs that ~~are also~~ have not yet industrialised fully (e.g. India).

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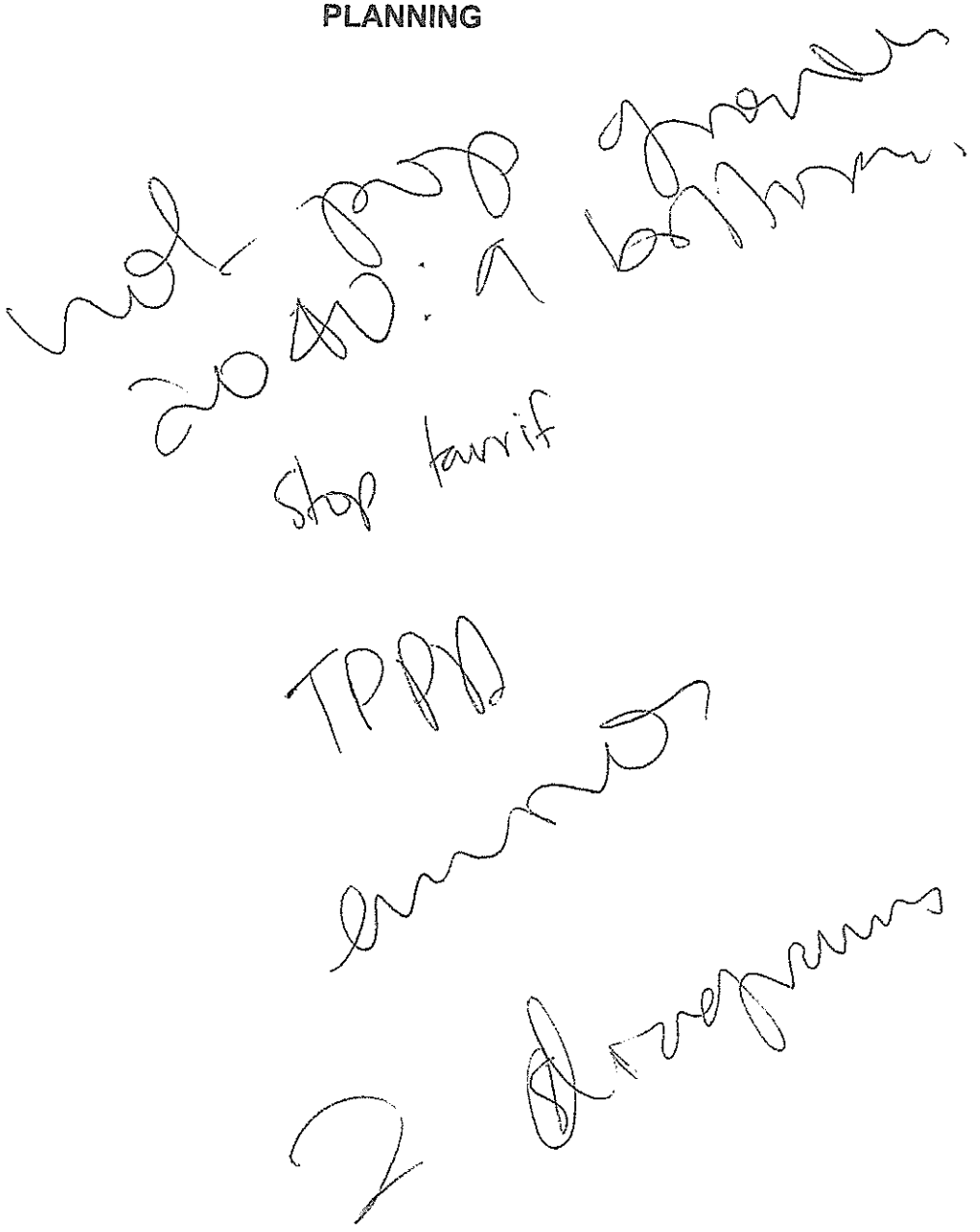
This extra answer page MUST be placed inside the plastic bag with your answer booklet and handed in.

QUESTION TWO (8 marks)

Justify the most significant challenges facing the agricultural industry today, with reference to different perspectives.

Your answer must include and refer to relevant, effective, original visuals.

PLANNING



Begin your answer for **Question Two** here:

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While the agricultural industry is responsible for a large proportion of greenhouse gas emissions, ~~and~~ globally, ~~and~~ and poses significant challenge to contemporary agricultural society, many also neglect the ~~perspectiv~~ social and political perspectives that underscore Free Trade Agreements as an overwhelming barrier in current-day ~~agr~~ agricultural industry. There are many, many challenges of ~~of~~ social, political, environmental and economic realms to such a vital industry, but the two aforementioned points are most significant.

~~Many will argue,~~ Political perspectives such as that of the UN-chartered FAO will argue the challenge of population growth as a fundamental issue plaguing the 21st century. The global population is set to reach 9 billion by 2040 while resources are not equipped to carry such a capacity. However, such a challenge is not a challenge for the agricultural industry persay. Stanford University graduate Biddy Martin (Fig 2.1) asserts the notion that agricultural

output is already efficient enough to ~~accoun~~ feed the population, and ~~it is~~ malnourishment and hunger in MEDCs is an issue of distribution and not production levels. MEDCs, on average, ~~throw out~~ discard 30% of edible food. This 30% is a surplus to requirements in LEDCs which, Manton argues, is "more than enough to feed the starving 3 billion". Further to this, a historical perspective would argue that when food shortages have occured, mankind have combatted this with Malthusian 'checks' to population or Boserupian technological advancements. ~~As stated, such~~ Such thinking shows how although food security may be a significant challenge to the world, it is ~~not~~ neither a challenge to the agricultural industry nor today's scientists. Therefore, challenge lies in trade-agreements and environmental consequence.

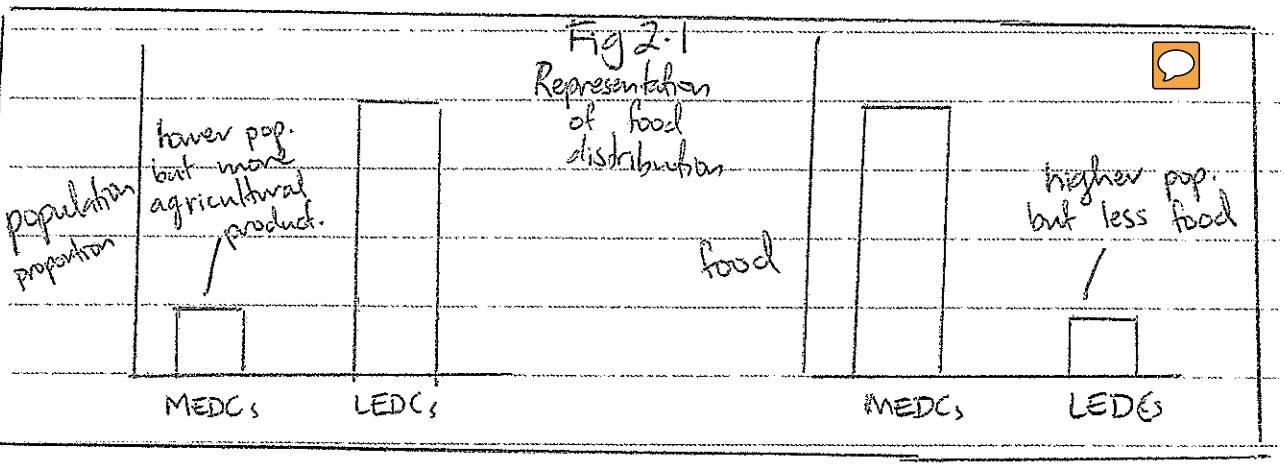

Fig 2.1 Representation of food distribution

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Free trade agreements such as that of the Trans-Pacific Partnership Agreement (TPPA) threaten the agricultural sector due to the desire to ~~increase~~ to abolish tariffs and taxes. Though such an enactment aims to enrich the agricultural sector by increasing fluidity and ease of global trade in our vastly globalised ~~so~~ contemporary society, it is the TPPA hurts local agricultural industry. Where ~~the~~ tariffs and ~~and~~ agricultural subsidies protected the market of farmers, ~~and~~ abolishing these would allow imports to become not only more accessible but more affordable. ~~Though~~ Though this may benefit the general public consuming agricultural output, it poses a significant challenge to industry locally. If the agreements go ahead, importing tomatoes from Mexico may be cheaper ~~than for~~ ~~but~~ Aucklanders than buying locally sourced products, ~~with~~ ~~lighter tomatoes~~ ~~food~~ thus resulting in a lower demand for ~~locally~~ food with low-mileage. This harms jobs in the ~~agri~~ industry many seek quantity over quality in their goods - something that can be achieved through importing produce Agricultural subsidies mean

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farmers can earn a decent living and financial security when ~~of~~ yields from harvest are low. This has cost the NZ taxpayers billions, and so backlash had led to a desire from ~~cit~~ the ~~pl~~ public to axe tax subsidies. Agriculture is highly unpredictable, especially due to erratic changes ~~in~~ ~~the~~ in climate brought about by climate change i.e. an increase in droughts in many agricultural ~~de~~ areas, and so governments axing of agricultural subsidies may lead to economic downturn without insurance for the agricultural sector, ~~with the job~~ The TPPA stipulates a desire to override quotas and financial measures to protect integrity of local ~~business~~ agriculture, ~~the~~ thus threatening agrobusiness and posing significant challenges economically.

With the recent increase in awareness of climate change and global warming, Joe Foley, an environmentalist has argued how a plant-based diet uses significantly less energy to produce than an omnivorous one. This has led to an increase in veganism,

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supposedly said to result in a smaller carbon footprint than methane-producing meat-inclusive diets. This has posed a challenge for New Zealand cow farmers, as the fact that ~~25% of agriculture~~ an estimated 20% of greenhouse gases ~~to be traced to~~ are owed to methane produced by cows has become common knowledge, hurting ~~the~~ business. Beef sales have decreased by as much as 60% in the UK, and New Zealand's multi-billion dollar meat and dairy industry has had to face the financial repercussions. Furthermore, eutrophication (Fig 2.2) has also led to environmental degradation so that the public is deferred by

Fig 2.2

Nitrogen + Phosphorus enters streams from agricultural fertiliser runoff → ~~to~~ algae blooms in rivers and streams → loss of ~~to~~ oxygen for fish as algae consumes oxygen, decomposed algae toxic to fish → DEATH of fish.

agricultural practices. Instead, many seek locally, organically produced, small-scale farming, resulting in less

Question Number 2

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revenue for large-scale, commercial farming. Intensive farming faces a challenge as environmentalists strike against many farming practices, thus resulting in dwindling numbers of consumers. 70% of freshwater is being used on agriculture, and with resources ~~dwindling~~ ~~being decreasing as the~~ decreasing, agro business will need to seek more ~~water~~ efficient farming practices that require less of a strain on natural resources. Terraculture is growing in popularity as farmers face challenges over water-scarcity in the wake of the Californian Drought and veto of water-mining in many countries

Overall, the two greatest challenges to agricultural industry are explicated by trade-agreements and environmental impact. These are issues ~~not faced~~ unique to the present-day, issues which our forefathers have never had to overcome

This extra answer page MUST be placed inside the plastic bag with your answer booklet and handed in.

QUESTION THREE (8 marks)

Critically analyse the extent to which the future for agriculture in more economically developed countries (MEDCs), is similar to that for agriculture in less economically developed countries (LEDCs).

PLANNING

MEDC

ORGANIC

GRICE

globalisation high ord
cotton farming

Begin your answer for **Question Three** here:

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Upon careful inspection and examination of ~~a~~ the future implications of agriculture in both MEDCs and LEDCs, it is clear that ~~the two of~~ we are met with both similarity and difference. In both, agriculture will continue to provide sustenance, but the needs of its consumers ~~may~~ are different. To a ~~so~~ certain extent, similarity is met between the future of the two, however, difference is exhibited to a large extent by the employment opportunities in LEDCs ~~for~~ agriculture

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In LEDCs, most notably African and South-Asian ~~countries~~ constituents, agriculture's ~~future~~ future lays in advancements of nutritional value to tackle ~~issues~~ & health-issues predominantly a threat to poorer nations, including, but not limited to, kwashiorkor and ~~dysentery~~ ~~vitamin A deficiency~~ infant-blindness. Blindness in LEDCs, ~~as opposed to~~ compared to that of MEDCs, is often not ~~but~~ genetic

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but as a result of vitamin-A deficiency. Such vitamins are ~~are~~ found in ~~food~~ tropical foods not readily accessible. However, genetic engineering has ~~created the~~ succeeded the creation of a new ~~form of food~~ form of staple food ~~injected~~ charged with extremely large rates of vitamin A in its' seeds endosperm - Golden Rice™. The rice has been met with excitement by ~~scientists and MEDC consumers, but its future is~~ scientists and LEDC nations, but skeptics from higher-powers in MEDCs have stopped its distribution, arguing that a hand-out from MEDCs will not allow LEDCs to come out of ~~poverty~~ ~~in self-determinently~~ thus poverty by themselves, thus leading to dependence on MEDCs, making the problem bigger. ~~This shows how~~ ~~Although~~ LEDC ~~to~~ officials, ~~However~~ however, greet ~~the~~ GMO with excitement. Here, we see how although the future of GMO is on the rise, it will be met with much more resistance in MEDCs.

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The future of agriculture is similar in both MEDCs and LEDCs in the respect that both will require GMOs to combat malnourishment. It is common knowledge that those in LEDCs tend to be malnourished, but the same holds true in MEDCs. Though USA, Mexico and NZ rank as the the 'most obese nations' according to a Dartmouth University study, their diets lack vital nutrients and are instead full of artificial flavours and ~~sweeten~~ enhancers which provide little nutritional benefit. ~~Both nations may b~~ Both MEDCs and LEDCs will ~~need~~ benefit from technological advancements in genetic engineering which provide nutrient-rich agricultural produce. Globally, the future of agriculture depends on the speciation of new ~~geo~~ pastoral and arable produce which meets the needs of its consumers.

& Many LEDCs, such as Nigeria and Vanuatu still rely on subsistence farming and are yet to reach the third wave of Agricultural Revolution. The future of agriculture here relies on increasing geo-engineering whereas in MEDCs the focus will be on ~~reg~~ regeneration

of ~~the~~ agricultural land. ~~In LEDCs~~ The future of agriculture in LEDCs will see an increase in mechanisation and irrigation ~~practice~~ practices. In Bangladesh the "beetle pump" is currently being trialled as a means to ~~ditch~~ ditch traditionall water-from-the-well practices. This is an attempt to increase agricultural efficiency as intensification of farming prevails in LEDCs to ~~meet~~ meet the booming fertility rates (4.2 in Bangladesh). In MEDCs, years of intensive farming of monoculture have led to a drain on fertility of soils. The UN has ~~did~~ declared 2015 the International Year of Soil in an attempt ~~for~~ to raise awareness of the ~~lack~~ inadequacies of MEDCs' over-farmed, nutrient drained soils, as seen in Fig 3.1. For years

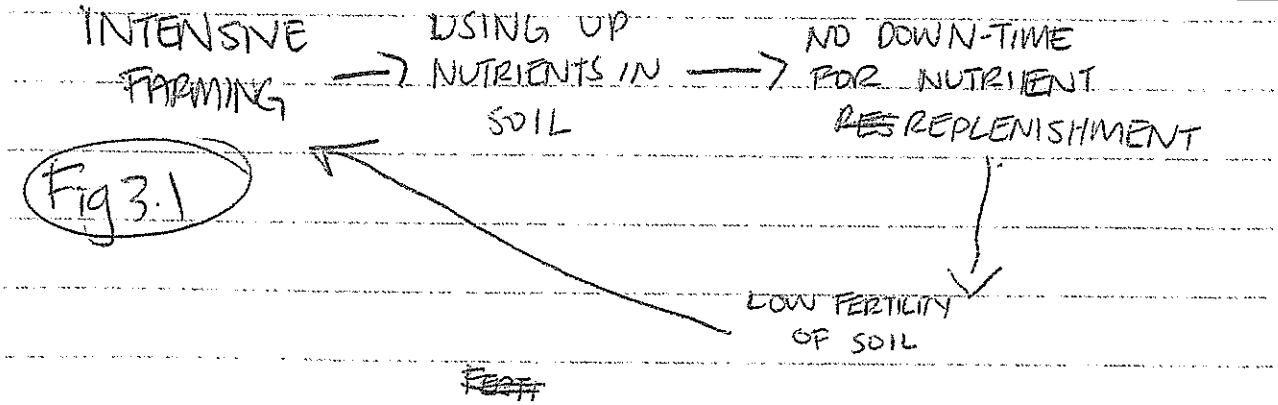

Fig 3.1

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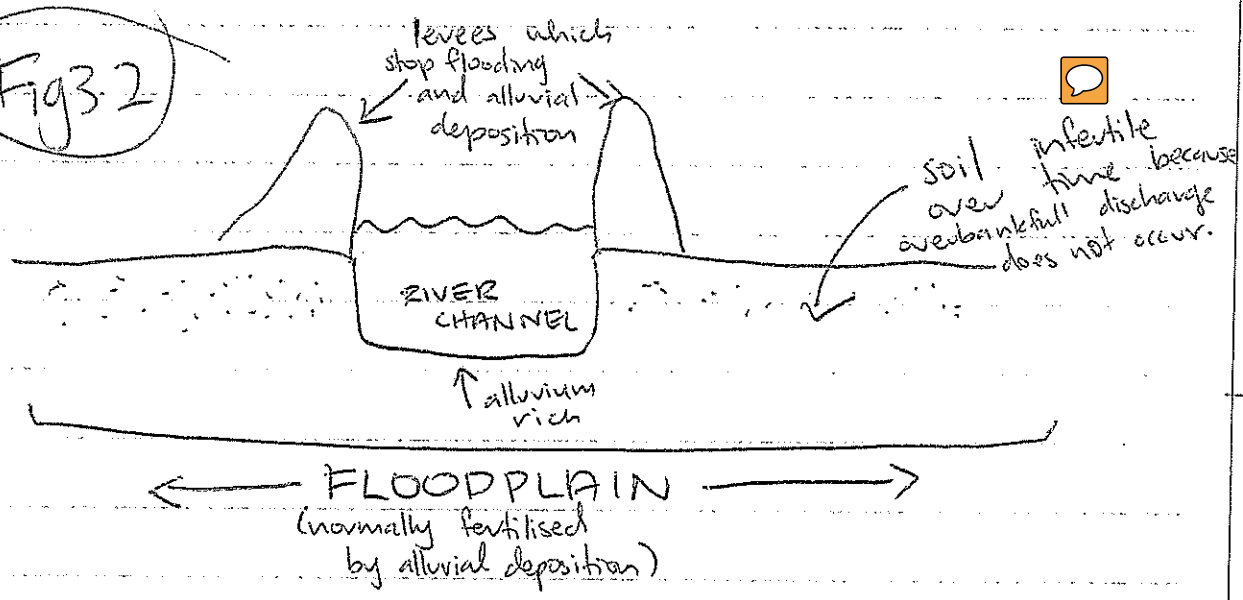
MEDCs have turned to geoengineering, levees and dams have stopped alluvium-rich soils from fertilising floodplains (Fig 3.2)

Fig 3.2



~~However~~ The future of ~~MED~~ MEDCs must turn to replenishment, ~~and~~ natural regeneration and rehabilitation of soils by allowing natural flooding processes to occur as they do in infrastructurally-barren rural areas of LEDCs. In the future, MEDCs will be unable to turn to quick-fixes such as ~~for~~ synthetic fertilisation as this washes away into riverbanks and causes eutrophication. It is clear that differences lies in the future of agriculture in LEDCs and MEDCs. In LEDCs there will be a focus on ~~increasing~~ increasing agricultural process and

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Geography 93401, 2015

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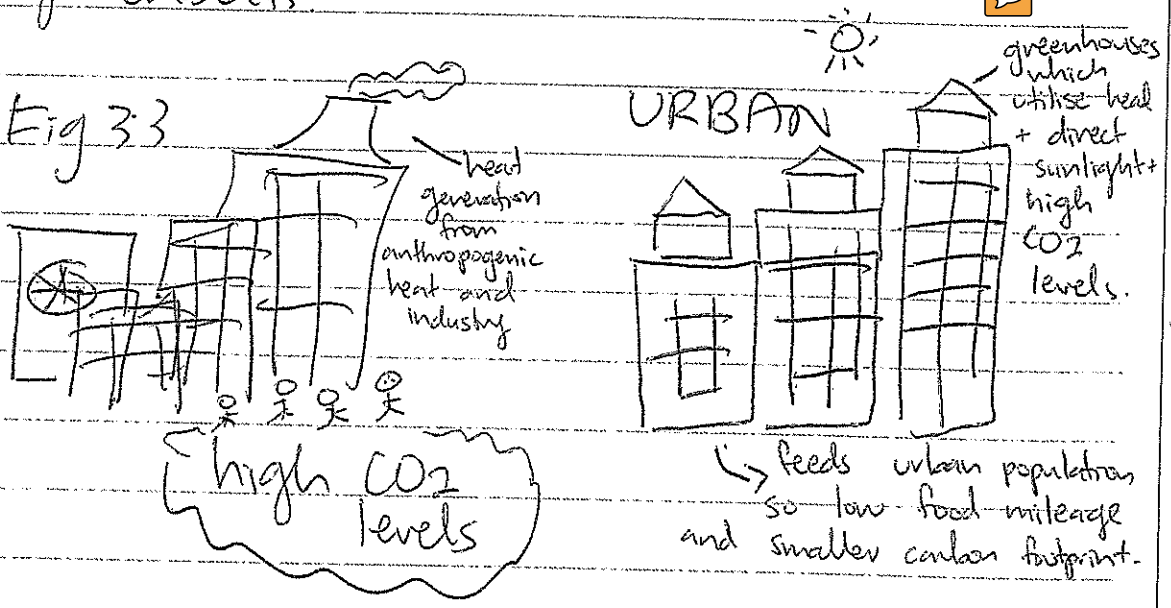
Write the question number(s) if applicable.

QUESTION NUMBER 3

production, whereas in MEDCs it will be on decreasing the detrimental impact on agricultural land

MEDCs will also need to tackle high carbon emissions in urban areas, utilising the urban heat island effect (Fig 3.3) to create rooftop greenhouse or greenbelts

Fig 3.3



LEDCs, on the other hand, will spend future agricultural ventures learning from the mistakes of MEDCs to use land efficiently, developing environmentally friendly solutions. LEDCs will use rotational farming, rather than mass monoculture so that land has time to replenish

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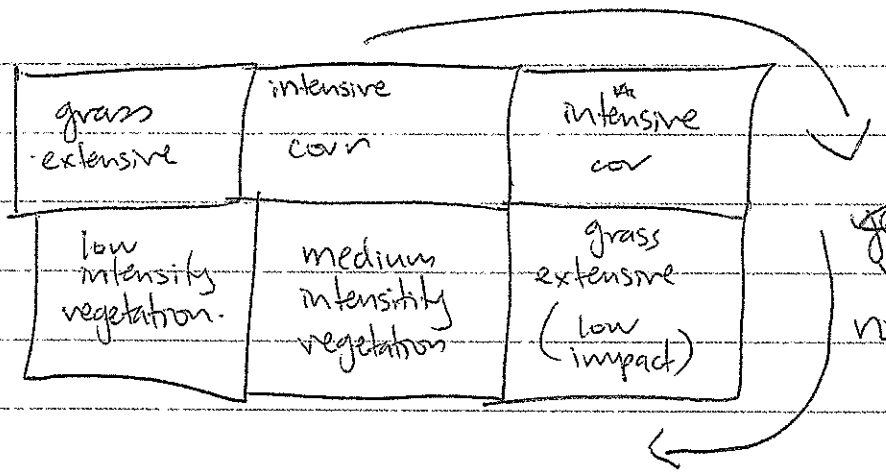
nutrient levels ~~are~~ : while there is still a constant harvest of ~~food~~ produce, (Fig 3.4).



D.

D.

Overall, LEDCs will be able to seek more efficient agricultural practices with less environmental damage ~~as~~ ~~interest~~ in the future. ~~MEDCs~~ MEDCs will work to undo their wrongs.