24. (2.5 points)

a. (0.5 point)

Describe the concept of materiality as it relates to an actuarial work product.

b. (0.5 point)

Briefly describe one reason why it may not be feasible to accurately determine a range of all possible outcomes when establishing a reserve range. Identify an example for the reason.

c. (1.5 points)

For each type of insurance below, describe how the two indicated risk factors could interact and influence the Appointed Actuary's conclusion of whether there are significant risks and uncertainties that could result in material adverse deviation.

Type of Insurance	Risk Factors
1) Coastal Homeowners	• Growth in a soft market • Lack of available experience
2) Mortgage	• Change in sustained unemployment rate • Change in home prices
3) Automobile	• Currency exchange rate • Availability of repair parts

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SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 24	
TOTAL POINT VALUE: 2.5	**LEARNING OBJECTIVE: D1**
SAMPLE ANSWERS	
Part a: 0.5 point	
Any one of the following: • An omission, understatement, or overstatement in a work product is material if it is likely to affect the intended user's decision making process or reasonable expectation • The amount that can cause a change in decision making for management, investors, consumers or regulators • An amount is material if including or excluding from disclosure would impact user's decision • The impact of a result or statistic such that a large enough change will result in a different decision by some or all intended users of the actuarial report • Material if it would influence the decisions of regulators/investors/business partners • Materiality relates to an actuarial work product being potentially misleading, leading to wrong decisions by the products intended users • Materiality is the amount of deviation from expected results that would make a difference to the way that the intended end user of the work product would interpret the results • Actuaries only need to make disclosures on items that are material. Item that are material could cause the user of the actuarial communication to take a different action • One event would be material if the related users would change their decision regarding the insurance company's solvency and financial health • Something is material if the information is relevant to user and would significantly alter users assessment of future environmental conditions. Most prominently, materiality should be considered in context of reserving. • Materiality is the amount of deviation in a number that can change a reader's conclusion	
Part b: 0.5 point	
Any one of the following: • Future liability yet to be identified that it is not reliably estimable, such as courts ordering payments of insurance claims where perils are explicitly excluded (for example, Asbestos/Product liability). • There could be an unforeseeable event that the insurer did not consider being liable for – or the extent to which it was liable. A good example of this is asbestos reserves which have caused many insurer's losses to develop more adversely than anticipated. • Because some reserves are long-tail since claims can take years to settle and it's hard to estimate what's the final settlement would be. For example, asbestos exposure can last for years and normally the settlement amounts are large. • Economic and judicial issues are not quantifiable in an actuarial review. How these affect the company's financial position are nearly impossible to determine. For example, if a new law is put into place that allows liability claims to settle for double what they are currently, the company's reserves would most likely be inadequate but there is no way for the actuary to account for it. • One possible example is a large concentrated catastrophe exposure, such as from a	

terrorist attack. The actuary doesn't have enough historical data to develop a range of all possible outcomes. 9/11 was probably an example of losses we never expected to be exposed to.

- Not everything is known about claims at the time the reserve was set. For example, construction defect claims may have a large reporting lag.
- Some possibilities are so far remote that quantification and identification is very challenging. i.e.: Proliferation of lawsuits that would affect line of business. There is no way the actuary can foresee this, but it could happen.
- Would be very difficult to quantify and include in reserves any events that occur with extremely low frequency but cause extremely high severity. For example, it would be hard to include earthquake risk in NY property insurance where earthquakes are not particularly likely, but could cause severe losses if they occurred.
- Estimating reserves is to estimate future claim obligations. As the future events have not happened and are uncertain, it is not feasible to accurately determine a range of all possible outcomes. For example, prior to 2012, we would not have expected the damage that Sandy caused. This is a large catastrophic event, which is very hard to predict.
- Historical events are the usual basis for determining possible outcomes, but an event could occur that wasn't accounted for. For example, very high inflation on medical WC costs.
- For some lines of business, sufficient credible data may not be available to set reserves with a high degree of accuracy. Flood insurance has this issue and it is one of the reasons the federal government became involved. The risk was too difficult to price and reserve, making it uninsurable.
- Because the amount of liabilities may be uncertain, e.g. medical malpractice claims may depend on jury's decision (award is uncertain) and may be affected by legislative changes.
- Some lines of business have long reporting lags. Thus, you will never know exactly what is a reasonable range. For example, occurrence policies on medical professional liability coverage could potentially not see a claim for years.
- If a company writes a new line of insurance, there may not be any industry data available for use by the Appointed Actuary, so the actuary may not be able to estimate values without the data. An example would be a company is the first to write tuition insurance and it's new in the marketplace and no data is available.
- There could be a law change that retroactively affects all open claims. Example is a law change that requires that all auto claims should include payment for diminution of value (i.e. all existing and future claims).
- Not responsible for things which could happen in the future. Example – fluid used in auto air conditioning found to be cancer-causing, leading to large losses.
- The range will be too wide too include all possible range. Also, the impact of certain outcomes may not be quantifiable at the moment, eg. Mass tort claims.
- Actuary may be unaware of a situation arising. For example, many companies have recently been exposed to cyber hacks. Twenty years ago, the thought of this happening probably never crossed anyone's mind. Therefore, the actuary was unable to accurately build this into their range of reasonable estimates.

Part c: 1.5 points

Coastal Homeowners

- Growth → new business may not be as predictable so greater risk. Lack of experience → greater risk reserves/rates are inadequate. Combined growth and not much experience means lots of RMAD.
- The growth may impact/distort some standard actuarial methods, unless they can be accurately accounted for. The lack of experience will also make accurate reserve estimates very difficult, especially give the CAT nature of the coastal area. This will likely increase the possibility that RMAD exists.
- Coastal influence: Lack of available expertise can interact with growth in a soft market to cause risk for material adverse deviation. The soft market can cause UW guidelines to be relaxed. If claims handlers lack experience, they may not adjust their claims practices accordingly, meaning that claims reserves may be inadequate.
- Since the company is expanding during a soft market (lower premium) without prior experience, the actuary could conclude that the carrier has a risk of a large CAT event and isn't properly handling this risk due to lack of experience w/product. Thus there is a RMAD since a large cat event can hit the reserves.

Mortgage

- If unemployment increases and home prices decrease at the same time, there would be significant defaults on mortgages => people could no longer afford their homes and can't sell them for what they owe. This would cause mortgage insurance to be under reserved and there would be significant risk of adverse development.
- If the unemployment rate increases and home prices decrease, there will be a much higher rate of default and banks will not be able to recover the outstanding balance due to the home price decrease. This would increase the RMAD.
- Unemployment rate – sustained high unemployment rate could result in more foreclosures. Change in home prices – put homeowners underwater if the drop is drastic. In combination the two factors could increase foreclosure rates and hence related losses.
- If increasing unemployment and decreasing prices, greater chance of default, meaning wider range for mortgage insurance reserves, meaning greater risk of RMAD.
- Increasing home prices with decreasing unemployment rates could make an actuary less concerned with risks of foreclosure and mortgage company solvency. Less risk and uncertainty than if one or other or both factors.
- An increase in home prices accompanied by a reduction in unemployment would cause an actuary to worry less about adverse development than if unemployment was increasing.

Automobile

- If the value of the US $ goes down & parts needed to repair cars from collisions are only available in foreign market => new parts are pricier b/c of exchange rate => a company's reserves for auto phys dam would be too low b/c prior average repair costs have now cone up significantly => reserves will show significant adverse deviation.
- A lot of auto parts are made abroad, so if dollar weakens then parts will cost more, leading to increased auto repair costs due to reduced parts availability as parts suppliers search for cheaper parts. Combo results in material adverse deviation in

auto book (more rental car coverage and higher priced parts)

- If car parts for foreign made vehicles become scarce at the same time that the dollar weakens, then severities for auto physical damage could significantly increase, leading to a risk of material adverse deviation.
- A stronger dollar in US coupled w/increase availability of repair parts could lead to cheaper rates to fix cars. This could lead to less uncertainty and less chance of RMAD.
- No significant RMAD if there is a favorable FX rate change. It may be cheaper to buy new cars from overseas which would offset the lack of repair parts. Getting a new car would be cheaper than replacing a part. Thus reserves could remain unchanged.

EXAMINER'S REPORT

Part a

The candidate was expected to know the meaning of materiality but was not expected to quote a definition verbatim. Common errors included:

- Only providing a description of possible metrics for determining materiality.
- Not mentioning that materiality depends on the user/audience – it was not sufficient to state that it would change/affect the actuarial opinion with no mention of the impact to the user.
- Simply saying it was something that needed to be disclosed.
- Attempting to define material adverse deviation rather than defining the concept of materiality.

Part b

The candidate was expected to clearly state a reason for not considering all of the possible outcomes when establishing a reserve range. This should include an explanation/example as to why this reason causes difficulties. Common errors included:

- Not providing an example.
- Stating a description that was too broad, such as "uncertainty in claims", "too many risks", "exposures with a lot of uncertainties", "limited data"

Part c

Candidates were expected to describe the interaction of the risks, including the correct combination of directions for the two risks, as well as give a valid outcome of the interaction as they relate to risks and uncertainties that could result in MAD. This part of the question required candidates to apply the concepts to situations that were not specifically described in the readings. Common errors included:

- Not describing why the interaction or combination of the two risk factors was significant. Some candidates considered each risk factor individually rather than as a combination, or only discussed one of the risks.
- Not making a specific link to the impact of the risk factors on material adverse deviation.
- Providing overly general descriptions of the impact, such as "leads to uncertainty" or "leads to insolvency".
- For 1, some candidates discussed low or inadequate premiums when growing in a soft market. On its own, this is not directly related to MAD.
- For 2 and 3, many candidates did not identify the direction for the risk factor.