SUGGESTED SOLUTIONS

22404 – Business Strategy and Knowledge Management

CA Professional (Strategic Level II) Examination
December 2014

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF SRI LANKA

<u>**Answer No. 01**</u>

(a) Governments cannot compete, only firms can do that. Governments can influence the context in which an industry operates and can create opportunities and pressures for innovation. It must also be remembered that the creation of competitive advantage can take many years.

  ➢ **Factors of production provide the seed corn**. A large endowment of easily mined iron ore would suggest metal-working industries. Porter distinguishes factors as basic and advanced, where basic factors (natural resources, climate, semi-skilled and unskilled labour) are identified as unsustainable as a source of national competitive advantage since they are widely available. As opposed to that, advanced factors (modern digital communications infrastrucutre, highly educated people - computer scientists, university research laboratories) are associatd with a well-developed scientific and technological infrastructure that are necessary to achieve high order competitive advantages such as differentiated products and proprietary production technology.

  An abundance of factors is not enough. It is the efficiency with which they are deployed that matters. As mentioned above Porter notes that generalised factors, such as transport infrastructure do not provide a decisive and sustainable base for competitive advantage as do specialised factors.

  ➢ **Related and supporting industries can also be a foundation**, if the competence within them can be configured in a new way. A nation's competitive industries tend to be clustered. Porter states clustering to be a key to national competitive advantage. A cluster is a linking of industries through relationships which are either vertical (buyer-supplier) or horizontal (common customers, technology, skills). Therefore an individual firm will be more likely to succeed internationally when there is a supporting cluster. Firms should be prepared to invest in co-operative ventures in fields such as training, infrastructure and research.

  ➢ **Government strategy and policy** should support cluster development and promote high standards of education, research and commercially relevant technologies. Nations are likely to display competitive advantage in industries that are culturally suited to their normal management practices and industrial structures. For example, German managers tend to have a strong bias towards engineering, and are best at products demanding careful development and complex manufacturing processes. They are less successful in industries based on intangibles such as fashion and entertainment.

  Further, industries in different countries have different time horizons, funding needs and so forth. National capital markets set different goals for performance whilst national attitudes to wealth also play an important role in industry-wide wealth creation. National culture affects industrial priorities through the relative prestige it allots to various industries and their leaders. E.g. Italy values fashion and furnishings. Porter argues that these policies may affect the firm's international strategies and opportunities.

Porter's model combines the traditional country-level theories with firm-level theories that focus on the actions of individual companies. He concludes the role that nation's play in creating an environment may or may not be conducive to a firm's success.

➢ **Extraordinary demands in the home market based on national peculiarities** and conditions can set the demand conditions determinant in the diamond of competitive advantage. This refers to existence of a large, sophisticated domestic consumer base that stimulates the development and distribution of innovative products. The domestic market determines how firms perceive, interpret and respond to buyer needs. This information puts pressure on firms to innovate and provide a launch pad for global ambitions.

A country needs to have no cultural impediments to communications, home market segmentation that shapes firm's priorities will be successful globally in segments which are similar to the home market, sophisticated and demanding buyers set standards in the market, anticipation of buyer needs earlier than the world market are some of the attributes a country needs to work on to gain nationally the competitive advantage.

(12 marks)

(b) A firm pursuing the strategy of related diversification has multiple lines of business linked together. Such a firm is conscious of leveraging its resources and capabilities beyond a single product or market into those businesses that are related to their current activities.

A firm could achieve related diversification in two ways;
- Related-constraint – when all the businesses in which a firm operates share a significant number of inputs, production technologies, distribution channels, similar customers etc.,
- Related-linked – where a single firm's different businesses are linked on only a couple of dimensions, or if different sets off businesses are linked along very different dimensions.

The goal of concentric diversification is to obtain the benefits from transferring and leveraging distinctive competencies, sharing resources and building products. Moreover, this allows a firm a firm to apply any general organisational competencies it possesses to increase overall business performance. The firm may choose to diversify concentrically through either internal or external means. Related diversification may create value through:

- Leveraging core competencies - using core competencies of the firm enhance customer value. Core competencies are difficult to imitate or substitute thereby sustaining competitive advantage.

- Sharing activities – common manufacturing facilities, distribution systems, or sales forces will be shared.

- Pooled negotiating power – this will strengthen a firm's position in relation to suppliers and buyers.

(8 marks)

(Total: 20 marks)

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Examiners' comments

(a) Candidates were asked to advise the policy makers using Porter's Theory of National Competitive Advantage. Majority of the candidates correctly understood this part and gave four factors correctly in point form.

Some candidates had not identified the theory of national competitive advantage and given some irrelevant answers. Some candidates had discussed Porter's Five Forces.

Most of the candidates had subject knowledge on Porter's Theory of National Competitive Advantage, but application of knowledge to the case was not done properly.

(b) Candidates were asked to justify the benefits from related diversification for potential investors. Most of the candidates did not identify the two main ways of achieving related diversification. Some candidates described irrelevant theories not of backward and forward integration. Instead of giving benefits of related diversification, some candidates had given available opportunities in Sri Lanka for an investment.

In general, candidates had given correct answers and obtained more than 10 marks out of the allocated 20 marks.

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Answer No. 02

(a)

- **Picking the new industries to enter and deciding on the means of entry** – the first concern in diversifying is what new industries to get in to and whether to enter by starting a new business from the ground up, acquiring a company already in the target industry, or forming a joint venture or strategic alliance with another company. A company can diversify narrowly in to a few industries or broadly into many industries. The choice of whether to enter an industry via a new start-up operation or a collaborative joint venture or by acquisition of an established leader, an up-and-coming company, or a troubled company with turnaround potential shapes what position the company will initially stake out for itself.

- **Initiating actions to boost the combined performance of the businesses the firm has entered** – as positions are created in the chosen industries, corporate strategists typically focus on ways to strengthen the long term competitive positions and profitability of the businesses the firm has invested in. The corporate parent can help their business subsidiaries be more successful by providing financial resources, supplying missing skills or technological know-how or managerial expertise to better perform key value chain activities or by providing new avenues for cost reduction.

- **Pursuing opportunities to leverage cross-business value chain relationships and strategic fits into competitive advantage** – a company that diversifies in to businesses with related value chain activities (pertaining to technology, supply chain logistics, production, overlapping distribution channels, common customers) gains competitive advantage, potentially not open to a company that diversifies in to businesses whose value chains are totally unrelated. Related diversification presents opportunities to transfer skills, share expertise, or share facilities, thereby reducing overall costs, strengthening the competitiveness of some of the company's products, or enhancing the capabilities of particular business units.

- **Establishing investment priorities and steering corporate resources in to the most attractive business units** – a diversified company's different businesses are usually not equally attractive from the standpoint of investing additional funds. It is incumbent on corporate management to (a) decide on the priorities for investing capital in the company's different businesses, (b) channel resources in to areas where earnings potential are higher and away from areas where they are lower and (c) divest business units that are chronically poor performers and businesses in unattractive industries to free up unproductive investments for redeployment to promising business units or for financing attractive new acquisitions.

(10 marks)

(b)

❖ Diversification may fail because of higher bureaucratic costs over the value created by diversification. Bureaucratic costs result from the increase number of businesses in a company's portfolio. Greater the number of businesses, the more difficult it is for managers to remain informed about the complexities of each business. Therefore corporate level managers end up making important decisions based on a superficial analysis of each business. Corporate managers' lack of familiarity with operations increases the probability of business level managers' ability to distort information provided to those at the corporate level. Information overload can result in substantial inefficiencies within extensively diversified companies.

❖ Another source of bureaucratic costs is the coordination required to realise value from transferring competencies and resource sharing. Bureaucratic costs arise from an inability to identify the unique profit contribution of a business unit that is sharing resources and functions with another unit. This problem can be resolved if corporate management directly audits both divisions, however, doing so requires both time and effort from corporate managers.

❖ Another reason companies fail to realise the expected benefit of diversification is that companies make inappropriate choice between related and unrelated diversification. Although the ways that related diversified companies can create value are more numerous, the bureaucratic costs of a related strategy are higher than those of an unrelated strategy. Thus, related firms may be no more profitable than unrelated firms. Related diversification should be chosen when the firm's distinctive competencies in its core business have commonalities with the competencies required to compete in other businesses, and when the bureaucratic costs of implementation do not exceed the value created through resource sharing.

❖ A company should pursue unrelated diversification when its distinctive competencies are highly specialised and have few applications outside the core business, when top management possesses super strategic capabilities, and when the bureaucratic costs of implementation do not exceed the value created through restructuring.

❖ Another inappropriate reason for diversification is risk pooling. Risk pooling is said to create a more stable income stream, reducing the risk of bankruptcy, which is in the best interest of stakeholders. However, this argument ignores two facts; stockholders can easily eliminate the risks inherent in holding an individual stock by diversifying their own portfolio, and they can do so at a much lower cost than the company can.

❖ Another inappropriate reason to diversify is to achieve greater growth. Such diversification is not a coherent strategy because growth on its own does not create value, despite the fact that empire-building top executives sometimes pursue growth for its own sake.

(5 marks)

(Total: 15 marks)

Examiners' comments

Part (a) - Most candidates did not understand the question properly and gave irrelevant answers. The BCG matrix was explained in more detail than was required. Majority of the candidates wrote theoretical aspects of the BCG matrix which was not expected in the question. Some of the candidates gave general strategic management processes instead of corporate strategy is a diversified company. However, a few candidates had clearly understood and given good answers.

Part (b) - Only a few candidates were able to given correct answers for this part. Instead of stating inappropriate decisions, more common facts were given. Unnecessary descriptions were given without focusing on the question being asked.

In general, performance in this question was very poor.

<u>Answer. No. 03</u>

(a)   Industries differ widely in their economic characteristics, competitive situations, and future profit prospects. Even though the competitive pressures in various industries are never precisely the same, the competitive process works similarly enough to use a common analytical framework in gauging the nature and intensity of competitive forces. As professor Michael Porter of the Harvard business school has convincingly demonstrated, the state of competition in an industry is a composite of five competitive forces.

➤ **The rivalry among competing sellers** – the strongest of the five competitive forces is usually the jockeying for position and buyer favour that goes on among rival sellers of a product or service. In some industries, cross company rivalry is centered on price competition – competing to offer buyers the best is typical among internet retailers and sellers of such standard commodities. Competitive jockeying among cross-company rivals can heat up when a competitor sees an opportunity to better please customers or is under pressure to improve its market share or profitability.

Regardless of the industry, several common factors seem to influence the tempo of cross-company rivalry.

o   Rivalry intensifies as the number of competitors increases and as competitors become more equal in size and capability
o   Rivalry is usually stronger when demand for the product is growing slowly.
o   Rivalry is more intense when industry conditions tempt competitors to use price cuts or other competitive weapons to boost unit volume.
o   Rivalry is stronger when customers' costs to switch brands are low.
o   Rivalry is stronger when one or more competitors are dissatisfied with their market position and launch moves to bolster their standing at the expense of rivals.
o   Rivalry increases in competition to the size of the payoff from a successful strategic move.
o   Rivalry tends to be more vigorous when it costs more to get out of a business than to stay in and compete.

➤ **The potential entry of new competitors** – new entrants to a market bring new production capacity, the desire to establish a secure place in the market, and sometimes substantial resources with which to compete. Seriousness of the competitive threat of entry is in a particular market depends on two classes of factors; barriers to entry and the expected reaction of incumbent firms to new entry. There are several types of entry barriers.
o   Economies of scale – scale economies deter entry because they force potential competition either to enter on a large scale or to accept a cost disadvantage and consequently lower profitability.
o   Cost and resource disadvantages independent of the size
o   Learning and experience curve effect

- o Inability to match the technology and specialised know-how of firms already in the industry
- o Brand preferences and customer loyalty
- o Capital requirements
- o Access to distribution channels

➢ **Competitive pressure from substitute products** – firms in one industry are quite often in close competition with firms in another industry because their respective products are good substitutes. Strong competitive pressures from substitute products depend on three factors;
- o Whether attractively priced substitutes are available
- o Whether buyers view the substitutes as satisfactory in terms of quality, performance, and other relevant attributes, and
- o Whether buyers can switch to substitutes easily.

➢ **Competitive pressures steaming from supplier bargaining power and supplier-seller collaboration** – whether supplier-seller relationships represent a weak or strong competitive force depends on;

- o Whether suppliers can exercise sufficient bargaining power to influence the terms and conditions of supply in their favour (suppliers have no bargaining power or leverage over rivals whenever the items they provide are commodities available on the open market from numerous suppliers with ample capability to fill orders, suppliers have a weak bargaining position whenever there are good substitutes for the item they provide and buyers find it neither costly nor difficult to switch their purchases to the suppliers of alternative items, suppliers also tend to have less leverage to bargain over price and other terms of sale when the company they are supplying is a major customer, suppliers are more powerful when they can supply a component more cheaply than industry members can make it themselves) and;
- o The extent of supplier-seller collaboration in the industry (promote just-in-time deliveries and reduced inventory and logistic costs, speed the availability of next generation components, enhance the quality of parts and components being supplied and reduce defect rates, and reduce the suppliers' cost and pave the way for lower prices on the items supplied).

➢ **Competitive pressures steaming from buyer bargaining power and seller-buyer collaboration** – whether seller-buyer relationships represent a weak or strong competitive force depends on;

- o Whether buyers have sufficient bargaining power to influence the terms and conditions of sale in their favour – just as with suppliers, buyers have in negotiation favourable terms that can range from strong to weak. Buyers have substantial bargaining leverage in a number of situations. The most obvious is when buyers are large and purchase a sizable percentage of the industry's output. Purchasing a large quantity gives a buyer enough leverage to obtain price concessions and other favourable terms. In addition buyer may still have some degree of bargaining leverage in the following circumstances;

- If buyers' costs of switching to competing brands or substitutes are relatively low
- If the number of buyers is small or if a customer is particularly important to a seller
- If buyers are well informed about the seller's products, prices, and costs
- If buyers pose a credible threat of integrating backward in to the business of sellers

   o   The extent and competitive importance of seller-buyer strategic partnership in the industry. Partnerships between seller-buyer are an increasingly important element of the competitive picture in business-to-business relationships as opposed to business-to-customer relationships. Many sellers providing items to business customers have found it in their mutual interest to collaborate closely.

(5 marks)

(b)   Operation management is an important element of corporate strategy for three reasons;

- ❖ The reward from the successful implementation of such strategies can be very high – for example Dell's competitive advantage through low-cost manufacturing
- ❖ Major investment in physical and human resources is necessary to achieve the identified results – for example, large investment needed for production plants of European steel companies
- ❖ Fundamental changes in both people and machines need to be addressed by every company - for example, Dell computers show the importance of major changes in these areas if improvement is to be obtained.

Operation strategy has two major contributions to corporate strategy;

- ❖ It aims to provide manufacturing and related processes that will give the organisation competitive advantage over competition.
- ❖ It supplies coordinated support for products so that they will win sales orders in a competitive market place.

As a result, operations resource analysis is important to strategic development that focuses on realising the above contributions because it can lead to competitive advantage in areas such as:
- Adaptable production to make products that are more precisely tailored to individual customer requirements
- Lower cost than competitors for the same product performance
- Product quality that is superior to that of competition
- Enhanced services and delivery associated with the product that is superior to rivals.

(10 marks)

(Total: 15 marks)

Examiners' comments

Part (a) - Majority of candidates failed to answer this part of the question. They have not understood the question. They did not seem to understand the words 'key analytical tool'. Most of them did not identify Portor's Five Forces as a tool. Some candidates identified BCG mechanism, PEST, and SWOT as tools, which was wrong.

Part (b) - Most answers were not focused on the question asked. Lengthy answers were given but not relevant to the question. Candidates may have knowledge on operational management and corporate strategy, but they were unable to apply that knowledge to this kind of question.

In general, performance in this question was very poor.

Answer No. 04

(a)   A possible answer for facts would be:

1.   Facts are the definite attributes, parameters or knowledge components that can be stored in a knowledge store.
2.   A definite expression such as: "last few days there were evening rains with thundering, and hence not good for excursions in the hill side for tourists", "five-star hotels in Sri Lanka charge Rs. 30,000 or more per night", "minimum charge for a flight from Singapore to Sri Lanka is Rs. 30,000", etc., can be termed facts.

A possible answer for rules would be:

1.   Rules are the expressions that provide guidance to decide on a cause of action based on a select a fact.
2.   A statement that helps making a decision such as: "if there were thunder storms last evening, display a warning to the tourists with a possibility of the same today"; "if the tourist has capacity to pay more than Rs. 30,000 a night, suggest a five star hotel", etc., can be termed rules.

(2 marks)

(b)   *The answer is based on the application of above (a).*

1.   on-line inquiring mechanisms regarding its services and tour packages, offered hotel accommodation, planned flight details, and taxi/bus arrangements
<u>fact:</u> a daily flight from/to Singapore to/from Sri Lanka is available for group packages
<u>rule:</u> if a Singapore/Sri Lanka flight is available with more than 20 seats, then offer it for a group package

2.   requesting mechanisms for new tour packages or customisation of existing packages
<u>fact:</u> existing packages can be added with new places of visit if they are near the route plan
<u>rule:</u> if a tourist group requests places to be added, and if the places are near the route plan, then customise an existing package, else create a new package

3.   providing financial details and discount offers about the group tour arrangements
<u>fact:</u> discounts are offered only for groups higher than 20 persons
<u>rule:</u> if there are more than 20 per group registered, then offer 25% discount

4.   online reservation of tour packages and any other extra services offered
The question does not require to consider this

5.   online payments for reserved packages or any other services reserved
The question does not require to consider this

6.   providing details about historical and other places of interest, together with search facilities

fact: Ruwanveliseya is in Anuradhapura, and Anuradhapura has many historical places

rule: if searched for Ruwanweliseya, then list all other historical places in Anuradhapura

7. providing details about weather forecasts

fact: Kitulgala experiences landslides during heavy rains

rule: if the route includes Kitulgala and if during heavy rainy days, then issue a warning

8. collaborative tools to link with excursion guides

fact: an excursion guide in Yala is allowed to handle only 10 tourists at a time

rule: if a tourist wishes to link with an excursion guide in Yala, and if the number of links are less than 10, then allow linking, else list other excursion guides

9. loyalty services to maintain customer relations and to offer discounts for regular clients

fact: a client who visited more than twice in an year is entitled to a 30% discount

rule: if a client requests a package, and if the client has visited 2 or more times, then offer 30% discount

10. alerting services via SMS and e-mail regarding events, reservations, payments, and for safety during the tours

fact: when a payment is made, that amount is accounted to a credit card or deducted from a bank account

rule: if a payment is realised, and if the mobile number of the client is in the system, then send an SMS alert with payment details

11. coordination of health insurance facilities

fact: health insurance is a must for a traveler

rule: if the client does not have health insurance, then propose possible health insurance schemes

(9 marks)

(c)

1. Provide a feedback mechanism

Web 2.0 technology: blog

Service: selection of hotels (can be any other service)

Why: blogs provide an efficient way of providing feedback and comments. Such comments can be used to enhance the service levels and provide a response in return.

2. Dynamic documentary construction

Web 2.0 technology: Wiki

Service: searching with provision of documentary information on historical and other places of interest

Why: Wiki provides a way of collaboratively constructing informational documents with periodic updates, making them up-to-date, and hence the customers will rely on them

3. Retrieve information from authentic sources (or provide links to web sites with details of the places of interest by authorized institutions such as tourist boards)

Web 2.0 technology: RSS feeds

Service: directory of information repository

Why: Authorised institutions usually update their web sites with relevant information in their constituency, and it is not necessary to repeat the effort, as Web 2.0 provides means to re-use them

4. Provide linking facilities (either through LinkedIn/Facebook or using a custom built mechanism) to link and communicate with excursion guides
Web 2.0 technology: Forums or plug-ins to LinkedIn or Facebook
Service: Excursion guide services
Why: Tourists may have preferences for different types of excursions and guides, and they need to build trust on the guide

(9 marks)

(Total: 20 marks)

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Examiners' comments

Part (a) - This was a very easy question and a considerable number of candidates were able to provide the correct answer.

Part (b) – Unfortunately, majority of the candidates were unable to answer this part well. Most of them couldn't distinguish between the 'fact' and 'rule'. Subject knowledge on this area and understanding of this question were poor.

Part (c) - Majority of the candidates were unable to give recommendations correctly. However, most candidates were aware of the web 2.0 technologies and mentioned wikis, blogs, LinkedIn, Facebook etc. and wrote about facilities that can be obtained from them.

In general, candidates' knowledge in this area was poor. Candidates should try to understand the given case and they should analyse it by considering the theories defined in the book.

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Answer No. 05

(a)   Data mining is the process of analysing large volumes of data to search for patterns and relationships within that data. Artificial intelligence, machine learning, statistics, and database systems are used as tools for data mining. The overall goal of the data mining process is to extract knowledge from an existing data set. The task is the analysis of large quantities of data to extract previously unknown interesting patterns such as groups of data records (cluster analysis), unusual records (anomaly detection) and dependencies (association rule mining). Data mining may identify multiple groups in the data, which can then be used to obtain more accurate prediction results by a decision support system.

(2 marks)

(b)

    (1)   Ubiquitous computing (e.g. daily activities recorded through mobile devices, smart office systems, etc.)
Through mobile-based services, information can be retrieved from the mobile phones and similar devices. They are more granular due to such information being focused on individual events and data records. They are more personal as individuals operate them, and the inputs are based on personal preferences. (2 marks for a description covering both granularity and personal nature)

    (2)   Micro-blogging (e.g. Twitter)
Twitter provides plug-ins to integrate easily with information systems. Many tourists use Twitter, and hence their feedback and comments, and any further details they find during excursions, can be retrieved. Twitter posts ("tweets") are usually focused on specific aspects (granular) individual incidents (personal).

(6 marks)

(c)   Ubiquitous computing and micro-blogging will continuously gather information and hence lead to a considerably complex knowledge base. These details will have a lot of noise as well as useful information.

Information retrieved from other systems mentioned in the description includes hotel details, airline details, bus/taxi service details, and many tourist information retrieved from relevant services.

Five stage process of data mining to discover knowledge [for marks, consider only the idea and not the exact wording]:

    (1)   selection: information retrieved from the sources related to ubiquitous computing and micro-blogging, and the other systems indicated in the description will have information related to many areas. Depending on the knowledge to be discovered, only the information in the relevant area needs to be processed, and hence such areas need to be selected.

    (2)   pre-processing: it is necessary to filter the noise specifically from two

mechanisms given in (b) (i.e., ubiquitous computing and micro blogging). Other systems which provide more systematic information also may need preprocessing depending on the requirement for a specific type of knowledge. It is needed to eliminate duplicates, incomplete data, etc.

(3)   transformation: above information may be in a format that is not suitable for data mining, and hence they need to be converted/transformed to a suitable format,

(4)   data mining: data mining process need to be carried out using a suitable algorithm. Above information need to be clustered, classified, and summarised for the interpretation purpose using a data mining algorithm. Data mining tools will be used in this phase.

(5)   interpretation/evaluation: depending on the requested knowledge and what is extracted in the data mining process, the user of the above system need to be presented with necessary information. They may be interpreted using words, diagrams, etc., and any evaluations or comparisons may be provided through charts, graphs, etc.

(7 marks)

(Total: 15 marks)

Examiners' comments

Part (a) - Majority of the candidates understood this part well and gave good answers. They had very good knowledge on data mining.

Part (b) - Majority of the candidates had not identified the appropriate technologies. They seemed to have not understood the question and gave wrong answers. Some candidates did not even attempt to answer this part.

Part (c) - Most candidates had understood the question and given the five stages correctly. However, they did not consider the two mechanisms used in part (b).

Answer No. 06

(a)   1.   <u>Business understanding</u>
This step is for understanding of objectives and requirements from a business perspective. The step consists of sub-steps such as determination of business objectives, assessment of the situation, determination of data mining goals, and generation of a project plan.

2.   <u>Data understanding</u>
The step starts with initial data collection and familiarization with the data. Specific aims include identification of data quality problems, initial insights into the data, and detection of interesting data subsets. Data understanding is further broken down into sub-steps such as collection of initial data, description of data, exploration of data, and verification of data quality.

3.   <u>Data preparation</u>
The step covers all activities needed to construct the final dataset. The final dataset constitutes the data that will be fed into Data Mining tools in the next step. It includes table, record, and attribute selection; data cleaning; construction of new attributes; and transformation of data. Is is divided into the sub-steps of selection of data, cleansing of data, construction of data, integration of data, and formatting of data.

4.   <u>Modeling</u>
At this point, various modeling techniques are selected and applied. Modeling usually involves the use of several methods for the same data mining problem type. The input parameters are adjusted to optimal values. Since some methods may require a specific format for input data, often moving into the previous step is necessary in some situations. This step is subdivided into steps as selection of modeling techniques, generation of test design, creation of models, and assessment of generated models.

5.   <u>Evaluation</u>
After one or more models have been built that are of high quality from a data analysis perspective, the model is evaluated from a business context. A key objective is to determine whether any important business issues have not been sufficiently considered. At the end of this phase, a decision about the use of the data mining results should be reached. The key sub-steps in this step include evaluation of the results, process review, and determination of the next step.

6.   <u>Deployment</u>
Now the discovered knowledge must be organized and presented in a way that the customer can be used to integrate in the decision making process. Depending on the requirements, this step can be simple as generating a report or as complex as implementing an iterative Knowledge Discovery Process. This step is further divided into the sub-steps of plan deployment, plan monitoring and maintenance, generation of final report, and review of the process.

In general, it is a very successful and extensively applied model, mainly due to its grounding in practical, industrial, real-world knowledge discovery experience. The CRISP-DM model has been used in domains such as medicine, engineering, marketing, and sales. It has also been incorporated into commercial knowledge discovery systems.

(10 marks)

(b)

Similarities
1.   Collaborative work in producing knowledge
2.   Tracking is possible (who wrote what at what time)
3.   Gets updated dynamically, with latest inputs by the community of contributors

Differences
1.   Wikis produce one document incorporating all inputs, whereas weblogs are produced as distinct individual blog entries by individuals
2.   Wikis produce the latest version to the reader, whereas weblogs present everything in chronological order
3.   Readers can leave comments in weblogs, whereas, Wikis may not provide it (unless editing is enabled based on some identification)
4.   Wikis are more descriptive, whereas weblogs may contain short statements
5.   Wikis are more formal and use of language matters, whereas weblogs are more informal

(5 marks)

(Total: 15 marks)

Examiners' comments

Part (a) - Majority of the candidates understood this part and gave correct answers. Their subject knowledge on the tested area was very good. Most candidates gave all six steps, although only five steps were required to get the maximum marks. A few candidates gave steps of the Academic Research Model instead of the CRISP-DM model. Majority of the candidates obtained 8 - 9 marks out of 10.

Part (b) - Majority of the candidates failed to answer this part. Most of them did not have a clear idea about the similarities and differences between 'wikis' and 'weblogs'. Their subject knowledge on 'wikis' and 'weblogs' were poor.

In general, this was an easy question and candidates performed well.

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They are not intended as "Model answers', but rather as suggested solutions.

The answers have two fundamental purposes, namely:

1.   to provide a detailed example of a suggested solution to an examination question; and

2.   to assist students with their research into the subject and to further their understanding and appreciation of the subject.

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