



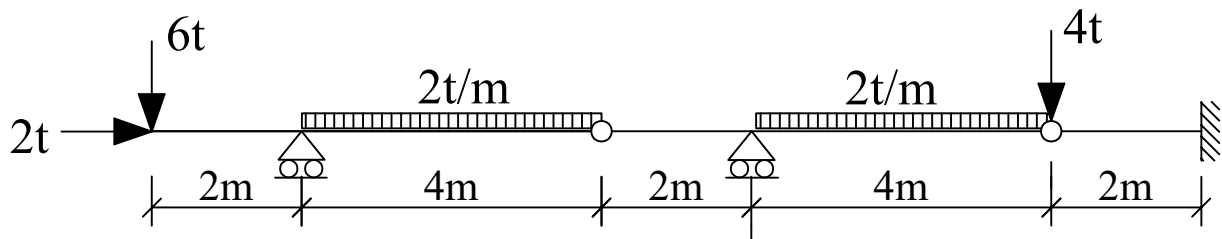
TANTA UNIVERSITY
FACULTY OF ENGINEERING
CONSTRUCTION ENGINEERING PROGRAM
FINAL EXAM



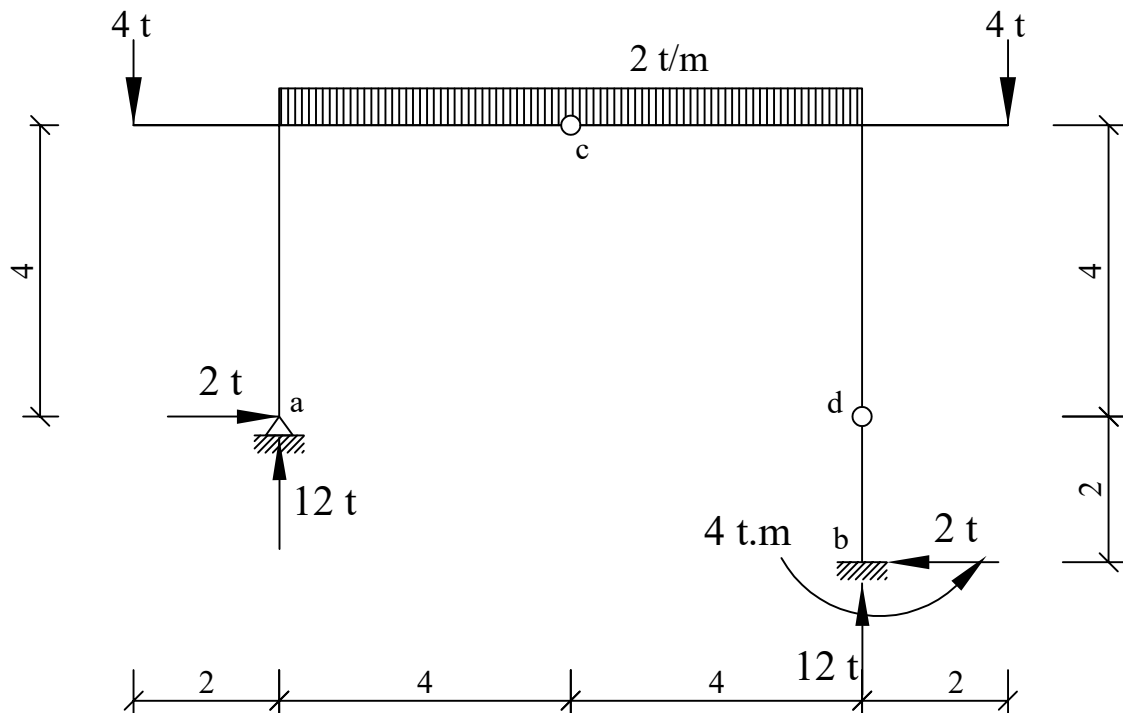
COURSE TITILE: STRUCTURAL ANALYSIS 1			COURSE CODE: CES 141
DATE :09/2022	FIRST LEVEL	TOTAL ASSESSMENT MARKES : 40	TIME ALLOWED: 3 HOURS

Systematic arrangement of calculations and clear drawing are essential. Any data not given is to be assumed
Answer as many questions as you can - Answer as brief as possible.

Q1) Classify the shown beam then draw the N.F, S.F, and B. M. Diagrams (10 marks)



Q2) Draw the N.F, S.F, and B. M. Diagrams for the shown frame (10 marks)



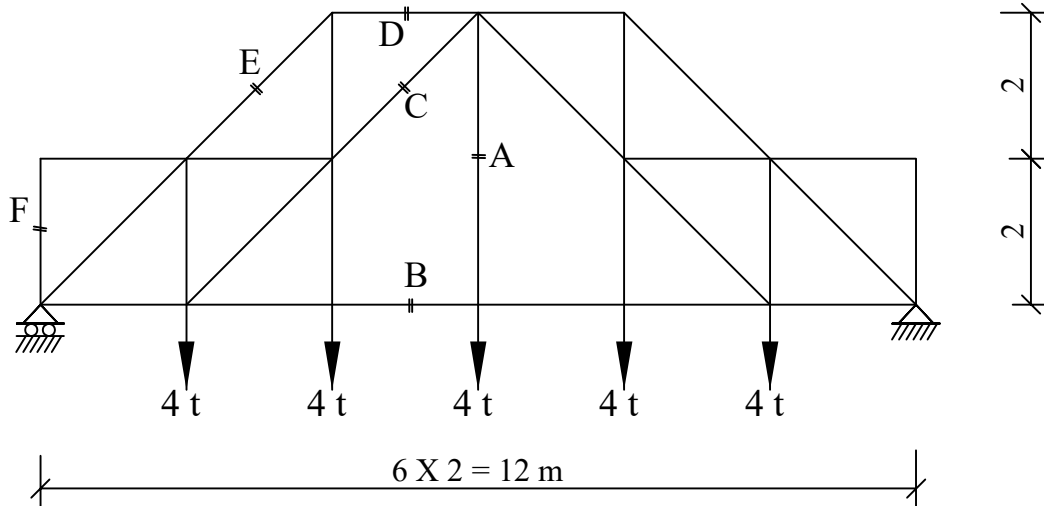


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Q3) For the given truss, determine the forces in the marked members

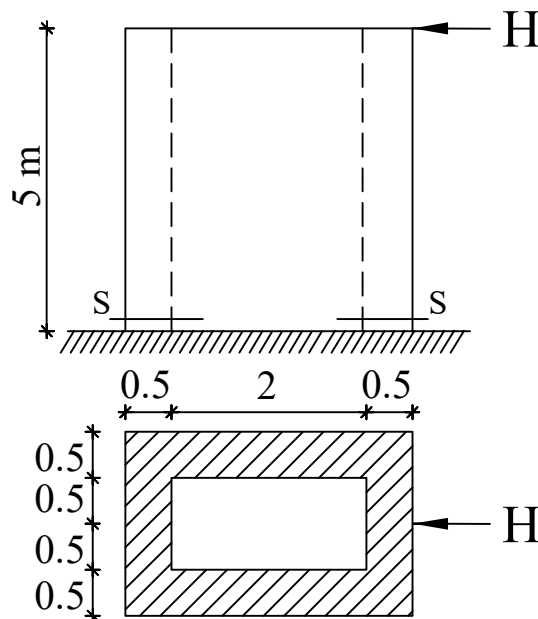
(7 marks)



Q4) a) Draw the distribution of normal stresses at section S-S of the shown pier if $H = 3t$.

(13 marks)

b) Find the maximum value of H if no tension is allowed at section S-S and the maximum allowable compressive stress is 25 t/m^2 .
(Own wight of pier = 2 t/m^3)





Please answer the following questions:

Question (1)

(20Marks)

(a) The temperature at a point (x, y) on a rectangular metal plate is given by

$$T(x, y) = 80 - 2x^2 - y^2$$

Starting at the point $(3, 4)$

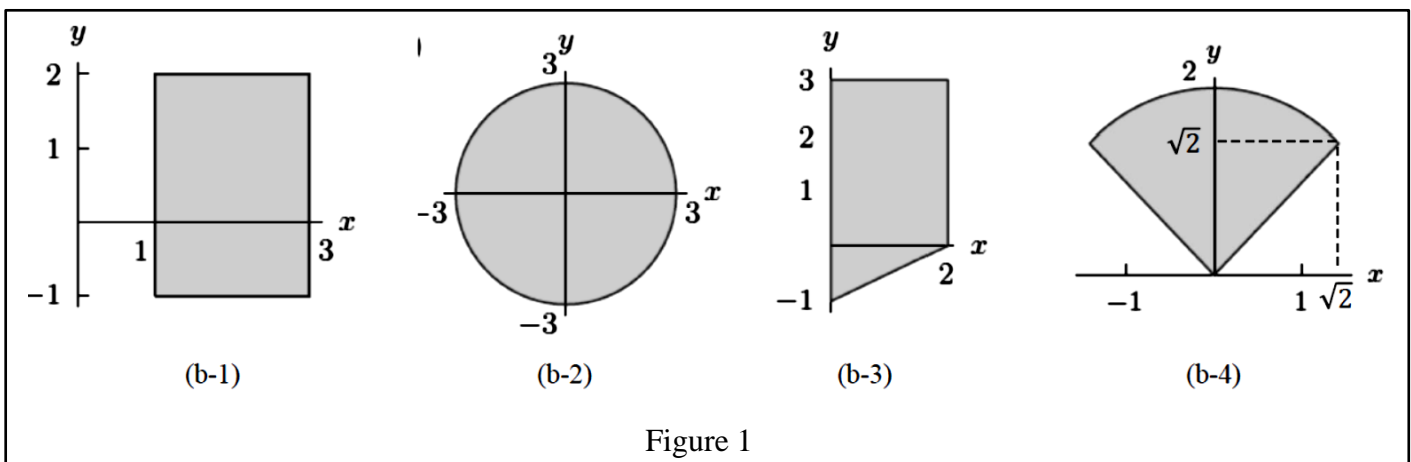
(a-1) Find a path that a heat seeking particle will take as it moves in which the temperature increases most rapidly and find the rate of increase in temperature.

(a-2) Find the directions where there will be no change in temperature.

[6 Marks]

(b) For each region in Fig.1, decide whether to evaluate the double integrate using polar or cartesian coordinates. Write the double integral for an arbitrary function $f(x, y)$ over the indicated regions.

[4 Marks]



(c) If $w = f\left(\frac{xy}{x^2+y^2}\right)$, show that $xw_x + yw_y = 0$.

[5 Marks]

(d) Find the work done by the force field $\vec{F} = x^3y \mathbf{i} - x \mathbf{j}$ in moving an object along the circle $x^2 + y^2 = 1$ in the clockwise direction.

[5 Marks]

Please, consider page 2/2

(a) Sketch the cross-sections of the function $g(x, y) = x^2 - y^2$ with y fixed and then with x fixed.

[4 Marks]

(b) Find the first partial derivatives for the function

$$f(x, y) = xe^y - \sin(xy)$$

[4 Marks]

(c) A company has a production function with three inputs x , y , and z given by

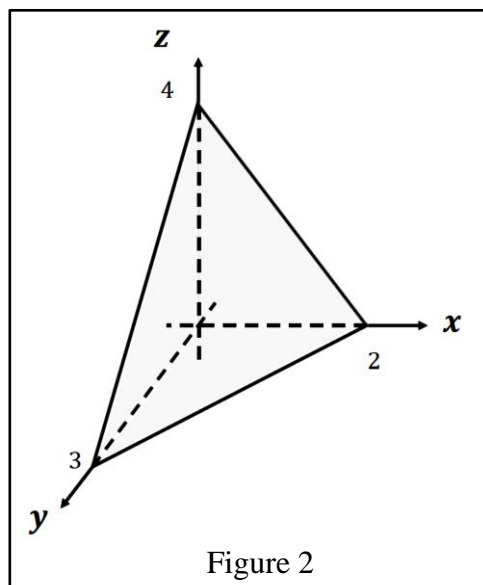
$$f(x, y, z) = 50 x^{2/5} y^{1/5} z^{1/5}$$

The total budget is \$24,000 and the company can buy x , y , and z at \$80, \$12, and \$10 per unit, respectively. What combination of inputs will maximize production?

[6 Marks]

(d) Find the volume bounded by $\frac{x}{2} + \frac{y}{3} + \frac{z}{4} = 1$ and the coordinate planes $x = 0, y = 0, z = 0$ shown in Fig. 2.

[6 Marks]





Course Title	Technical Installations	Final Exam	Course Code	EPE122
Date	8/6/2022	No. of Pages 2	Allowed time	3 Hour

Question Number (1) (15 Points)

(أ) أذكر الخطوات المتبعة لحساب الإضاءة الداخلية بطريقة الليومن؟ ثم وضح بالرسم الدائرة التنفيذية لتوصيل مصباحين فلورسنت على التوالي بمفتاح واحد؟ (5 points)

(ب) يراد إضاءة ممر طوله 30م بأربعة مصابيح يبعد كل مصباح عن الآخر مسافة 10 m ومثبتة على ارتفاع من 5 m من سطح الأرض، فإذا كانت شدة الإضاءة للمصباح 200 cd في جميع الاتجاهات. أوجد الإضاءة على سطح الأرض عند منتصف المسافة بين المصباحين الثاني والثالث وأيضا أسفل أحد المصابيح الأول؟ (5 points)

جدول 6-7 : أحد جداول حساب Room Utilization Factor

معاملات الانعكاس										
Ceiling	0.8	0.8	0.8	0.5	0.5	0.8	0.8	0.5	0.5	0.3
Wall	0.8	0.5	0.3	0.5	0.3	0.8	0.3	0.5	0.3	0.3
Surface	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1
Room Index Factor, k	Room Utilization Factor in %									
0.6	73	46	37	44	36	66	36	42	35	35
0.8	82	57	47	54	46	74	45	51	44	44
1.0	91	66	56	62	54	80	53	59	52	51
1.25	98	75	65	70	62	85	61	66	60	59
1.5	103	82	73	76	69	89	67	72	66	65
2.0	109	91	82	84	78	94	75	78	73	72
2.5	114	98	90	90	84	97	81	83	79	77
3.0	117	103	96	95	90	99	86	87	83	82
4.0	120	109	103	100	95	101	91	91	88	86
5.0	122	113	107	103	98	103	93	93	91	89

(ت) المطلوب تصميم نظام الإضاءة لصالة رسم أبعادها 8×20 m وارتفاع السقف 4 m ومستوى الإضاءة المطلوبة يساوي 500 lux, علماً بأن انعكاس السقف 80% والحوائط 30% والأرضيات 10%, وأن مستوى العمل يرتفع 80cm من الأرض, وأن وحدة الإضاءة المستخدمة معلقة تحت السقف بمسافة 60cm ولها المواصفات التالية:
Philips Dulux 1×48W, Luminous flux per lamp = 3000 lm, Light loss factor = 0.84.

(5 points)

Question Number (2) (15 Points)

(أ) The roof of an electrically heated home is 6 m long, 8 m wide, and 0.25 m thick, and is made of a flat layer of concrete whose thermal conductivity is $k = 0.8 \text{ W/m}\cdot\text{K}$. The temperatures of the inner and the outer surfaces of the roof one night are measured to be 15°C and 4°C , respectively, for a period of 10 hours. Determine (a) the rate of heat loss through the roof that night and (b) the cost of that heat loss to the home owner if the cost of electricity is $\$0.08/\text{kWh}$ (5 points)

(ب) اشرح باختصار مع تزويد اجابتك بالرسم المبسط كلما امكن تصنيف الانواع المختلفة للمساعد الكهربائية من حيث تكنولوجيا التشغيل والاستخدام مع توضيح مكونات المساعد؟ مع ذكر المتطلبات المعمارية للمساعد؟.

(3 points)

(ت) وضح بايجاز الغرض الاساسى من التهوية؟ و اشرح بارسم المبسط الانواع المختلفة للتهوي.

(3 points)



(ث) A 2-m-long, 0.3-cm-diameter electrical wire extends across a room at 15°C . Heat is generated in the wire as a result of resistance heating, and the surface temperature of the wire is measured to be 152°C in steady operation. Also, the voltage drop and electric current through the wire are measured to be 60 V and 1.5 A, respectively. Disregarding any heat transfer by radiation, **determine the convection heat transfer coefficient for heat transfer between the outer surface of the wire and the air in the room..... (4 points)**

Question Number (3) (10 Points)

(أ) وضح بالشرح مع الرسم المبسط مع كتابته المعادلات الحاكمة كيف يمكن ان تنتقل الحرارة من شخص يقف امام حائط غرفة مكون من من ثلاثة طبقات من مواد مختلفة الخواص والسمك الى شخص يقف في الناحية الاخرى من الغرفة مع اعتبار ان الحرارة تنتقل من كل شخص الى الحائط بتيارات الحمل فقط.....(4 points)

(ب) ما هو المقصود بالحريق؟ وكيف يمكن اخماد الحريق؟ ووضح انواع الحرائق وكيف يمكن التغلب على كل نوع؟.....(3 point)

(ت) ما هي العوامل التي تؤثر على اكتساب المباني للحرارة؟ وباستخدام الرسومات البسيطة وقم بسرد العناصر المختلفة التي يمكن بواسطها احتساب الحمل الحرارى في المباني؟ (3 point)

End of questions Best Wishes

Assoc. Prof. Medhat Elkelawy
Assoc. Prof. Hossam A. Saleh



Mechatronics Engineering Program



Tanta University

Faculty of Engineering

Course Title	Technical Writing	Final Exam	Course Code	HUM 162
Date	6 th September 2022	No. of Pages (2)	Allowed time	2 hrs

Remarks: (Answer all the following questions, using a clear good handwriting, please consider right spelling, grammar and punctuation rules)

Question No. (1)

(10 points):

- a) Read the following abstract about “2022 renewable energy industry outlook” then answer the questions after reading **(5 points):**

In 2021, the renewable energy industry remained remarkably resilient. Rapid technology improvements and decreasing costs of renewable energy resources, along with the increased competitiveness of battery storage, have made renewables one of the most competitive energy sources in many areas. Despite suffering from supply chain constraints, increased shipping costs, and rising prices for key commodities, capacity installations remained at an all-time high. Wind and solar capacity additions of 13.8 GW in the first eight months of 2021 were up 28% over the same period in 2020. Many cities, states, and utilities set ambitious clean energy goals, increasing renewable portfolio standards and enacting energy storage procurement mandates.

Renewable energy growth is poised to accelerate in 2022, as concern for climate change and support for environmental, social, and governance (ESG) considerations grow and demand for cleaner energy sources from most market segments accelerates. In the renewable energy industry analysis, the following five trends are expected to move to the forefront in 2022, opening new avenues in the renewable energy growth; Growing interest in next-generation clean energy technologies, Solar systems new configurations, Transmission infrastructure is becoming a key priority, especially for offshore wind, Supply chain strategies continue to evolve, The circular economy is critical to sustainable growth in the renewable energy industry.

Please mark the following sentences with true or false based on the attached abstract:

1. Renewable energy installations decreased in 2022 than 2021. ()
2. The cost of renewable energy sources is increasing due to the high demand on it. ()
3. Demand on renewable energy is expected to increase over time. ()
4. Transmission of energy is not a key parameter in the first stage of renewable energy dissemination. ()
5. The next generation will not be required to participate in adopting renewable energy policies. ()

- b) Write an email to act as a cover letter to your CV when applying to a job vacancy in an international firm. **(5 points)**

Question No. (2)

(10 points)

- a) Write short notes about the following (4 points):

1. Types of emails
2. The difference between Abstract and Summary

- b) **Please mention what does the following Abbreviations refer to** (6 points)::

1. ASBD
2. PO
3. MOM
4. QC
5. RFV
6. SD



Question Number (3)

(10 Points)

a) Please mark the following sentences with true or false:

(10 points)

- 1) Religious preference mustn't be included in the resume.
- 2) Hybrid resume includes one's relevant skills and work experiences as well.
- 3) Paraphrasing is a useful tool for avoiding plagiarism in technical writing.
- 4) Technical writing ethics can be changed from society to another.
- 5) Research report types are troubleshooting reports and state of art reports.
- 6) Technical report content must be summarized in report methodology section.
- 7) Proposals must be written by a group of persons not by only one person.
- 8) Status report include the completed tasks of a project rather than non-completed one.
- 9) sending a covering letter with a CV isn't important in much cases of applications.
- 10) Image switch is a good sign of a technical report.

Question Number (4)

(10 Points)

a) Paraphrase the following paragraph, and summarize it in only 3 lines: (5 Points)

Egypt could realistically, and cost-effectively, supply 53% of its electricity mix from renewables by 2030, double the share to be expected from current plans and policies, the report finds. With renewable power, heat and fuels all factored in, renewables could provide 22% of Egypt's total final energy supply in 2030, up from just 5% overall in 2014. While investments in renewables would have to increase, the proposed shift would cut the country's energy costs by USD 7 per megawatt hour (MWh) on balance, even before considering the health benefits of reducing air pollution.

b) Explain in brief the difference between each of the following:

(5 Points)

1. Functional CV	Hybrid CV
2. Periodic Report	Troubleshooting Report
3. Copyright Infringement	Plagiarism
4. Personal Profile	Covering Letter
5. Proposal	Paraphrasing

End of questions With best of luck

With best of luck: Assoc. Prof. Dr. Hagar Alm-Eldin, Assoc. Prof. Dr. Ragaa Abd El-Hakim



Course Title	Technical Writing	Final Exam	Course Code	HUM 162
Date	19 June 2022	No. of Pages (2)	Allowed time	2 hrs
Remarks: (Answer all the following questions, using a clear good handwriting)				

Question No. (1) (10 points):**a) Read the following abstract then answer the questions after reading (4 points):**

The soaring dollar is pushing the global economy deeper into a slowdown by driving up borrowing costs. Dollar has risen 7% since January as the Federal Reserve embarks on an aggressive series of interest-rate increases to reduce inflation and investors have bought dollars due to the economic uncertainty.

A rising currency should support American demand for goods from abroad, but it also threatens to drive up the import prices of foreign economies, further increasing their inflation rates, and consume their capital. That's especially worrying for emerging economies, which are being forced to either allow their currencies to weaken, intervene to cushion their slide, or raise their own interest rates in a bid to support their foreign exchange levels. Both India and Malaysia made surprise rate increases this month.

Advanced economies haven't been spared either: In the past week the euro hit a new five-year low, the Swiss franc weakened to hit equality with the dollar for first time since 2019 and Hong Kong's Monetary Authority was forced to intervene to defend its currency peg. The yen also recently suffered a two-decade low.

The dollar's rapid pace of rate increase is causing headaches for many other economies in the world, and currency weakness. While the combination of slowing US growth and an expected cooling in America's inflation will ultimately see the dollar's ascent slow, which in turn will take pressure off other central banks. It may take months to find that new equilibrium.

Choose the right answer from the following:

- Federal Reserve performed a series of interest-rate increases due to:
 - Lack of currency
 - Inflation
 - Economic growth
 - Economic uncertainty
- Interest rate increase effect on emerging economies include all the following accept:
 - Lack of currency
 - Inflation
 - Economic growth
 - Raise of interest rate
- Strong economies in the world have managed to endure the dollar dilemma.
 - True
 - False
- Dollar is expected to rise due to the procedures applied by Federal Reserve
 - True
 - False

b) You are a project manager in a multinational corporate. Your employees have been working hard on that project for the last 3 months. Write a formal letter of appreciation showing your gratitude for their hard work. (6 points)



Question No. (2)

(10 points)

a) Write short notes about the following (4 points):

- 1. Structure and definition of a memorandum
- b) Parts of A scientific Paper

c) Please mention what does the following Abbreviations refer to (6 points)::

- 1) SD 2) ASBD 3) Kof 4) CDR 5) RFA 6) NCR

Question Number (3)

(10 Points)

a) Please mark the following sentences with true or false:

(5 points)

- 1) Plagiarism is the right to reproduce or perform the copyrighted work
- 2) Resume includes all of your skills, experiences and education
- 3) Abstract of the technical report Covers research highlights.
- 4) Functional CV is suitable for people who wish to change their career.
- 5) Technical report introduction explains the limitations of the research performed.
- 6) Religious preference mustn't be included in the resume.
- 7) Hybrid resume includes ones relevant skills and work experiences as well.
- 8) In proposals we present completed tasks rather than expected completions in a certain project.
- 9) Summary section of a technical report discusses Strengths of the study, as well as its weaknesses and shortcomings.
- 10) Informal proposals take the form of a long letter or short document.

c) Construct a Gantt chart for a project schedule of 15 months with 6 activities each activity's duration is 3 month long, except the first activity's duration is 4 months and last activity duration is 6 months. All Activates can be achieved parallel. (5 points)

Question Number (4)

(10 Points)

a) Plagiarism actually cost more in time and money than it was worth.

Please comment on the phrase, and describe causes of plagiarism as well as how to avoid plagiarism.

(5 Points)

b) Describe in brief the difference between each of the following:

(5 Points)

1. Chronological CV	Hybrid CV
2. Periodic Report	Progress Report
3. solicited proposal	Unsolicited proposal
4. Copyright Infringement	Plagiarism
5. Report Methodology	Report introduction

End of questions With best of luck