Question 3 (5 Points)

The main post office in Tampa, Florida, is due to be replaced with a much larger, modern facility than can handle the tremendous flow of mail which has been going along with the city's growth since 1970. The whole post travels every day from the seven regional post offices in Tampa to the main post office. Choosing an appropriate location for the new facility can make a big difference in terms of efficiency. Using the data from the following table, determine the map coordinates for the new main post office building:

Regional Post Office	Map Coordinates (x, y)	Truck Round Trips per day
Ybor City	(10,5)	3
Davis Island	(3,8)	3
Dale-Mabry	(4,7)	2
Palma Cela	(15,10)	6
Bayshore	(13,3)	5
Temple Terrace	(1,12)	3
Hyde park	(5,5)	10

Question 4 (5 Points)

An organizer of several football tournaments in Spain has established two central warehouses for footballs in Madrid and Valencia. Those warehouses supply the tournaments in Barcelona, Alicante and Sevilla. The warehouse stocks, the demand for balls in every city as well as the transportation costs per unit are shown in the table below.

			Customers			
			Barcelona $j = 1$	Sevilla $j = 2$	Alicante $j = 3$	Supply (stock) a_i
Suppliers	Madrid	$i = 1$	3	6	7	8
	Valencia	$i = 2$	1	7	6	16
	Demand b_j		9	5	10	

Formulate the above problem as a linear programming model with the objective of minimizing transport cost.

Question 5 (5 Points)

We consider the following transportation problem:

		Customers						
		1	2	3	4	5	6	a_i
Suppliers	1	1	5	2	4	7	4	25
	2	4	3	4	6	9	3	40
	3	1	8	1	2	5	8	60
	4	6	4	3	5	4	5	23
	b_j	30	20	16	35	22	25	

Determine a valid solution and the objective function value belonging to it. Apply the North-West corner rule method.

Dr. Mohamed A. Abdel-Fattah Mansour

جامعة الزقازيق
كلية الهندسه
قسم الميكانيكا والشعبة الصناعيه

المادة : انسانيات
الفرقة :الأولى
الزمن : ساعتان

إختبار الفصل الدراسى الأول ٢٠٠٨/٢٠٠٩

أجب عن الأسئلة التالية :-

السؤال الأول :-

١- أكتب ما تعرفه عن خطورة مشكلة التلوث كمشكلة بيئية ومصادره وطرق مكافحته.

(٧ درجات)

السؤال الثانى :-

- أشرح :-
١- تأثير الإنسان فى البيئه.
٢- علاقة الموقع والتضاريس بالأمراض التى تصيب الإنسان.

(٦ درجات)

السؤال الثالث :-

- وضح مستويات التفرقة بين القرية والمدينة .

(٧ درجات)

مع أطيب الأمنيات بالتوفيق ،،،،

د / فوال حامد

Zagazig University
Faculty of Engineering
Structural Engineering Dept.

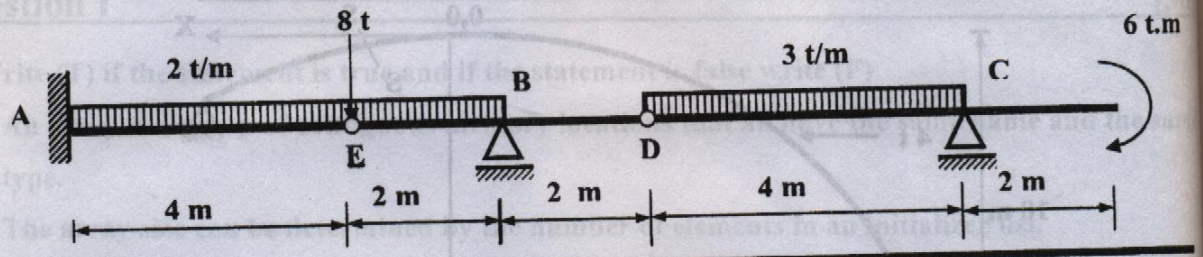
First Year Industrial Eng.
2nd. Term Exam. May. 2008
Theory of Structures

Times Allowed: 3 Hours.

Answer all Questions

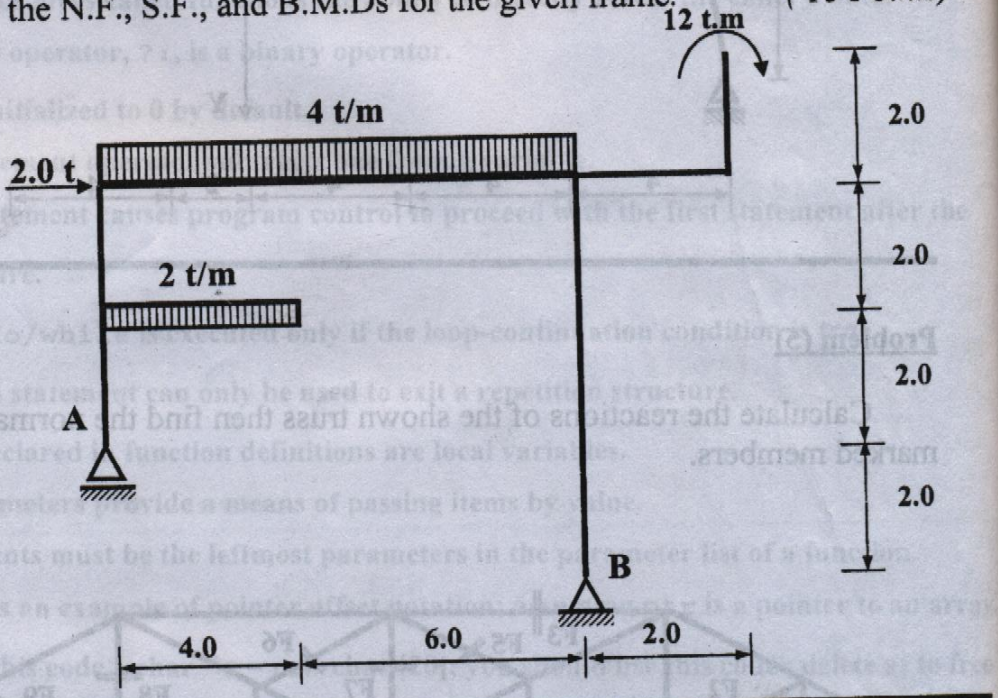
Problem (1)

For the given beam, find the reactions, and then draw N.F., S.F., and B.M.Ds. *(15 Points)*



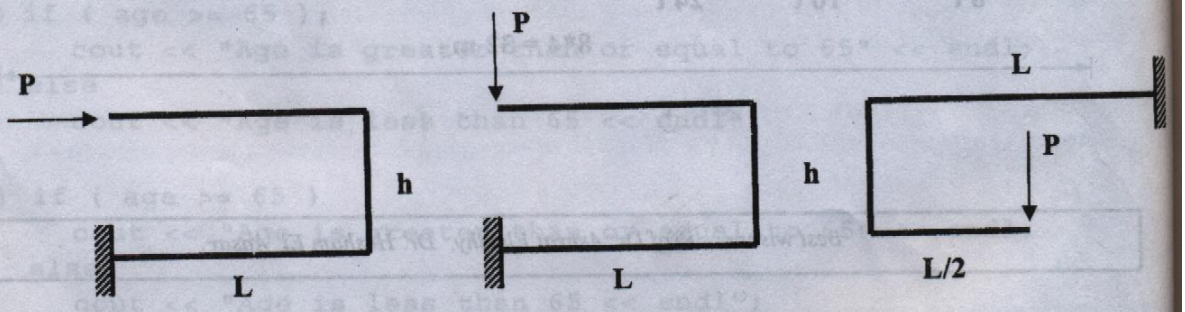
Problem (2)

Draw the N.F., S.F., and B.M.Ds for the given frame. *(15 Points)*



Problem (3)

Draw the B.M.Ds for the shown frames where the load is P , the length is L and h is the height of three frames. *(10 Points)*



(b) For the following probability density function of random variable X:

$$f(x) = \begin{cases} x^2/c & -2 \le x \le 1 \\ 0 & \text{other wise.} \end{cases}$$

1- Find the value of c .
2- Find the cumulative distribution function F(x).
3- Find probabilities : P (X = -1) , P (X > 0) , P (X ≤ 2) , P (-1≤ X < 1).
4- Find E (X).

(14 marks

Q4: (a) Packages filled by a machine have weights that vary normally around a mean of 16.4 kgs w
standard deviation of 1.0 kgs .An inspector takes a sample of 16 packages from the production .
1- Find probability that he will find their average weight at least equal to 16 kgs .
2- Find probability that the average weight is between 15.8 kgs and 17.0 kgs .
[Note :the average weight of the sample has normal distribution with mean = 16.4 kgs and standa
deviation = $1.0/\sqrt{16}$]

(b) To test the hypothesis that population mean is at most 18.5 , a random sample of n = 36 is
tested and it is found that $\bar{x} = 17.4$, $s^2 = 9$. Use $\alpha = 0.05$. (Use the 9-steps) .

(14 marks

Q5: (a) True (T) or False (F) and correct:

1- Median is the value having highest frequency . (
2- Coefficient of variation (CV) has the same units as standard deviation . (
3- Range is the difference between the highest and the lowest values in data . (
4- Events A and B are mutually exclusive if $A \cap B = \Phi$. (
5- Poisson distribution is a special probability distribution for continuous random variable. (
6- Binomial distribution can be approximated to normal distribution if n is low and p is very low. (

(b) For comparing two materials M1 and M2 , two samples of specimens of the two materials
tested and the following results are obtained .

M1 : 15.3 , 14.7 , 14.0 , 14.1 , 16.0 , 15.9 , 16.2 , 13.8
M2 : 18.3 , 19.5 , 18.8 , 17.9 , 18.7 , 17.5 , 19.1 , 18.2

Assume that the populations are homogeneous and normally distributed .

1- Find 98 % confidence interval of $(\widehat{\mu_2 - \mu_1})$.
2- At 0.05 level of significance , test the hypothesis that $(\mu_2 - \mu_1)$ is at least equal to 3.5 .
(Use the 9 steps)

(14marks)

Best Wishes
Mahassen Khater

Course Name	: Probability and Engineering Statistics (1)		**Final Term Exam**
Course Code	: 123 هصن		**Date** : 24/05
Level	: 1	**Zagazig University**	**Time** : 3
Department	: Industrial Engineering	**Faculty of Engineering**	**No. of pages** : 2
Term No.	: 2		**No. of Questions** : 5

Q_1 :(a) The following tables are incomplete :

Class limits	Frequency	Relative frequency	Boundaries	Cumulative freq
1 - ?	?	?	Less than ?	0
? - 4	?	0.19	Less than 2.5	?
5 - ?	35	?	Less than ?	27
? - ?	?	0.21	Less than ?	?
? - ?	?	?	Less than 8.5	?
? - 12	?	?	Less than ?	95
			Less than ?	?
Total	100	?		

1- Complete the two tables.
2- Plot the relative frequency curve .
3- Plot the less than Ogive then find the median graphically.
4- Using per unit (short cut), compute the mean ($\bar{x}$), variance (s^2) and CV.

(b)From three boxes containing white and red balls , one is selected at random . Then , one of the balls inside it is randomly selected . The first box contains 40 white balls and 10 red ones . The second box contains 35 white balls and 15 red ones . The third box contains 32white balls and 8 red ones .
1-What is the probability that the selected ball is red ?
2-If the ball is white , what is the probability that it is from the first box ?

(14 marks)

Q_2 : A random experiment of drawing two cards without replacement from a box containing four cards labeled 1 , 2 , 3 and 4 .
1- Represent the sample space S and event E .
E : sum of numbers on the two cards is at least equal to 5
The random variable X is defined as the difference between the number on the first card and t on the second card .
2- Find :
(a) Set of possible values X(S) and probability mass function f(x).
(b) Cumulative probability distribution F(x) and represent it graphically .
(c) Mean μ_x and variance σ_x^2.
3- Find the probabilities :
$P(X=0)$, $P(X>-4)$, $P(X<-1)$, $P(X\geq 2)$ and $P(-2 < X \leq 2)$

(14 mark

Q_3 : (a) An industrial engineer tests a sample of 4 items, randomly selected from a product shipme The shipment will be rejected if more than one item are defective . Find the probability to acc this shipment when ,
1-It contains 16 items and 2 of them are defective .
2- It contains 120 items and 6 of them are defective .(Use tables)

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كلية الهندسه
قسم الميكانيكا والشعبة الصناعيه

المادة : انسانيات
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إختبار الفصل الدراسى الأول ٢٠٠٨/٢٠٠٩

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(٦ درجات)

السؤال الثالث :-

- وضح مستويات التفرقة بين القرية والمدينة .
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مع أطيب الأمنيات بالتوفيق ،،،،

د / نوال حامد

Zagazig University | **First Year Industrial Eng.**
Faculty of Engineering | **2nd. Term Exam. May. 2008**
Structural Engineering Dept. | **Theory of Structures**

Times Allowed: 3 Hours.

Answer all Questions

Problem (1)

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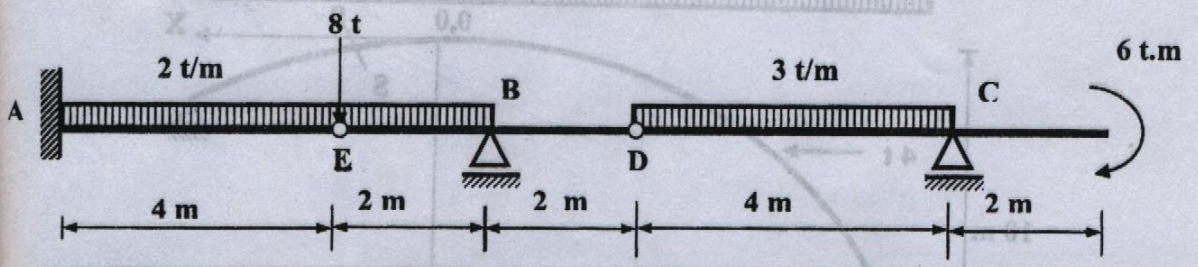
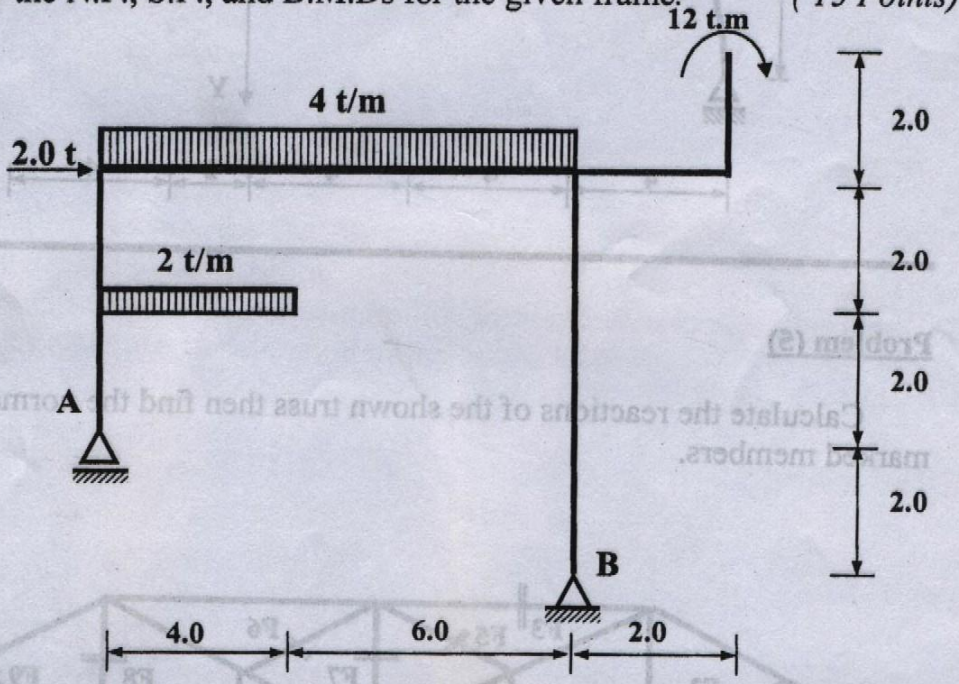


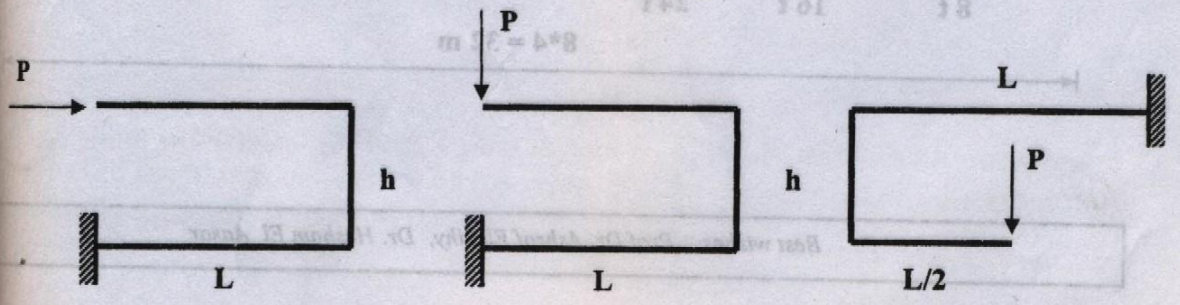
Problem (2)

Draw the N.F., S.F., and B.M.Ds for the given frame. *(15 Points)*



Problem (3)

Draw the B.M.Ds for the shown frames where the load is P , the length is L and h is the height of three frames. *(10 Points)*



Final Exam 17-05-2008

Zagazig University
Faculty of Engineering
Mechanical Power Engineering Dept.

1st year Industrial Engineering
Thermo-Fluid Dynamics
Time allowed: 3 Hours

Solve all questions
Assume any missing data

PART 1 (Thermodynamic)

Question(1) **[15 Degree]**

(A) Mention the first low of thermodynamic in the following cases
(i) Closed system **(ii)** open system **(iii)** complete thermodynamic cycle

(B) Complete the table given below for a closed system under going a cycle

Process	Q_{net} kJ	W_{net} kJ	U_2-U_1 kJ
1-2	+5		-5
2-3	+20	+10	
3-1		-5	
Cycle			

(C) Three kilogram of Nitrogen gas at 27 °C and 0.15 MPa are compressed isothermally to 0.3 MPa in a piston-cylinder device. Determine the work of compression as well as heat added or rejected.

Question(2) **[15 Degree]**

A) From the principal of the second low of thermodynamic, Define the thermal efficiency of the heat engine as well as the coefficient of performance of the heat pump.

(B) Deduce the efficiency of Otto cycle and Diesel cycle from the Dual cycle efficiency. Given that, the efficiency of Dual cycle equals

$$\eta = 1 - \frac{1}{r^{k-1}}\left[\frac{r_p r_c^k - 1}{(r_p - 1) + k r_p (r_c - 1)}\right]$$

where, r is compression ratio, r_c is cutoff ratio, and r_p is the pressure ratio for the constant volume heat addition.

(C) The temperature at the beginning of the compression process of an air-standard Otto cycle with a compression ratio of 8 is 300 K, the pressure is 1 bar, and the cylinder volume is 560 cm^3. The maximum temperature during the cycle is 2000 K. Determine
(i) the temperature and pressure at the end of each process of the cycle,
(ii) the thermal efficiency, and **(iii)** the mean effective pressure, in bar.

Question(3) **[15 Degree]**

(A) High pressure air at 1300 K flows into an aircraft gas turbine and undergoes a steady-state, steady-flow, adiabatic process to the turbine exit at 660 K. Calculate the work done per unit mass of air flowing through the turbine.

(B) Air initially occupying 1 m^3 at 1.5 bar, 20 °C undergoes an internally reversible compression during which $pV^{1.27} = constant$ to a final state where the temperature is 120 °C. Determine;
(i) The pressure at the final state, in bar. **(ii)** The work and heat transfer, each in kJ.
(iii) The entropy change, in kJ/K.

(C) One kilogram of steam is heated at constant pressure of 2 bar from saturated vapor line to 200 °C. Find:
(i) The work and heat transfer, each in kJ. **(ii)** The entropy change, in kJ/K.
(iii) Show the process in p-v and T-s diagrams.

rse Name :	Probability and Engineering Statistics (1)	Zagazig University Faculty of Engineering	**Final Term Exam**
rse Code :	123 هصن		**Date** : 24/05/2008
el :	1		**Time** : 3 Hours
artment :	Industrial Engineering		**No. of pages** : 2
n No. :	2		**No. of Questions** : 5

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? - 12	?	?
Total	100	?

Boundaries	Cumulative frequency
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Complete the two tables.
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AGAZIG UNIVERSITY
ACULTY OF ENGINEERING
IECH. DESIGN & PROD. DEPT.
ST YEAR INDUSTRIAL ENG.

الإمتحان ٦ أسئلة

FINAL EXAM.
DATE: 31/5/2008
TIME : 3 HOURS
PROD. TECH.

uestion 1: (15 degrees)

1- State the factors affecting the machinability of metals.

2- State with neat sketches the operation principles of the grinder, the milling machine and the drilling machine.

3- What are the ideal properties which a cutting tool material should have?

4- State three manufacturing processes that produce good surface finish and three manufacturing processes that produce poor surface finish.

5- Sketch the surface texture features of a machined surface.

estion 2: (15 degrees)

A. Explain briefly the tool failure of a single point cutting tool using neat sketches.

B. Discuss the Taylor's equation for calculating the tool life.

C. During the machining of a steel workpiece using HSS tool, the tool life was 30 and 20 min. at cutting speed of 150 and 200 m / min respectively.
Calculate the cutting speed that will give a tool life of 80 min.

estion 3: (15 degrees)

A. Using neat sketches, compare between up milling (conventional milling) and down milling.

B. A face milling operation is used to machine 3.0 mm from the top surface of a rectangular workpiece of aluminum 300 mm long by 120 mm wide. The cutter has four teeth (cemented carbide inserts) and is 150 mm in diameter. Cutting conditions are: V = 4m/s, feed = 0.25 mm/ tooth and depth of cut (d) = 3.0 mm.

Determine:

1- Time to make one pass across the surface.

2- Metal removal rate during cutting.

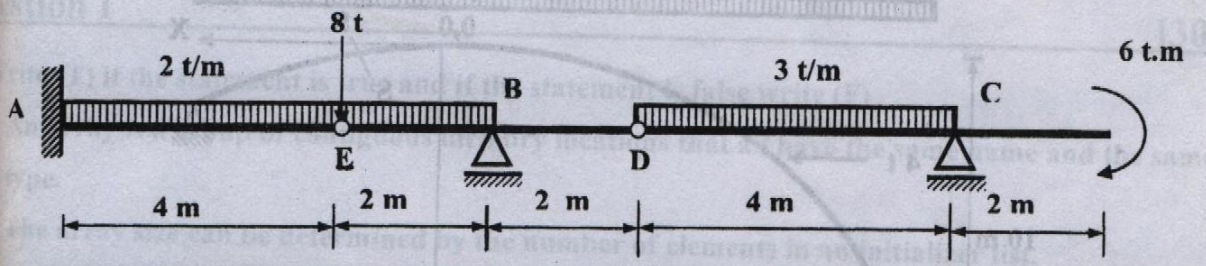
PLEASE TURN OVER

Zagazig University — **First Year Industrial Eng.**
Faculty of Engineering — **2nd. Term Exam. May. 2008**
Structural Engineering Dept. — **Theory of Structures**
Times Allowed: 3 Hours.

Answer all Questions

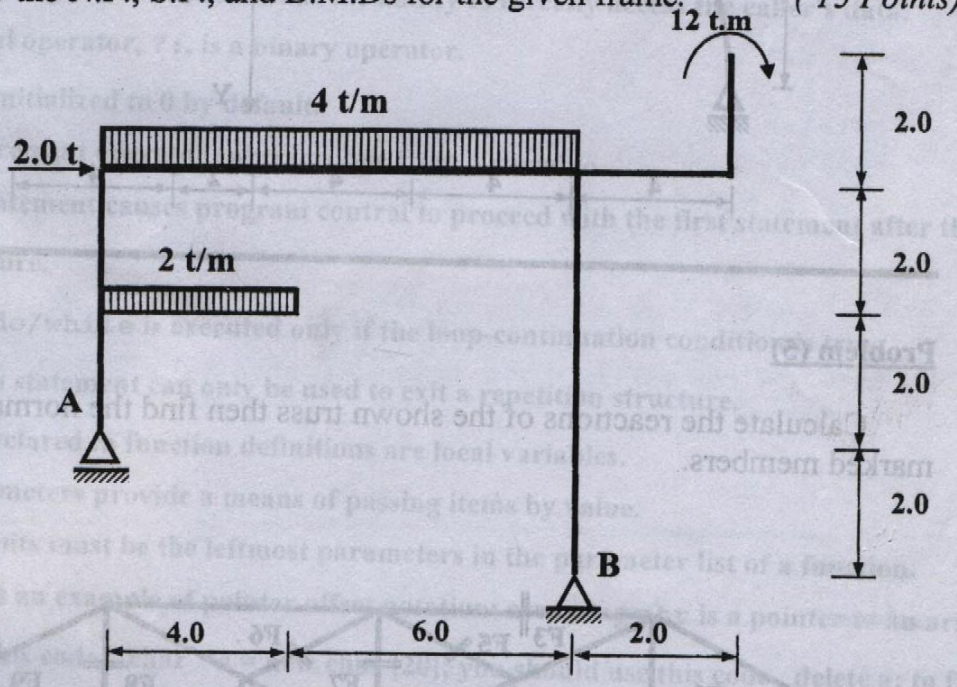
Problem (1)

For the given beam, find the reactions, and then draw N.F., S.F., and B.M.Ds. *(15 Points)*



Problem (2)

Draw the N.F., S.F., and B.M.Ds for the given frame. *(15 Points)*



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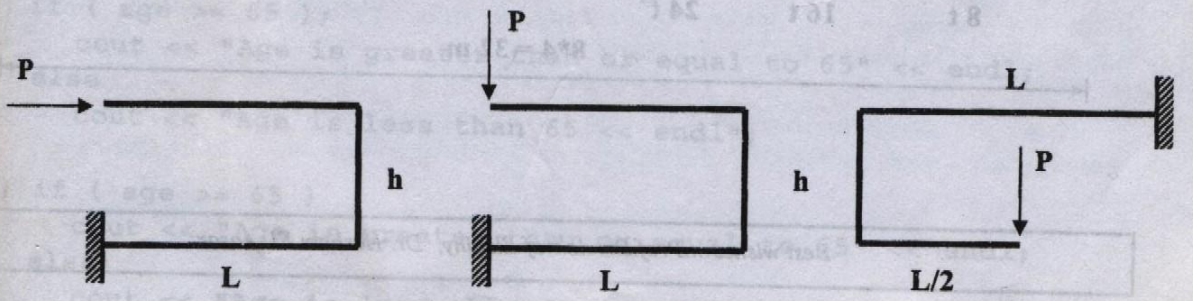

ourse Name : Structure programming
ourse Code : هصن ١١٢٢
evel : هـ. أ
epartment : Industrial Engineering
erm No. : I

Zagazig University
Faculty of Engineering

Final Term Exam
Date : We. 9/1/2008
Time : 3 hours
No. of Pages : 3
No. of Questions : 4
1st Year Industrial Engineering

olve the following questions

uestion I [30]

Write (T) if the statement is true and if the statement is false write (F)

1. An array is a group of contiguous memory locations that all have the same name and the same type.
2. The array size can be determined by the number of elements in an initializer list.
3. Arrays are passed call-by-value by default.
4. Call-by-reference gives called functions the ability to directly access the caller's data.
5. The conditional operator, `?:`, is a binary operator.
6. Variables are initialized to 0 by default.
7. The unary decrement operator subtracts one from a variable.
8. The `break` statement causes program control to proceed with the first statement after the `switch` structure.
9. The body of a `do/while` is executed only if the loop-continuation condition is true.
10. The `continue` statement can only be used to exit a repetition structure.
11. All variables declared in function definitions are local variables.
12. Reference parameters provide a means of passing items by value.
13. Default arguments must be the leftmost parameters in the parameter list of a function.
14. `*(ptr + 9)` is an example of pointer offset notation; assuming `ptr` is a pointer to an array.
15. After running this code `char *a = new char [20];` you should use this code `delete a;` to free the memory.

estion II [20]

entify and correct the error(s) in each of the following:

1)
```
if ( age >= 65 );
   cout << "Age is greater than or equal to 65" << endl;
else
   cout << "Age is less than 65 << endl";
```

2)
```
if ( age >= 65 )
   cout << "Age is greater than or equal to 65" << endl;
else;
   cout << "Age is less than 65 << endl";
```

جامعة الزقازيق
كلية الهندسه
قسم الميكانيكا والشعبة الصناعيه

المادة : انسانيات
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إختبار الفصل الدراسى الأول ٢٠٠٨/٢٠٠٩

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مع أطيب الأمنيات بالتوفيق ،،،،

د / نوال حامد

٢٠٠٩/٥/٢٣ أولى صناعية تركيبات

Course Name : Structure programming Course Code : هصن ١٢٢ ب Level : ه. أ Department : Industrial Engineering Term No. : II	Zagazig University Faculty of Engineering	Final Term Exam Date : Sa. 23/5/2009 Time : 3 hours No. of Pages : 2 No. of Questions : 4 1st Year Industrial Engineering

Solve the following questions

Question I [30]

1 String mystring; Creates
a) Class b) Constructor c) a and b d) Object

2 In the body of a method, C# uses the variable named _____ to refer to the current object whose method is being invoked.
a) Call b) This c) Do d) That

3 Find any errors in the following Account constructor: Public int Account(){balance=0;}
a) Name b) Formal parameters c) Return type d) No error

4 Defining two methods with the same name but with different parameters is called.
a) Loading b) overloading c) overriding d) Duplexing

5 What is the proper header for a class that intends to use an interface.
a) class MyClass IFace b) class MyClass ; IFace c) class MyCalss {IFace} d) class MyClass : IFace

6 In order for a class to use an interface, it must
a) inherit the properties of the interface b) contain the same methods as the interface c) create an interface objects d) All of them

7 Every class directly or indirectly extends the _____ class.
a) System b) Object c) Console d) IDrivable

8 To output the value of multidimensional array, Console.WriteLines(___)
a) myArray[1][3]; b) myArray[1.3]; c) myArray{1}{3}; d) myArray(1),(3);

9 All methods in an abstract base class must be declared abstract.
a) True b) False

10 Classes declared with the sealed keyword cannot be base class.
a) True b) False

11 String indexers treat strings as:
a) binary code b) 1 to string Length c) arrays of characters d) a character

12 If two StringBuilder objects contain the same string then
a) they represent the same meory location b) if one changes, so will the other c) they are two different objects d) None of them

13 The proper way to convert a string to all lowercase is:
a) String = string.ToLower(string); b) ToLower(string); c) string.ToLower(); d) string.ToLower(string);

14 A variable declared inside a method is called a _____ variable
a) Static b) Private c) Local d) Protected

15 int[] myArray = new int[10]; What will be the value of myArray[1]?
a) 0 b) 10 c) null d) None of them