
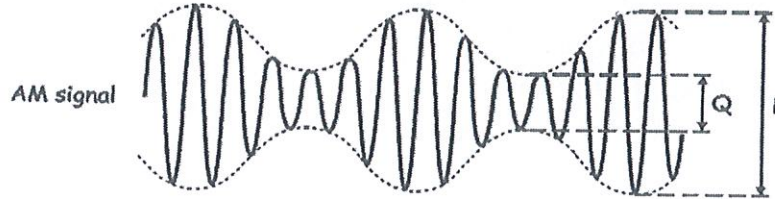
	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF ELECTRICAL ENGINEERING			
	PROGRAM/ YEAR	ELECTRONICS & COMMUNICATIONS		
COURSE TITLE:	COMMUNICATION THEORY	SEMESTER	FIRST	
		60	3 HOURS	

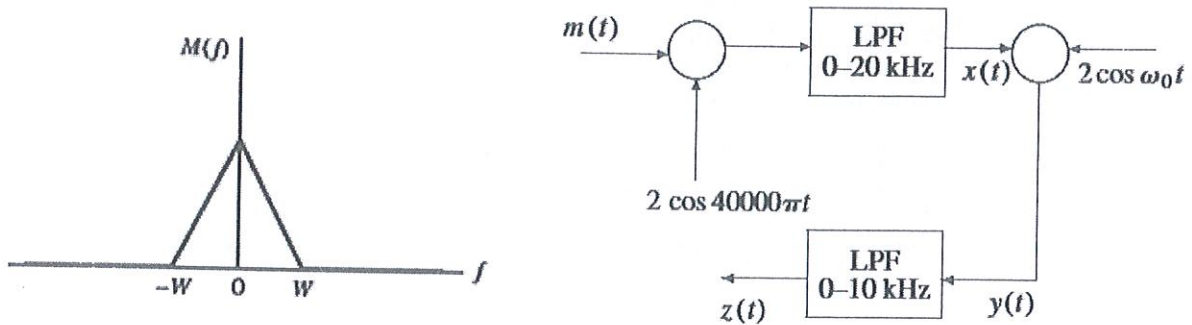
Answer all the following questions (3 questions, 20-points each). Justify your answers. Assume any missing data.

Question No. 1

- a) Consider the AM signal shown below. Find the modulation index and the power efficiency as a function of Q and P.



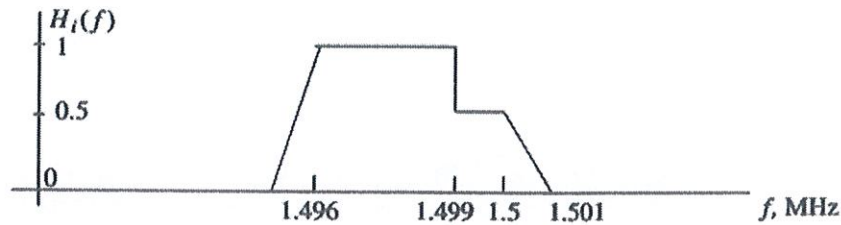
- b) The signal $m(t)$ whose spectrum is shown below is applied at the input of the shown system. Sketch the spectra of the signals $x(t)$, $y(t)$ and $z(t)$ when $\omega_0 = 20,000\pi$ rad/sec and $W = 10$ kHz. (assume that the filters are ideal).



- c) Consider a message signal $m(t)$ containing frequency components at 100, 200, and 400 Hz. This signal is applied to a USB modulator together with a carrier at 100 kHz. In the coherent detector used to recover $m(t)$, the local oscillator supplies a carrier wave of frequency 100.02 kHz. Determine (and sketch) the frequency components of the detector output.

Question No. 2

- a) Wi-Fi (the license-free IEEE802.11 radio) can operate in the 2.4 GHz band that has a frequency range of 2.4 to 2.4835 GHz. Each Wi-Fi transmission takes 22 MHz bandwidth. Determine how many non-overlapping channels can be accommodated in this band.
- b) Consider a VSB amplitude modulation system. The message signal bandwidth is 4 kHz. The carrier frequency is 1500 kHz. Suppose that the transmission vestigial filter $H_i(f)$ has a frequency response as shown below (the x-axis is in kHz). (6-points)
- Find the bandwidth of this transmission.
 - Find and plot the response of the required $H_o(f)$ for distortionless reception.

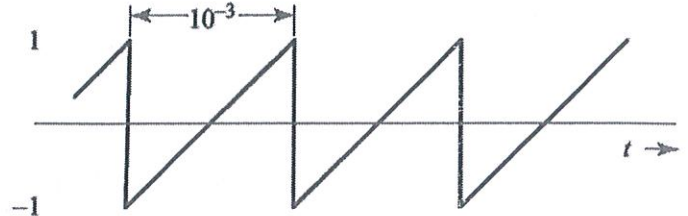


c) For the sawtooth wave shown, sketch the following

- i) DSB-SC signal.
- ii) AM signal with modulation index = 1/2
- iii) FM signal ($\omega_c = 2\pi \times 10^6$, $k_f = 2000\pi$).

Also find $(f_i)_{\min}$ and $(f_i)_{\max}$.

- iv) PM signal ($k_p = \pi/2$).



Question No. 3

a) Let $s(t)$ be an angle-modulated signal that arrives at a receiver,

$$s(t) = 2 \cos[10^7 \pi t + 2 \sin(1000 \pi t) + 3 \pi \sin(2000 t)].$$

- i) Determine the approximate bandwidth of $s(t)$ using Carson's rule.
- ii) Determine the power of the $s(t)$.
- iii) If $s(t)$ is sent to an (ideal) envelope detector, find the detector output signal.
- iv) If $s(t)$ is first differentiated before the envelope detector, find the detector output signal.
- i) If $s(t)$ is an FM signal, find the message signal $m(t)$ if $k_f = 200\pi$, and explain how it can be extracted from the output of the envelope detector.

hint, remember that:
$$\varphi_{\text{FM}}(t) = A \cos \left[\omega_c t + k_f \int_{-\infty}^t m(\alpha) d\alpha \right]$$

b) In shortwave AM radio, a superheterodyne receiver is designed to receive shortwave broadcasting of 25-meter band between 11.6 and 12.1 MHz. The IF is 455 kHz.

- i) Determine the frequency range of the local oscillator for this receiver.
- ii) Analyze and explain whether it is possible for this receiver to receive both a desired AM station and an image station within the same 25-meter band.

c) Design (and sketch the block diagram of) an Armstrong indirect FM modulator to generate FM carrier with frequency of 98.1 MHz and $\Delta f = 75$ kHz. A narrow-band FM generator with $f_c = 0.1$ MHz and $\Delta f = 10$ Hz is available. Also, an oscillator is available with adjustable frequency in the range of 11 to 12 MHz. Frequency doublers, triplers and quintuplers are available.



C/621

**PORT SAID UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRICAL ENGINEERING**

	PROGRAM/YEAR:	(ELECTRONICS AND COMMUNICATION ENGINEERING DIVISION)/3rd	SEMESTER	FIRST	
	COURSE TITLE	ADVANCED PROGRAMMING T.	COURSE CODE	CCE 332	
DATE:	13-3-2021	TOTAL ASSESSMENT MARKS:	60	TIME ALLOWED:	3 HOURS
				FRESH	

Question # (1) [12 Marks]

❖ **Answer and Explain** the following questions:

i.	How many arguments can a program have and why we use it?	v.	How can you test whether four numbers a, b, c and d are in order?	ix.	What are the main differences between the for and the while loops?
ii.	What is the output of: <code>System.out.println ((2+3) + "bc" + 2 + 3);</code>	vi.	If you use the format <code>%3.7f</code> for a double value, how many digits will you get before and after the decimal point?	x.	What are the main parts of the recursive function?
iii.	Can you use the following expression in java? <code>a + b = b + a;</code>	vii.	What is the difference between the Literals and the Variables?	xi.	Are there any advantages or disadvantages of implementing a recursive solution instead of an iterative solution?
iv.	Can you use <code><</code> and <code>></code> to compare String variables?	viii.	What is the output of: <code>(int) 11 * 0.3;</code>	xii.	How many recursive calls do The recursive factorial function <code>f(20)</code> generate?

Question # (2) [12 Marks]

❖ **Trace** to determine the output for the following:

- (1) Write a program that prints the sum of two random integers between 1 and 6 (such as you might get when rolling dice).
- (2) What do the following codes fragments print?

<pre>(a) int f = 0; g = 1; for (int i = 0; i <= 10; i++) { System.out.println (f); f = f + g; g = f - g; }</pre>	<pre>(b) int N = 10; int[] a = new int[N]; a[0] = 1; a[1] = 1; for (int i = 2; i < N; i++) a[i] = a[i-1] + a[i-2]; System.out.println (a);</pre>	<pre>(c) String[] b = {"1","2","3","4","5"}; for (int i = 0; i < N/2; i++) { double temp = b[i]; b[i] = b[N-1-i]; b[N-i-1] = temp; } System.out.println (b);</pre>
---	---	---

Question # (3) [12 Marks]

❖ Answer the following questions:

- (1) Suppose that **a** and **b** are **int** values. Simplify the following expression:

$$!(a < b) \ \&\& \ !(a > b)$$

- (2) What is the **output** of?

$$\text{Math . round (2.76543) == (int) 2.76543}$$

- (3) Explain (Using a **Figure**) the **Standard Input and Output** in JAVA?

- (4) Suppose you have a **list "L"** and an **element "C"**. Write a **code** that **returns** as output, the **"position"** of this **element** in the list and **"0"** if the **element** does not exist.

Question # (4) [12 Marks]

❖ Answer the following questions:

- (1) Write a **Code** for :

$$\text{Matrix-vector multiplication } a[][] * x[] = b[]$$

- (2) Compose a function **shuffle ()** that **Shuffle** the **elements** in an **array a[]**.

- (3) Write a **code** that **draws** the following **Figure 1** using JAVA? Assuming that the maximum **x** and **y** coordinates are **1**.

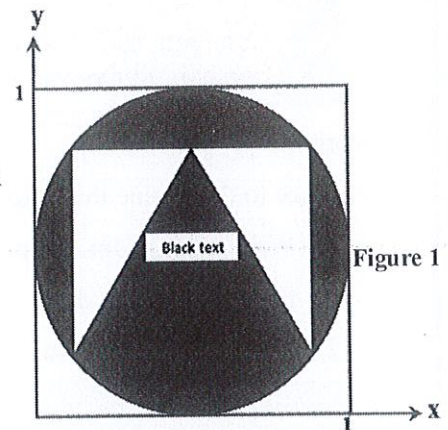
Question # (5) [12 Marks]

❖ Answer the following questions:

- (1) Write and show the **tree** for the **Fibonacci** function recursively.

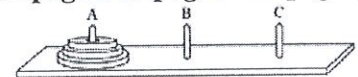
Note: the **Fibonacci** function is defined mathematically by:

$$F_n = \begin{cases} 0, & \text{if } n = 0 \\ 1, & \text{if } n = 1 \\ F_{n-1} + F_{n-2}, & \text{if } n > 1 \end{cases}$$



- (2) Implement the **Euclidean** Algorithm (the **Greatest Common Divisor (DCD)**) (a) **Recursively**, using a **remainder** operator and (b) **Iteratively**.

- (3) Suppose the **Towers of Hanoi** problem of moving **three** disks from **peg A** to **peg C** via **peg B**, shown in **Figure 2**.



- (a) Write a **program** that prints the solution.

- (b) Show the recursive call **tree** and **output** for the call **Hanoi (3, 'A', 'B', 'C')**.

Note: The rule is that no disk may be above a smaller disk on the same peg. The objective of the game is to move all the disks from peg A to peg C, one disk at a time, without violating the rule.

السؤال



Answer the following questions:

Q1. Define the phase angle and the group delay of a filter.

Q2. Show that $\mathcal{L} \left[\frac{df(t)}{dt} \right] = s\mathcal{L} [f(t)] - f(t=0)$, where $\mathcal{L}[f(t)]$ is the Laplace transformation of function $f(t)$ and “ s ” is the Laplace variable

Q3. Find the Laplace transform of $\sin(at)$, where “ a ” is a constant and “ t ” is the time variable.

Q4. Realize the following transfer functions, using appropriate circuit elements

$$(a) H(s) = \frac{ks^2}{(s+2)(s+4)}$$

$$(b) H(s) = \frac{ks}{(s+2)(s+4)}$$

$$(c) H(s) = \frac{ks^2}{(s^2+1)(s^2+9)}$$

Q5. Solve the below equation, given that $x(0) = 1$, and $x'(0) = -1$

$$x''(t) + 3x'(t) + 2x(t) = 4e^t$$

Q6. Realize each of the following functions using Foster two forms.

$$(a) F(s) = \frac{2(s+1)(s+3)}{(s+2)(s+6)}$$

$$(b) F(s) = \frac{s(s^2+2)}{(s^2+1)(s^2+3)}$$

Q7. Indicate the type of each of the following impedance functions, i.e., RC, RL, LC, RLC, or none.

$$(a) Z(s) = \frac{s^3 + 2s}{s^4 + 4s^2 + 3}$$

$$(b) Z(s) = \frac{s^2 + 6s + 8}{s^2 + 4s + 3}$$

$$(c) Z(s) = \frac{s^2 + 4s + 3}{s^2 + 6s + 8}$$

$$(d) Z(s) = \frac{s^2 + 5s + 6}{s^2 + s}$$

$$(e) Z(s) = \frac{s^4 + 5s^2 + 6}{s^3 + s}$$

Q8. Find the value or the range of values of the constant a such that the below polynomial is at least modified Hurwitz polynomial

$$p(s) = s^3 + 2s^2 + as + 1$$

Q9. Realize the following admittance function

$$Y(s) = \frac{(s + 1)(s + 3)}{s + 2}$$

Q10. Realize the following RLC using Cauer method

$$Y(s) = \frac{(s + 2)(s + 3)}{(s + 1)(s + 4)}$$


Q11. Test the positive realness of the following function

$$(a) Y(s) = \frac{2s^3 + 2s^2 + 3s + 2}{s^2 + 1}$$

$$(b) F(s) = \frac{2s^4 + 7s^3 + 11s^2 + 12s + 4}{s^4 + 5s^3 + 9s^2 + 11s + 6}$$

Good Luck

امتحان

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF ELECTRICAL ENGINEERING			
	PROGRAM/ YEAR	(3 RD COMPUTERS & ELECTRONICS) 2020-21	SEMESTER	FIRST
	COURSE TITLE:	COMPUTER NETWORKS	COURSE CODE:	CCE313
	MARCH 6 - 2021		60	3 HOURS

Question # (1)

(15 Marks)

- a) Draw the layers of the OSI model versus the TCP/IP model.
- b) **Define the following terms:**
 - 1- Acknowledgement Number.
 - 2- Bandwidth.
 - 3- Window Size.
 - 4- Sequence Number.
 - 5- Segmentation.
 - 6- Encapsulation.
- c) Describe in details the main characteristics of IP?

Question # (2)

(15 Marks)

a) **True or False and Correct**

- 1- If segments with sequence numbers 1500 to 3000 and 3001 to 3500 were received, then the acknowledgement number is 3501.
- 2- Multicast is a message sent from a host to all other hosts on the network.
- 3- The bandwidth is measured by MHz
- 4- Crosstalk is a disturbance caused by electric or magnetic fields of a signal on one wire to the signal in an adjacent wire.
- 5- Peer-to-peer application allows a device to act as both a client and a server within the same communication.
- 6- IPv4 addresses are 128-bit versus 32 bits in IPv6.
- 7- At transport layer, each set of data flow between source and destination application is called Conversation.
- 8- Hypertext Transfer Protocol (HTTP) are applications that use TCP to ensure data delivery while UDP is the best choice for applications like Voice over IP (VoIP).
- 9- IP Protocol is a connection oriented while TCP is connectionless.
- 10- If the destination node detects an error in the received frame, the frame is discarded.

b) **Compare between:**

- 1- Half-duplex and full-duplex communication.
- 2- Logical Link Control (LLC) and Medium Access Control (MAC) sublayers.
- 3- Frequency (FM), Amplitude (AM), and Pulse-coded modulation (PCM) techniques.

c) Illustrate in detail the File Transfer Protocol (FTP).

Question # (3)

(15 Marks)

a) **Choose the correct answer:**

- 1- is sent to all hosts on a specific non-local network, e.g., host outside 172.16.4.0/24 network broadcasts to all hosts in that network via destination address 172.16.4.255.
 - i. Oriented Broadcast
 - ii. Directed Broadcast
 - iii. Limited Broadcast
 - iv. Private Broadcast
- 2- The longer the signal travels, the more it deteriorates in a phenomenon referred to as

 - i. Signal attenuation
 - ii. Signal amplification
 - iii. Signal modification
 - iv. Signal transmission

- 3- Dynamic window size in TCP communication sessions is using to avoid
 - i. Flooding
 - ii. Congestion
 - iii. Interference
 - iv. Intrusion

- 4- In TCP communication session, if the server sends to the client 2 segments with size 1800 bytes each before receiving acknowledgement, then the window size equals
- 4000
 - 3800
 - 3600
 - 3000
- 5- Transmitting node creates a logical summary of frame contents for error detection known as
- cyclic redundancy check value
 - non cyclic redundancy check value
 - recurring redundancy check value
 - unique redundancy check value
- 6- selects paths to direct packets toward destination on another network.
- Addressing
 - Routing
 - De encapsulation
 - Framing
- 7- Ports numbers from 1024 to 49151 are assigned to
- Well known ports
 - Registered ports
 - Dynamic or Private ports
 - Air ports
- 8- The device examines the media for presence of data signal. If the media is free, the device sends a notification of its intent to use the media. Once it receives a clearance to transmit, the device then sends the data. This procedure is called
- Carrier sense multiple access with collision avoidance (CSMA/CA)
 - Carrier sense multiple access with collision detection (CSMA/CD)
 - Carrier sense multiple access (CSMA)
 - ALOHA
- 9- In IPv4 header, an 8 bit binary value that limits the packet lifetime.
- Time to Live
 - Differentiated Services
 - Header Checksum
 - Identification
- 10- All of the following are types of copper media used in networking EXCEPT
- Unshielded twisted pair cable
 - Fiber cable
 - Shielded twisted pair cable
 - Coaxial cable
- b) Explain in details the three-way handshake protocol to establish an TCP session.
- c) Draw the headers of two main transport layer protocols: Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) and state the main function of each field.

Question # (4)

(15 Marks)



- a) Which layer is associated to each of the following PDU:
 Packet – Segment – Bits – Frame – Data
- b) Given a network with IP address equal 10.1.1.0/24. Determine:
- The network class
 - The number of hosts
 - The first and last host addresses
 - The broadcast address
 - The subnet mask
 - The loopback address
- c) Determine the network address and prefix for:
- A host with IP address 192.168.1.129, and the subnet mask is 255.255.255.128.
 - A host with IP address 10.87.58.155 and the subnet mask is 255.255.255.248.
- d) Given an address block of 172.16.0.0/16 and you want to create 100 subnets. Determine:
- Class of the original network
 - Number of bits borrowed from host portion.
 - Number of hosts for each subnet.
 - Network address and Subnet mask of the first subnet
 - First and last host addresses of the first subnet
 - Limited broadcast address and Directed broadcast address of original network

End of Questions

Prof. Dr. Rawya Rizk

Dr. Asmaa Refaat

5/2/20

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF ELECTRICAL ENGINEERING					
	Program Year	Electric Power and Machines 2020-2021	Semester	First		
	COURSE TITLE:	Electrical Power (2)-Final	COURSE CODE:	EPM320		
DATE:	MAR. 21	TOTAL ASSESSMENT MARKS:	70	TIME ALLOWED:	3 HOURS	3 RD YEAR

Solve all problems assume any missing data where needed

Prob. 1

(15 % marks)

A 15-kVA, 2400:240-V, 60 Hz transformer has the following equivalent circuit parameters:

If the transformer is supplying a 10-kW, 0.8 PF lagging load at rated voltage, assuming the output voltage is the reference, draw the transformer's exact equivalent circuit referred to the primary (H.V) side and use it to calculate:

1. The input current
2. The input voltage
3. The input power factor.

Prob. 2

(20% marks)

The parameters of a 2300/230 V, 50Hz transformer are given below:

$$R_1 = 0.286 \Omega \quad R_2' = 0.319 \Omega \quad X_1 = 0.73 \Omega \quad X_2' = 0.73 \Omega \quad R_c = 250 \Omega \quad X_m = 1250 \Omega$$

The secondary load impedance is $Z_L = 0.387 + j0.29$. Draw the exact equivalent circuit with the normal voltage across the primary (H.V side) and use it to find:

1. Secondary voltage
2. Input power factor
3. Power input.
4. Power output
5. Primary copper loss
6. Secondary copper loss
7. Core loss

Prob. 3

(30 % marks)

A 4-pole, 60 Hz, T-connected, 3-phase generator has a regulated terminal line-to-neutral voltage of $V_a = 260V$, a synchronous reactance of 0.06Ω , a stator resistance of 0.003Ω and $L_f = 0.02$ H. The balanced 3-phase load draws 2 MW at a lagging 0.8 p.f.

- a. Compute the 3-phase complex power of the load (magnitude and angle)
- b. Compute the generator phase current (magnitude and angle)
- c. Calculate the required field current.
- d. If the excitation voltage is $E_a = 360 V \angle 14^\circ$, and the field current is adjusted to maintain the same terminal voltage as before, find the new generator phase current.
- e. Calculate the 3-phase real power consumed by the load and identify the new power factor.
- f. Calculate the generator efficiency (stator losses are the only losses)

Prob. 4

(20 % marks)

Neglecting system losses, find the optimal dispatch and the total cost in \$/hr for the three generators with the given load demand and generation limits.

$$C_1 = 500 + 5.3 P_1 + 0.004 P_1^2 \text{ [$/MWhr]}$$

$$C_2 = 400 + 5.5 P_2 + 0.006 P_2^2 \text{ [$/MWhr]}$$

$$C_3 = 200 + 5.8 P_3 + 0.009 P_3^2 \text{ [$/MWhr]}$$

Unit (MW)	G ₁	G ₂	G ₃
P _{min}	200	150	100
P _{max}	450	350	225

The plant supplies a load of 975 MW, what will be the cost saving?

Prob. 5

(15 % marks)

Find θ_2 , $|V_3|$, θ_3 , S_{G1} , and Q_{G2} for the system shown in Fig. P5. In the transmission system all the shunt elements are capacitors with an admittance $y_c = j0.01$, while all the series elements are inductors with an impedance of $z_L = j0.1$.

Perform One Iteration Gauss-Seidel

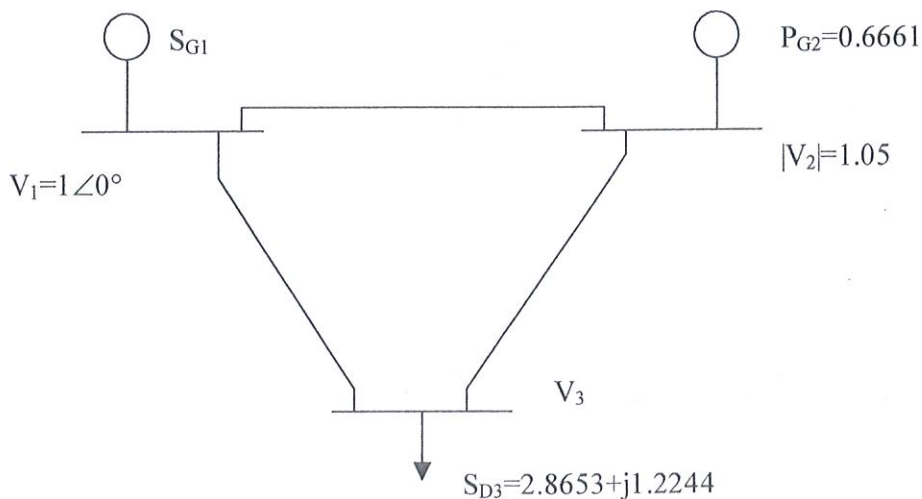




Fig. P5

Wish You the BEST

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	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF ELECTRICAL ENGINEERING				
	1st Term Final Exam, 3rd Year, Electrical power and machines				
	Course Title:	Electrical Machines (2)	EPM313		
Date	13/3/2021	Total Marks:	60	Time: 3 Hrs.	FRESH

This question paper consists of 2 pages.

This question paper consists of FIVE questions. Answer ALL the questions.

Question No. 1.

(10 marks)

- (A). The coil wound around the iron core as shown in Fig.1, Fig.2 and Fig.3. (1). Draw the magnetic field lines, (2). Determine polarity of electromagnet, (3). State the rule to determine the direction of magnetic field lines, (4) State the relation between MMF, reluctance and magnetic flux.

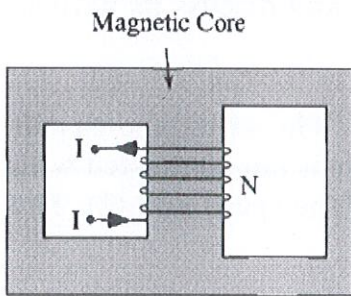


Fig.1.

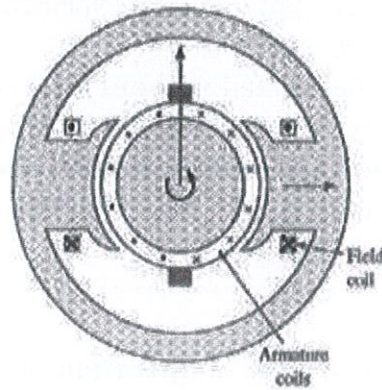


Fig.2.

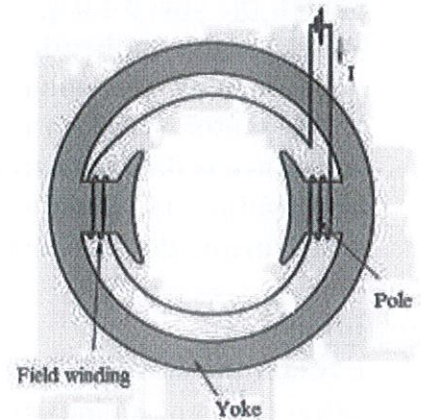


Fig.3.

- (B). Draw the B-H curve of ferromagnetic material.
 (C). What are the losses called as core loss?
 (D). Give some application of magnetic effects.

Question No. 2.

(15 marks)

- (A). Explain the construction of DC Generator.
 (B). Derive the expression for EMF induced in a DC generator.
 (C). Write short notes on the following: (1) Lap winding, (2) Wave winding.
 (D). Explain what is meant by armature reaction of a DC machine. Describe different methods for minimizing armature reaction.
 (E). Draw and explain the open circuit and loading characteristics of DC shunt and series generators.
 (F). Give some application of DC generator.
 (G). The armature of a 4-pole, lap-wound shunt generator has 120 slots with 4 conductors per slot. The flux per pole is 0.05 Wb. The armature resistance is 0.05 Ω, and the shunt field resistance is 50 Ω. Find the speed of the machine when supplying 450 A at a terminal voltage of 250 V.

Question No. 3.

(15 marks)

(A). Fig.4 shows a simple loop DC motor.

- (1). How should the terminals of the battery be connected to x and y to make the coil rotate clockwise as viewed from Z?
- (2). Explain the principle of DC Motor.
- (3). Derive torque equation of a DC motor.

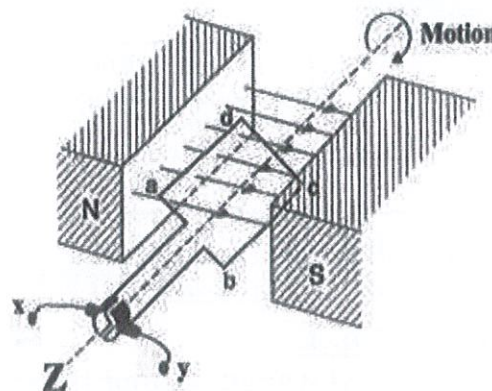


Fig. 4.

- (B). Classify DC motors according to their field winding connections. Draw the circuit diagrams and write the voltage and current relationships in all the types.
- (C). Sketch the speed-torque characteristic of a DC series motor and discuss its nature. What are the applications for DC series motors?
- (D). A DC series motor should not be started without load why?
- (E). A DC motor takes an armature current of 110 A at 480 V. The armature circuit resistance is 0.2 Ω . The machine has 6-poles and the armature is lap-connected with 864 conductors. The flux per pole is 0.05 Wb. Calculate (1). The speed and (2). The gross torque developed by the armature.

Question No. 4.

(10 marks)

- (A). Explain the construction and principle of operation of a 3-phase induction motor.
- (B). What is slip of an induction motor?
- (C). Draw the equivalent circuit of a 3-phase induction motor.
- (D). A 220 V, three-phase, two-pole, and 50 Hz induction motor is running at a slip of 5 percent. Find: (1). The speed of the stator rotating magnetic fields, (2). The speed of the rotor, (3). The slip speed of the rotor, (4). The rotor frequency.

Question No. 5.

(10 marks)

- (A). Define the output equation of a three phase induction motor.
- (B). Write the expression for output equation and output co-efficient of induction motor.
- (C). What are the main dimensions of induction motor?
- (D). A three phase induction motor with squirrel cage rotor, 20 HP, 410 volts, 50 Hz, 2-pole, 2810 rpm, delta connection, has a full load efficiency of 0.88 and power factor of 0.9.lag. Assume that the specific magnetic loading 0.6 Tesla, the specific electric loading 25000 A. conductors /m, winding factor 0.955, and the motor peripheral speed is 20 m/sec. Determine: (1). Stator main dimensions, (2) . Number of stator winding turns per phase.

With best wishes



Port Said UNIVERSITY
Faculty of Engineering at
Port Said

Acad. Year : third
Spec. : Computers.
Term : Fall 2020

Questions for the written examination
Subject: Communications (1) Date: 22 -2-2021 Time : 3 hours
Attempt all Questions No. of Questions= 4 No. of pages: 2

Question no. 1:

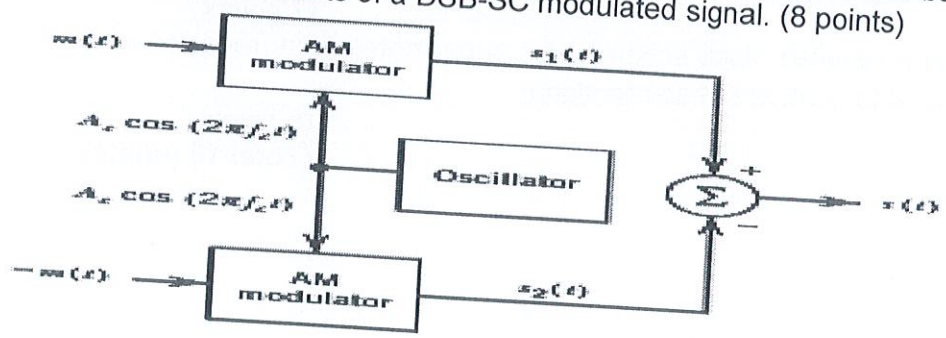
a- Give reasons for:

- 1) The envelope detector may be used to detect AM signal but it is not suitable for DSB-SC signals.
 - 2) Amplitude modulation is wasteful for both power and bandwidth.
 - 3) SSB finds its greatest application in analog voice signals while VSB is used for TV broadcasting.
 - 4) A distinctive property of angle modulation is its non-linear character.
 - 5) Considering the frequency spectrum of FM signal, the amplitude of the carrier is not constant.
 - 6) FM signals are usually used in analog satellite communication and cellular mobile radio systems.
- b- Determine the percentage of the total power carried by the sidebands of the AM wave for tone modulation when the modulation index $\mu = 1, 0.5, \text{ and } 0.2$. Comment on the result.

(8 points)
(7 points)
(Total 15 points)

Question no.2:

- a- If $s_1(t)$ and $s_2(t)$ are two modulated signals corresponding to messages $m_1(t)$ and $m_2(t)$, then prove that DSB-SC is a linear modulator while ordinary AM does not have this property. (7 points)
- b- The figure below shows the circuit diagram of a balanced modulator. The input applied to the top AM modulator is $m(t)$, whereas that applied to the lower AM modulator is $-m(t)$; these two modulators have the same amplitude sensitivity. Show that the output $s(t)$ of the balanced modulator consists of a DSB-SC modulated signal. (8 points)



Turn Over

(Total 15 points)

Question no.3:

a- A certain FM, tone modulated signal is given by

$$y(t) = 100\cos(2\pi \times 10^8 t + 20 \sin 2\pi \times 10^3 t), \text{ Determine:}$$

- 1-Unmodulated carrier frequency in Hz, 2- modulating frequency in Hz,
3-modulation index β , and 4-maximum frequency deviation Δf .
5-If the signal is a voltage in volts, determine the average power dissipated in a 50Ω resistive load.

(5 points)

b- State two definitions for the transmission bandwidth of an FM wave in the case of an arbitrary modulating signal $m(t)$ and then comment on them.

(5 points)

c- Draw a block diagram of a typical FM transmitter (based on the direct FM method) used to transmit audio signals containing frequencies in the range 200Hz to 4 kHz. The local oscillator available has a frequency=10MHz. The unmodulated frequency of oscillation of the VCO is 1MHz. The desired FM signal at the transmitter output is to have a carrier frequency $f_c=100\text{MHz}$ and a minimum frequency deviation $\Delta f=45\text{ kHz}$. Assume that the modulation index β has a value of 1.5 radians.

State two methods for demodulation of the above mentioned FM signal.

(5 points)

(Total 15 points)

Question no.4:

a- Consider a communication channel, the transfer characteristic of which is defined by the nonlinear input-output relation:

$V_o(t) = a_1 V_i(t) + a_2 V_i^2(t)$ Where $V_i(t)$ and $V_o(t)$ are the input and output signals, respectively, and a_1 & a_2 are constants. The input signal $V_i(t)$ is a frequency modulated signal with a carrier frequency f_c and a modulating message signal $m(t)$ with band width $W= 15\text{ kHz}$.

- 1) Write the formula for the input FM signal $V_i(t)$.
- 2) Deduce the formula for the output signal $V_o(t)$.
- 3) Find the necessary condition for separating the desired FM signal with carrier frequency f_c from the output $V_o(t)$.
- 4) Estimate the necessary minimum value of the carrier frequency f_c if the frequency deviation of the input signal $V_i(t)$ is $\Delta f= 30\text{ kHz}$.



(7 points)

b- Draw a detailed block scheme of a super heterodyne receiver which may be used to receive FM stereo signal.

(8 points)

(Total 15 points)

SLAS

	PORT SAID UNIVERSITY Faculty of ENGINEERING Department of Electrical Engineering					
	Program/ Year	(Power & Machines) 2020-2021	Semester	First		
Course title:	Elective Course (1) Fundamentals of Computer Networks		Course Code:	CCE 313		
DATE:	6/ 3/ 2021	TOTAL ASSESSMENT MARKS:	60	TIME ALLOWED:	3 HOURS	FRESH

Solve the following questions:

Question no. (1): (ILOs: A1, B1, and C2) (15 Marks)

a) Define with examples the concept of the network.

b) Type (✓) or (X) and correct the wrong statements:

1. The Internet is an example of a LAN.
2. The network layer is responsible for the interoperability between a sender and receiver who might be using different encoding schemes.
3. A host device connected directly to several other devices in a ring network topology.
4. In full mesh networks, there are multiple connections between the devices on the network so that messages can take any one of several paths.
5. The main goal of the virtual circuit is to keep forwarding on the routers as simple as possible.

c) Draw the OSI model and briefly describe the function of each layer

Question no. (2): (ILOs: A4, B3, and C2) (15Marks)

a) Explain the two types of rules that define how information can be exchanged between computers.

b) Discuss in detail the File transfer process.

c) List the mechanisms for IP address allocation.

Question no. (3):

(ILOs: A8, A1, and B4)

(15 Marks)

a) What are the problems solved by the transport layer?

b) Complete the following sentences:

1. The POTS is an example of a _____ network.
2. The tree network topology is a special type of _____ topology.
3. ISO stands for _____
4. The OSI model consists of _____ layers.
5. _____ is the protection technique against transmission errors.

c) What is the checksum, and What happens if the checksum is corrupted?

Question no. (4):

(ILOs: A12, A4, B11, and C11)

(15 Marks)

a) Define the following parameters for a switching network;

Parameters	Definitions	Values
N	Number of hops between two given hosts	4
B	Message length in bits	3200
W	Data rate; in bps on all links	9600
P	Packet size	1024
H	Overhead (header) bits per packet	16
S	Call setup time for circuit switching or virtual circuit in a second	0.2
L	Link propagation delay per hop in second	0.001

Compute the end-to-end delay for circuit, virtual-circuit, and datagram switching.

b) Calculate the subnet mask, Network Address, the broadcast address and the host range, and the maximum number of hosts for a Host Address 192.168.180.94/27

c) Compare between the following:



1. Client & Server
2. TCP& UDP

END OF EXAMINATION

With my best wishes

Examiner: Dr. Heba Nashaat

me

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF NAVAL ARCHITECTURE AND MARINE ENGINEERING					
	PROGRAM/ YEAR	(NAVAL ARCHITECTURE AND MARINE ENGINEERING PROGRAM) 3 TH YEAR 2017-2018	SEMESTER:	FIRST		
	COURSE TITLE:	ENERGY CONSERVATION	COURSE CODE:	NME418		
DATE:	13 - 3 - 2021	TOTAL ASSESSMENT MARKS:	70	TIME ALLOWED:	3 HOURS	FRESH

Answer All Questions No. of Questions: (4) No. of Pages: (2)

Question No. 1: (15 Marks)

- a) What is Green Ship Technology concept stands for? [2]
- b) Define Cold Ironing concept? [2]
- c) What are the possible solutions for reducing Emissions of SO_x , and NO_x? [2]
- d) Define Cold Ironing concept? How it affect energy efficiency onboard ships? [3]
- e) For a new design how can you consider the followings for an energy efficient ship? [6]
 - i. Main engines and auxiliaries
 - ii. Hull form
 - iii. Propulsion system

Question No. 2: (20 Marks)

- a) How ballast water impacts energy efficiency? [5]
- b) What is SEEMP Action Plan? [5]
- c) Define the followings: [6]
 - i. Energy Conservation
 - ii. Energy Efficiency
 - iii. Energy Management
- d) Write an example of SEEMP measures to reduce shipboard fuel consumption? [4]

Question No. 3: (15 Marks)

- a) What are the main factors that influence hull fouling rates? Describe in which ways hull coating selection affect ship energy efficiency [5]
- b) How does an economizer reduce emissions? [3]
- c) How is wasted energy recovered? Use sketch. [3]
- d) Describe "the application of a waste heat recovery system is threefold? [4]

Question No. 4: (20 Marks)

a) Write a brief note on how the followings act in energy conservation: [6]

- i. Trim Optimisation
- ii. Ballast Water Exchange
- iii. Engine load management

b) Give an example of system planning for auxiliary machinery use reduction? [4]

Hint: engine room ventilation fans!

c) In an exhaust gases heat recovery boiler the Flue Gas Inlet, Outlet Temp are 530°K, 400°K respectively. The boiler feed water Inlet Temp is 350°K with Flow Rate of 4600 kg/hr, and exhaust gases flow rate is 5600 kg/hr. Calculate outlet water temperature considering the boiler efficiency 85%? Consider the fuel price is 650\$, Specific fuel consumption of 170g/kw hr, Operation Hours per Year 7,000, and Cost of economizer and installation 12,000\$. Calculate the annual saving and pay back period of economizer installation?

Note:

Exhaust Gases Specific Heat (Cp): 1.063 KJ/kg K

Water Specific Heat (Cp): 2.135 kJ / (kg K) [10]

End of Exam

Page (2) of two pages

Good Luck..... All the Best

Dr. Waleed Yehia

Resistance of ship (NME 317)

Answer All Questions: "Each Question scores with 15 Points"

Question # 1 (a1, b2, c1)

- a) Explain with the aid of sketches each of the following:
- i- Wave systems which are created when ship passes through water.
 - ii- Type of flow according to Reynolds' experiments.
 - iii- The effect of ship's form in the longitudinal direction on frictional resistance
- b) Draw a typical wave resistance curve and explain why humps and hollows occur.

Question # 2 (a3, b2, c2)

- a) Explain how you can obtain the viscous pressure resistance and the frictional resistance from results of model test according to method of **INUED**.
- b) The residuary resistance of a model 7m long is 20N when towed at 3.5 knots. Calculate the power required to overcome the residuary resistance of similar ship of 140m long at its corresponding speed.

Question # 3 (a2, c3, c6)

- a) Write what you know about Roughness effect
- b) Give brief accounts on Appendage resistance.
- c) Explain using a net sketches how you can get the form factor according to the **Prohaska** method

Please turn over 

Question # 4 (a3, c6, c7)

a) Give formulas for:

- Total resistance according to 1978 ITTC prediction method.
- An approximation to the wetted surface area.
- Velocity of wave in deep water and shallow water.

b) A ship has a length of 70m and volume of displacement of 3000m³ is to be represented by a model 2m long. What is the displacement of model and speed must run to represent speed of 20kn of ship. Find the power required to overcome the RF of ship.

Question # 5 (a3, c4, c5)

a) Right or wrong (correct the wrong statements):


- i- Kelvin angle is 90° at sub critical speed
- ii- Roll method may be used to determine the wetted surface.
- iii- The change over from laminar to turbulent flow depends on Rn.
- iv- Viscous resistance is the greatest part for high-speed ship.

b) Discuss the speeds of a ship when moving in shallow water.

c) Will a ship moving in shallow water require more power than when moving in deep water if the speed is the same? Why?

PROF. L. Kamar

CL6

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF ELECTRICAL ENGINEERING			
	PROGRAM/ YEAR	(3 RD COMPUTERS & ELECTRONICS) 2020-21	SEMESTER	FIRST
	COURSE TITLE:	COMPUTER NETWORKS	COURSE CODE:	CCE313
	MARCH 6 - 2021		60	3 HOURS

Question # (1)

(15 Marks)

- a) Draw the layers of the OSI model versus the TCP/IP model.
- b) Define the following terms:
 - 1- Acknowledgement Number.
 - 2- Bandwidth.
 - 3- Window Size.
 - 4- Sequence Number.
 - 5- Segmentation.
 - 6- Encapsulation.
- c) Describe in details the main characteristics of IP?

Question # (2)

(15 Marks)

- a) True or False and Correct
 - 1- If segments with sequence numbers 1500 to 3000 and 3001 to 3500 were received, then the acknowledgement number is 3501.
 - 2- Multicast is a message sent from a host to all other hosts on the network.
 - 3- The bandwidth is measured by MHz
 - 4- Crosstalk is a disturbance caused by electric or magnetic fields of a signal on one wire to the signal in an adjacent wire.
 - 5- Peer-to-peer application allows a device to act as both a client and a server within the same communication.
 - 6- IPv4 addresses are 128-bit versus 32 bits in IPv6.
 - 7- At transport layer, each set of data flow between source and destination application is called Conversation.
 - 8- Hypertext Transfer Protocol (HTTP) are applications that use TCP to ensure data delivery while UDP is the best choice for applications like Voice over IP (VoIP).
 - 9- IP Protocol is a connection oriented while TCP is connectionless.
 - 10- If the destination node detects an error in the received frame, the frame is discarded.
- b) Compare between:
 - 1- Half-duplex and full-duplex communication.
 - 2- Logical Link Control (LLC) and Medium Access Control (MAC) sublayers.
 - 3- Frequency (FM), Amplitude (AM), and Pulse-coded modulation (PCM) techniques.
- c) Illustrate in detail the File Transfer Protocol (FTP).

Question # (3)

(15 Marks)

- a) Choose the correct answer:
 - 1- is sent to all hosts on a specific non-local network, e.g., host outside 172.16.4.0/24 network broadcasts to all hosts in that network via destination address 172.16.4.255.
 - i. Oriented Broadcast
 - ii. Directed Broadcast
 - iii. Limited Broadcast
 - iv. Private Broadcast
 - 2- The longer the signal travels, the more it deteriorates in a phenomenon referred to as
 - i. Signal attenuation
 - ii. Signal amplification
 - iii. Signal modification
 - iv. Signal transmission
 - 3- Dynamic window size in TCP communication sessions is using to avoid
 - i. Flooding
 - ii. Congestion
 - iii. Interference
 - iv. Intrusion

- 4- In TCP communication session, if the server sends to the client 2 segments with size 1800 bytes each before receiving acknowledgement, then the window size equals
- 4000
 - 3800
 - 3600
 - 3000
- 5- Transmitting node creates a logical summary of frame contents for error detection known as
- cyclic redundancy check value
 - non cyclic redundancy check value
 - recurring redundancy check value
 - unique redundancy check value
- 6- selects paths to direct packets toward destination on another network.
- Addressing
 - Routing
 - De encapsulation
 - Framing
- 7- Ports numbers from 1024 to 49151 are assigned to
- Well known ports
 - Registered ports
 - Dynamic or Private ports
 - Air ports
- 8- The device examines the media for presence of data signal. If the media is free, the device sends a notification of its intent to use the media. Once it receives a clearance to transmit, the device then sends the data. This procedure is called
- Carrier sense multiple access with collision avoidance (CSMA/CA)
 - Carrier sense multiple access with collision detection (CSMA/CD)
 - Carrier sense multiple access (CSMA)
 - ALOHA
- 9- In IPv4 header, an 8 bit binary value that limits the packet lifetime.
- Time to Live
 - Differentiated Services
 - Header Checksum
 - Identification
- 10- All of the following are types of copper media used in networking EXCEPT
- Unshielded twisted pair cable
 - Fiber cable
 - Shielded twisted pair cable
 - Coaxial cable
- b) Explain in details the three-way handshake protocol to establish an TCP session.
- c) Draw the headers of two main transport layer protocols: Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) and state the main function of each field.

Question # (4)



(15 Marks)

- a) Which layer is associated to each of the following PDU:
 Packet – Segment – Bits – Frame – Data
- b) Given a network with IP address equal 10.1.1.0/24. Determine:
- The network class
 - The number of hosts
 - The first and last host addresses
 - The broadcast address
 - The subnet mask
 - The loopback address
- c) Determine the network address and prefix for:
- A host with IP address 192.168.1.129, and the subnet mask is 255.255.255.128.
 - A host with IP address 10.87.58.155 and the subnet mask is 255.255.255.248.
- d) Given an address block of 172.16.0.0/16 and you want to create 100 subnets. Determine:
- Class of the original network
 - Number of bits borrowed from host portion.
 - Number of hosts for each subnet.
 - Network address and Subnet mask of the first subnet
 - First and last host addresses of the first subnet
 - Limited broadcast address and Directed broadcast address of original network

End of Questions

Prof. Dr. Rawya Rizk

Dr. Asmaa Refaat

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING					
	NAVAL ARCHITECTURE & MARINE ENGINEERING DEPARTMENT					
	PROGRAM/ YEAR	3 RD YEAR	SEMESTER	FIRST		
COURSE TITLE:	SHIP CONSTRUCTION II	COURSE CODE:	NME306			
DATE:	06-03-2021	TOTAL ASSESSMENT MARKS:	60	TIME ALLOWED:	3 HRS	
					FINAL EXAM	

N.B.:

1. Where ever dimensions are not stated, draw your sketches with reasonable ones...!!!!
2. No part is to be left without being named...!!!
3. Your answer sheet is to be divided to accommodate all required questions...!!!

ANSWER ALL QUESTIONS:

- 1- Explain, with the aid of neat sketches, the longitudinal stresses acting on a ship. Show as well how they are resisted. {15 marks}

- 2- Explain, with the aid of neat sketches, the transverse stresses acting on a ship. Show as well how they are resisted. {10 marks}

- 3- A ship has the following dimensions and data: {35 marks}
 - LBP = 85 m,
 - B = 16m,
 - D = 8 m,
 - T = 6.5 m,
 - V = 12 Kn.

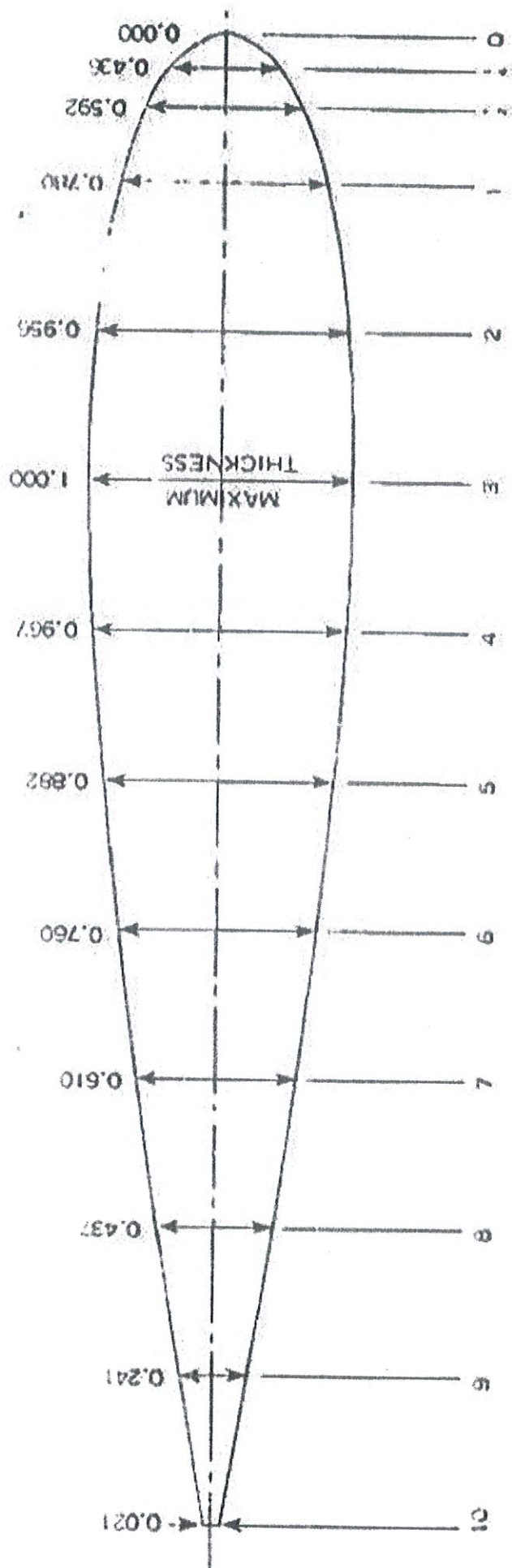
Using the classifications society's rules, design and draw the necessary longitudinal and transverse sketches for a double-plated balanced rudder as follows:-

- a) A horizontal section passing through the mid-span of the rudder.
- b) A vertical section passing through the rudder stock.
- c) A vertical section crossing prior to the rudder stock.
- d) Show with all dimensions as well as the design of the slot weld.

With all my Best Wishes!!!



Dr. Randa Ramadan

Feb 2021



LENGTH OF RUDDER DIVIDED INTO 10 EQUAL PARTS

ie

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF NAVAL ARCHITECTURE AND MARINE ENGINEERING					
	PROGRAM/ YEAR	(NAVAL ARCHITECTURE AND MARINE ENGINEERING PROGRAM) 2020 - 2021	SEMESTER:	FIRST		
	COURSE TITLE:	SHIP DESIGN (2)	COURSE CODE:	NME 315		
DATE:	8 - 3 - 2021	TOTAL ASSESSMENT MARKS:	70	TIME ALLOWED:	3 HOURS	FINAL EXAM

ANSWER ALL QUESTIONS! NO. OF QUESTIONS: (4) NO. OF PAGES: (2)

Question (1) (20 marks) (A4, A15, B3, C16)

(a) Complete the following sentences: (6 marks)

1. Optimization can be defined as
2. Weight of stores and provision depends on whether the ship is passenger, warship or any other type, in other words, this item depends on
3. of a ship can be defined as the assignment of spaces for all the required functions and equipment, properly coordinated for location and access.
4. On ships it has been generally desirable to locate the propelling machinery about amidships.
5. There must be a onboard any cargo ship when the crew exceeds 12 and voyages are longer than 3 days.
6. In approach, solutions of most optimization problems are generated by varying parameters either systematically in certain steps or randomly.

(b) Give reasons for each of the following: (6 marks)

1. Scrap percentage varies from yard to another yard,
2. Machinery space of LNG ships is located at the stern aft of all the cargo tanks,
3. The container cells are arranged so that the containers' long dimensions are fore and aft.

(c) A single screw dry cargo ship with the following particulars: LBP = 140 m, Bmld = 21 m, Dmld = 14 m, and T = 9 m and $C_B = 0.74$. Calculate ship dead weight and fuel consumption per trip, knowing that BHP = 6400 @ 0.85 MCR, SFC = 140 gm/HP/hr, round trip distance = 2000 nautical miles and ship speed = 14 knots. (Erection allowance = 300 & $K = 0.036$) (8 marks)

Question (2) (20 marks) (A4, A15, B3, C16)

(a) Draw a sketch showing the layout of a 3rd mate officer stateroom? (5 marks)

(b) State the general comments to be taken into considerations in the delineation of passengers' staterooms? (5 marks)

(c) What are the requirements that must be satisfied to have successful cargo stowage? (4 marks)

(d) What are the principles that govern the selection of the location and shape of machinery space? (6 marks)

.....

Question (3) (15 marks) (A4, A15, B3, C16)

(a) Write down five items that are included in ship outfit weight? (5 marks)

(b) What are the main components of ship weight (W) and explain each of them? (5 marks)

(c) What are the purpose of the following: (5 marks)

1. Margin in the calculation of ship light weight,
 2. In general cargo ships, the ballast tanks should be distributed over the length of the ship.
-

Question (4) (15 marks) (A4, A15, B3, C16)

(a) Write the mathematical form of any optimization problem? (5 marks)

(b) Put (X) or (✓) and correct the wrong sentences – if any. (5 marks)

1. Random search techniques are still inefficient for problems with many design variables.
2. The main difficulty in most optimization problems lies in the mathematics and methods involved.
3. The classical optimization techniques are used in a wide scope to solve ship design problems.
4. In steepness approach, when the steepness in all directions is (nearly) zero, the estimate for the optimum is found.
5. In constrained optimization problems, the number of variables "n" and the number of constraints "p" need not be related in any way.

(c) In the optimum design process of a seagoing container ship passing through Suez Canal, explain each of the following: (5 marks)

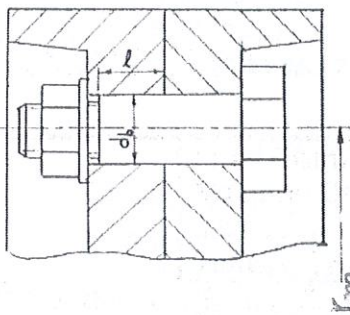
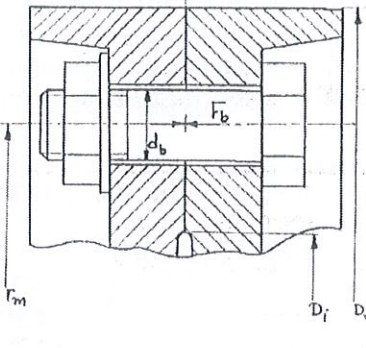
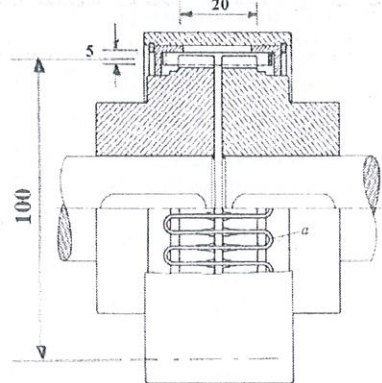
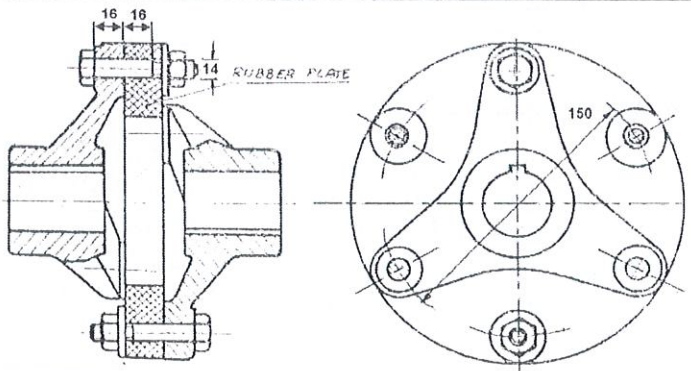
1. Possible design variables,
 2. One navigation constraint,
 3. Two equality constraints that can be used in this design problem,
 4. One possible objective function that can be used in this design problem.
-

Good Luck

Dr. M. M. Moustafa

Port Said University Faculty of Engineering, Port Said Prod. Eng. & Mech. Design Dept.		Final Examination (Jan. 2021) Machine Design 1 (Course: PRD 329) 3 rd Year, Prod. Eng. & Mech. Design Time Allowed: 3 Hours
Prof. Dr. Eng. Anwar Kandil , Dr. Samar El-Sanabary		
أفرض قيم مناسبة لأي بيانات ناقصة. النهائية العظمى للدرجات 70 درجة.		

Question 1 (17 Marks):

<p>a- The figures (a) and (b) show two methods for connection the flanges of the flange coupling.</p> <p>$r_m = 100 \text{ mm}$, $d_b = 12 \text{ mm}$, $l = 12 \text{ mm}$, $n_b = 4$, $M_t = 500 \text{ Nm}$.</p> <p>Specify the type of bolt and calculate the stresses acting on the bolts in each method.</p>		
<p>b- The steel-flex coupling has a steel grid of dimensions $t \times b = 2 \times 5 \text{ mm}$. The steel grid has an allowance bending stress of 150 MPa.</p> <p>How many grooves should the steel grid passed through the two flanges to transmit torque of 80 N-m?</p>		
<p>c- Calculate the torque which can be transmitted by Flexible Disk Coupling.</p> <p>The allowable surface pressure of rubber $P_{s \text{ all}} = 2 \text{ MPa}$</p>		

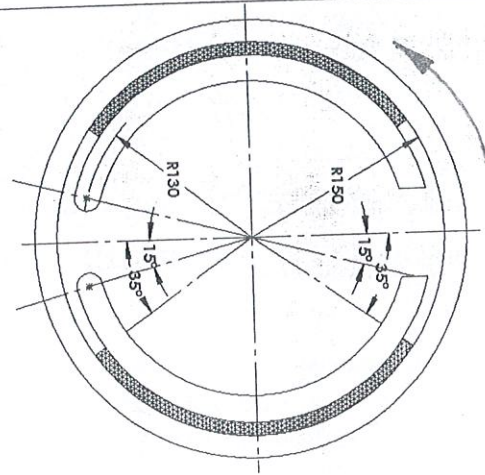
Question 2 (10 Marks):

A multi-disc clutch has three discs on the drive shaft and two on the driven shaft. The inside diameter of the contact surface is 120 mm. The maximum pressure between the surfaces is limited to 0.1 N/mm^2 .

Calculate the outside diameter and the actuating force of the clutch for transmitting 25kW at 1575 rpm. Assume uniform wear condition and coefficient of friction is 0.3.

Question 3 (12 Marks):

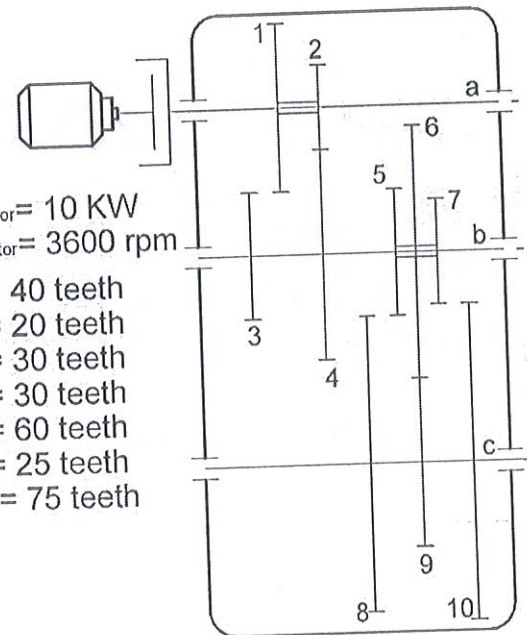
The figure shows an internal shoe brake with two shoes. The shoes are identical and have a face width of 35 mm. The coefficient of friction is 0.3. The brake drum rotates in counter-clockwise direction. The pressure on the upper and the lower shoe is limited by 1000, 482 kPa respectively.



- Present a sketch drawing of the brake showing the relative magnitude of the pressure distribution on the shoes.
- Calculate the braking capacity.

Question 4 (18 Marks):

For the spur gear box shown in the figure the gear set (1,2) slides axially along the shaft (a) to mesh with the gears (3,4) which are fixed on the shaft (b). Also the gear set (5,6,7) slides axially on the shaft (b) to mesh with gears (8,9,10) which are fixed on the shaft (c). The number of teeth are shown in the figure. The module $m=2.5$ mm, face width $b=30$ mm, pressure angle $\alpha=20^\circ$ for all gears. Gear 1 rotates in clockwise direction.



$P_{motor} = 10$ kW
 $N_{motor} = 3600$ rpm
 $Z_1 = 40$ teeth
 $Z_2 = 20$ teeth
 $Z_3 = 30$ teeth
 $Z_5 = 30$ teeth
 $Z_6 = 60$ teeth
 $Z_7 = 25$ teeth
 $Z_{10} = 75$ teeth

- Calculate the diameter of all gears.
- Calculate and illustrate the forces acting on gears 1 and 3, as well as on gears 2 and 4.
- Calculate the bending stress of the gear 1. Take the application factor $K_a=1.25$, load distribution factor $K_m=1.3$, and manufacture quality Q is 8.

Question 5 (10 Marks):

A straight bevel gear pair with shaft angle $\tau = 90^\circ$ has the following data: $Z_p=15$, $Z_g=45$ teeth, middle module $m=4$ mm, pressure angle $\phi=20^\circ$. Pinion speed is 300 rpm. The face width is 30 mm. The gear pair is transmitting 2.5 kW.

- Calculate the diameters and pitch cone angles of pinion and gears.
- Calculate and illustrate the forces acting on both the pinion and gears.

Question 6 (10 Marks):

A 125 mm wide, 8 mm thick, multi-layer flat belt has been selected to transmit 15 kW at a belt speed of 1000 meters/min between two similar pulleys. Each pulley is 250 mm diameter. The center distance is 2 meters. Calculate the following:

- Speed of the pulley in rpm.
- Belt tension on the tight and slack sides of the belt (take coefficient of friction = 0.35).
- Belt length.
- Number of crossing of the belt.
- Tensile stress due to belt tension.



الفصل الدراسي الأول
ثالثة إنتاج
مقرر: مهارات القيادة
Code : HUU 305



جامعة بورسعيد - كلية الهندسة
درجة الامتحان : 40 درجة

زمن الامتحان: ساعتان

قسم هندسة الإنتاج والتصميم الميكانيكى
تاريخ الامتحان: 24 فبراير 2021

هام	1- مطلوب ترتيب الإجابات حسب ورودها بورقة الأسئلة 2- الإجابات الزائدة لن يعتد بها 3- الإجابة العامة والمرسلة والغير محددة والمكررة نصا ومعنى ليس لها درجة وقيمتها صفر فى الامتحان
الامتحان شامل موضوعات المقرر والمطلوب إجابة كل الأسئلة التالية ومجموعة اختيارية واحدة فقط	

المجموعة الأولى 15 درجة (3x5)

- 1- اذكر خصائص المعلومات الأساسية والتي يحتاجها القائد فى عمله فى مرحلة التخطيط والتي تساعده فى قيادة العمل واتخاذ القرار الصحيح
- 2- للقيادة مفاهيم متعددة - اشرح هذه العبارة
- 3- فهم العمليات الإدارية والقيادية هو الحل الصحيح لإزالة التناقضات التي تعوق نجاح العمل والمطلوب المقارنة (فى جدول) بين مفهوم الإدارة ومفهوم القيادة الفعالة داخل المؤسسات الإنتاجية
- 4- تحتاج بعض مهام القيادة الى اتقان فن عمليات التفاوض فى العمل وخاصة فى الأعمال القانونية والمالية - اذكر فقط استراتيجيات التفاوض الواجب على القائد اتقانها
- 5- اذكر الاستراتيجيات الثمانية المختلفة للإقناع مع شرح استراتيجيات التأثير المتراكم والتكرار

المجموعة الثانية 15 درجة (3x5)

- 6- قيادة وإدارة اجتماعات العمل واتخاذ القرار تعتمد على عدة عناصر اساسية مرتبطة بالوقت والهدف وفن القيادة - اذكر الخطوات العملية الضرورية (التسعة) لقيادة فريق العمل بالاجتماع
- 7- تنشأ اثناء الاجتماعات مجموعة من المعوقات الفكرية التي تقيد الطاقات والتفكير الإبداعي- اذكر هذه المعوقات ثم اشرح مفهومك لـ 1- المعوقات الإدراكية 2- التسرع فى تقييم الأفكار
- 8- القائد الإدارى الناجح فى المصانع يجب ان يكون لديه اساسيات علم التنظيم الصناعى- وضح فى شكل أركان التنظيم الأربعة ثم وضح المعنى المقصود من (علاقات أفقية ورأسية)
- 9- متخذ القرار الصحيح يجب ان يكون لديه علم بأساسيات عملية صنع القرار- اذكر هذه الأساسيات المتتالية ثم اشرح ما هو المفصود بـ 1- وضع البدائل 2- تقويم البدائل
- 10- حدد الشروط الرئيسية الواجب توافرها عند بناء فريق العمل خاصة فى أعمال الصيانة العاملة فى مواقع خارجية كمثال شركات البترول

اختياري: أجب عن مجموعة واحدة فقط الثالثة أو الرابعة



المجموعة الثالثة 10 درجة (5x2)

- 11- العصف الذهنى (BRAINSTORMING) من أهم الأساليب الفنية فى اتخاذ القرارات الجماعية - اشرح طريقة العصف الذهنى وخطواتها الأساسية الثلاث
- 12- من سلبيات القيادة الإدارية وجود انخفاض فى الروح المعنوية للعاملين - اذكر اسباب ذلك ثم وضح العلامات الدالة عليها

المجموعة الرابعة 10 درجة (5x2)

- 13- نجاح فريق أعضاء فريق إدارة الأزمات يستلزم وجود مجموعة من الأخصائيين - اذكر نوعية هؤلاء الإخصائيين ثم اشرح مهمة وضرورة وجود أخصائى قانونى فى الفريق
- 14- اذكر التحديات الثلاث التي تواجه القائد الناجح فى المؤسسات الإنتاجية - ثم اشرح بعض المشكلات التي تتعلق بالقائد ذاته

مع تمنياتى بالتوفيق أستاذ المقرر أ. د. محمد عباس زغلول

	جامعه بورسعيد كلية الهندسة قسم هندسة الانتاج والتصميم الميكانيكى			
	الاول	الفصل الدراسى :	الفرقة الثالثة هندسة الانتاج والتصميم الميكانيكى ٢٠٢٠ - ٢٠٢١ م	
PRD 352	ترقيم المنهج	مقرر خ (١) تصميم المثبتات و المرشحات	عنوان المنهج	
قديم	٣ ساعات	الزمن	النهاية العظمى ٧٠ درجة	٨ - ٣ - ٢٠٢١ م التاريخ

الدرجات موزعة بالتساوى ؛ و وضوح الرسم واتباع الاماميات لها النصيب الأكبر من الدرجات.

س ١ : (١٤ درجة)

- أ - ارسم جزء المرشد الذى يؤدي وظيفة (المحافظة على النظافة).
 ب - بين بالرسم الفارق بين زنبة عمل السالبة و زنبة استبدال القورة.
 ج - بين بالرسم مرشد ثقب لشوكه.

س ٢ : (١٤ درجة)

- أ - ارسم اجزاء المرشحات التى تؤدي وظيفة الارشاد للتفريز والمقشطة الراسية.
 ب - بين بالرسم مثبت تجليخ لرافعه .
 ج - بناء مرشد ثقب لفلانجات صمام رباعى الواجه.

س ٣ : (١٤ درجة)

- أ - ما هي عيوب التثبيت الميكانيكى و ما هي طرق علاجها؟
 ب - تأكيد التوقيع عنصر اساسى لتصميم المرشحات - وضح ذلك بأكثر من مثال.
 ج - بين بالرسم تجهيزة خراطة مجارى الشنابر بالمكابس.



س ٤ : (١٤ درجة)

- أ - ناقش تصنيف المثبتات عامة من خلال من خلال مثال رقمى يبين اتخاذ القرار لحدود الاستخدام.
 ب - بين استخدام الفتيل المزدوج فى عمليات السنتره.
 ج - بين بالرسم تجهيزة خراطة كرات البلي.

س ٥ : (١٤ درجة)

- أ - بين بالرسم درجات الحرية لزهرة حرف V.
 ب - بين بالرسم فكرة وضع خوص تعويض التآكل من الانزلاق .
 ج - بناء مرشد ثقب لزراع توصيل بكتاب عمليات التصنيع الروسى من أفضل الكتب فى بيان أساسيات تصميم المرشحات بين ذلك برسم الخطوات الأساسية وصولا للتصميم النهائى ثم بين تعديل التصميم .

261

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING					
	PROGRAM/ YEAR	PRODUCTION/THIRD	SEMESTER	FIRST		
	COURSE TITLE	Theories of Plastic Deformation	COURSE CODE	PRD328		
DATE	10/3/2021	TOTAL ASSESSMENT MARK	60	TIME ALLOWED	3 HOURS	FRESH

Question 1 (11 points) (3,3,5) (a13-2)

- Draw the yield locus for Tresca criterion and its six sectors.
- Draw the yield locus for von Mises criterion and derive the von Mises criterion in pure shear (i.e. using k which is the yield strength in shear)
- If the principal stresses on a material with a yield stress in shear ($k = 270$ MPa) are $\sigma_3 = 180$ MPa and $\sigma_2 = 320$ MPa, what tensile stress σ_1 must be applied to cause yielding according to the von Mises criterion?
 - If the stresses in **i)** were compressive, what tensile stress σ_1 must be applied to cause yielding according to the von Mises criterion?

Question 2 (10 points) (1,3,2,4) (b2-1&a13-3&c1-1)

- Draw the true stress-strain curve and the engineering stress-strain curve (on one figure). Then define the values for true stress, true strain, engineering stress and engineering strain.
- Define the term *instability* as you can.
- When a tensile specimen with a diameter of 14mm and a gauge length of 58mm was loaded to 55kN, it was found that the gauge length was 62.8mm. Assuming that the deformation was uniform, (a) compute the true stress and true strain. (b) find the diameter.

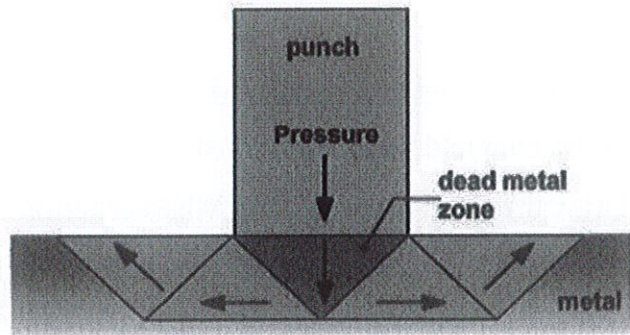
Question 3 (11 points) (4,7) (a13-3&c1-2)

- Prove with drawing for plane-strain drawing of a sheet that: $\frac{\sigma_d}{2k} = \frac{1+B}{B} [1 - e^{-B\epsilon_h}]$
- A strip of initial width 6.27 mm is drawn through tapered dies to a final width of 5.645 mm in a state of plane strain. Considering thickness to be equal to 10 mm, semi angle 15° ,

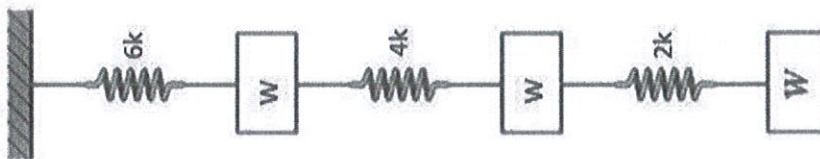
coefficient of friction 0.03, determine the draw stress. Yield stress for strip material is 250 MPa.

Question 4 (20 points) (10,10) (a13-1&c1-3)

- a) For the following deformation operation; draw the corresponding hodograph with $\theta=45^\circ$ and then compute the required pressure (P) with $k= 280$ MPa.



- b) For the shown system of three linearly elastic springs supporting the shown three weights (in the vertical plane), **determine** the displacement of each weight as finite elements.



Question 5 (8 points) (a13-1&d1-1&d1-2)



Explain the **Slip Line Field** theory and Prove that :(Hencky relations)

$$P - 2k\theta = \text{const. along an } \alpha - \text{line}$$

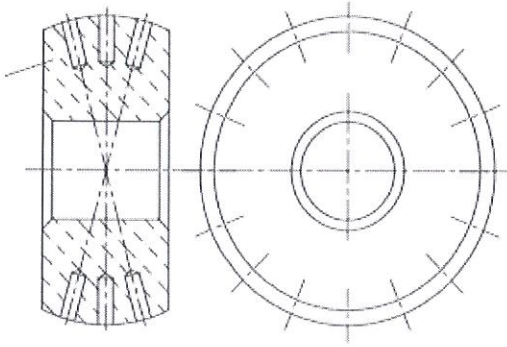
$$P + 2k\theta = \text{const. along an } \beta - \text{line}$$

Best wishes

Prof. Dr. Abla El-Megharbel

	جامعة بورسعيد كلية الهندسة قسم هندسة الانتاج والتصميم الميكانيكي			
	الاول	الفصل الدراسي :	الفرقة الثالثة هندسة الانتاج و التصميم الميكانيكي ٢٠٢٠ - ٢٠٢١ م	
PRD 336	ترقيم المنهج	١	تصميم المثبتات والمرشحات - مقرر اختياري	عنوان المنهج
حديث	٣ ساعات	الزمن	٦٠ درجة	النهاية العظمى
				٢٠٢١ م ٨ - ٣
				التاريخ

الدرجات موزعة بالتساوي و وضوح الرسم واتباع الاماميات لها النصيب الأكبر من الدرجات ؛ اجزاء الاسئلة ب و ج الرسم بها لا يعتد به الا بمسقطيين.



س ١ : (١٢ درجة)
 أ - بين بالرسم فكرة الوضع السليم لخصوص تعويض التآكل من الانزلاق.

ب - بين بالرسم جزء الارشاد لاربع ماكينات على الاقل.
 ج - بناء مرشد ثقب للشغله المبينه .

س ٢ : (١٢ درجة)

أ - بين بالرسم درجات الحرية لزهرة حرف V.

ب - بين بالرسم مرشد تفريز جماعي متعدد .

ج - بناء مرشد ثقب لفلانجات صمام رباعي الواجهه.

س ٣ : (١٢ درجة)

أ - بين استخدام الفتيل المزدوج في عمليات السنتره .

ب - بين بالرسم مرشد ثقب من النوع المعلق.

ج - بين بالرسم تجهيزه خرأطة كرات البلي.

س ٤ : (١٢ درجة)

أ - ما هي عيوب التثبيت الميكانيكي و ما هي طرق علاجها؟

ب - بين بالرسم مرشد ثقب لبنز التثبيت بالمكبس مع النهاية الصغرى لزراع التوصيل.


ج - بين بالرسم تجهيزه تثبيت خرأطة مجارى الشنابر بالمكابس على المخرطة العادية.

س ٥ : (١٢ درجة)

أ - تأكيد التوقيع عنصر اساسي لتصميم المرشحات - وضح ذلك بأكثر من مثال.

ب - بين بالرسم الفارق بين زنبه عمل السلبية و زنبه استبدال القورة اثناء الخرأطة.

ج - بين بالرسم مرشد ثقب لشوكه تغيير السرعات بصندوق تروس .

	جامعة بورسعيد كلية الهندسة قسم هندسة الانتاج والتصميم الميكانيكى					
	Program/ Year	الفرقة الثالثة	الفصل الدراسى	يناير		
	المادة	قياسات وتك علم القياس	كود المادة	PRD318		
التاريخ	6/3/2021	الدرجة العظمى	60	الزمن المسموح	ثلاث ساعات	انتظام

يسمح للطالب بفرض ما يراه مناسباً مع ذكر السبب

السؤال الاول : (12 درجة)

أ- تكلم عن الانظمة الاتية ISO- ISA و ايهما ادق.

ب- يصنف عدم استواء الأسطح الى أربع أقسام . وضح كل منهم مع الرسم

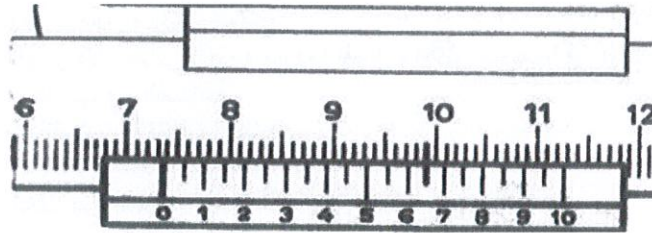
ج- في تجربة معملية لتقييم خشونة احد الاسطح تم اخذ القراءات التالية عند 13 نقطة قياس على السطح احسب

مقاييس الخشونة .Rq, Rt, Ra, Rz

رقم القياس	1	2	3	4	5	6	7	8	9	10	11	12	13
الانحراف (µm)	3	19	22	15	30	19	27	19	30	12	22	14	5

د- حدد قوالب القياس المستخدمة في قياس البعد $mm\ 67.98^{+0.004}$

هـ- وضح قراءة اداة القياس المبينة بالشكل مع ذكر اسمها و فكرة عملها و اجزائها و دقة قياسها ؟



السؤال الثانى: (12 درجة)

أ- ارسم ميكرومتر قياس الابعاد الخارجية موضحا عليه الاجزاء مع شرح الاتى:-

1- الفكرة التى بنى عليها عمل ميكرومتر القياس.

2- كيفية عمل صيانة لميكرومتر القياس

ب- تكلم عن التجاوز الهندسى موضحا اسباب ظهوره.

ج- تكلم عن قوالب القياس موضحا فئات دقتها وكيفية لصق قوالب القياس.

د- اثناء اجراء تجربة عملية لقياس مجموعة من القضبان وضعت على مستوى افقى بحيث تلاصقت اطرافها

وكانت جميعها على استقامة واحدة حيث كانت اطوالها بالمليمتر كالاتى

$15^{+0.09}$ $13^{+0.07}$ $11^{+0.08}$ $12^{-0.03}$ $10^{+0.05}$

احسب الطول الكلى لهذه المجموعة . واذا وضعت للمجموعة السابقة قضيب سادس فاصبح الطول

الكلى $mm\ 70^{+0.5}$. احسب طول القضيب السادس.

السؤال الثالث : (12 درجة)

المطلوب من عملية توصيف للإزواج وذلك باتباع نظام ترقيمي لكل من الثقب والعمود $H7 - d8$ والقطر الاسمي 40

mm الاتى :- 1- المقصود بـ $H7 - d8$.

2- حساب تجاوز المنتج مع الرسم .

3- تصميم محددى القياس للتفتيش علي عنصرى الأزواج .

4- رسم اسكتش يوضح محددى القياس مع وضع الابعاد .

إذا علم الآتى :-

$$IT8 = 25 i \quad \& \quad IT7 = 16 i$$

- القطر الاسمي يقع في مجال الأقطار (30 - 50) mm

- الانحراف الاساسي لـ d يعطى من المعادلة الاتية

- تجاوز التشغيل = 10 % من التجاوز الاساسي

$$Deviation = -16 D^{0.44}$$

انظر الورقة الثانية

السؤال الرابع: (12 درجة)

- أ- اذكر مميزات وعيوب محددات القياس.
ب- المطلوب اختيار قوالب القياس لتكوين الزوايا التالية موضحا اجابتك بالرسم

50	33	21
36	26	12
31	26	24

حيث ان كل مجموعة من قوالب القياس بياناتها كالآتي:

مجموعة الدرجات	1	3	9	27	41	90
مجموعة الدقائق	1	3	9	27		
مجموعة الثواني	-	3	9	27		

ج - علل لما ياتي:

- 1- عدم استخدام محددات القياس بشكل واسع في الصناعة.
 - 2- ضرورة التخلص من الاجهادات الداخلية في قوالب القياس اثناء تصنيعها.
 - 3- ضرورة تثبيت درجة حرارة معمل القياس.
 - 4- عند اختبار تجاوز معين يراعى الاخذ في الاعتبار الاشتراطات الوظيفية.
 - 5- يجب معايرة ادوات القياس قبل استخدامها.
- د- اذا كان طول قضيب الجيب 200 mm ووضع اسفل طرف ضبط القضيب مجموعة قوالب قياس قدرها 100 mm اوجد زاوية الميل؟ و هل يمكن قياس الزاوية في هذه الحالة بقضيب الجيب ام لا ؟ موضحا الحالات التي لا يفضل استخدام قضيب الجيب بها.

السؤال الخامس (12 درجة)

- أ- تكلم باختصار مع الاستعانة بالرسم كلما امكن
- 1-العلاقة بين مقدار التجاوز ومقاس المنتج.
 - 2-نظام اساس الثقب ونظام اساس العمود وايهما افضل والاكثر استعمالا في الانتاج. ولماذا؟
 - 3-الازواج واستخدامها في الصناعة.
 - 4-العلاقة بين قيمة التجاوز وتكاليف الانتاج.
 - 5- كيفية تحديد دقة استواء سطح زهرة الاستواء
- ب- مانوع التوافق الحادث بين العمود $28^{+0.07}$ mm والثقب $28^{+0.05}$ mm
- ج - ماهى الاسس العامة التى بنى عليها اختيار ادوات واجهزة القياس.

أنتهت الأسئلة



مع تمنياتي لكم بالتوفيق والنجاح
د. حنان كامل قوطة

Department :	Prod. Eng.& Mechanical Design	Date / التاريخ	2021	القسم :	هندسة الإنتاج والتصميم الميكانيكي
Year :	3 rd Year (Production)	Time / المدة	ثلاث ساعات	الفرقة :	الثالثة - (ميكانيكا إنتاج - نظام حديث)
Exam :	Final Exam			امتحان :	نهائي الفصل الدراسي الأول
Subject :	Metal forming Methods II			المادة :	أساليب تشكيل المعادن II

Part I- Metal Forming

Answer the following questions, assume any missing data, each one has 10 degrees.

1. A mild steel rod is subjected to 40% plastic deformation used of bending moment of 4000N-m with torsional moment of "T". If the original rod is 1.8m in length and 0.05m in diameter, find the torque "T" that can be required according to maximum shear failure. Consider the flow stress behavior of the rod material is $500 \cdot \epsilon^{0.3}$ MPa.
2. Determine the maximum force of a hydraulic press required to upset a low carbon steel blank of diameter 250mm and height 300mm to a height of 200mm. Assume $\sigma_y=60$ MPa, and $\mu=0.25$.
3. A steel wire is drawn from an initial diameter of 12mm to a final diameter of 10mm at a speed of 90m/min. The semi-cone angle of the die is 6° and the coefficient of friction at the work piece-die interface is 0.1. The tensile yield stress is 300MPa. Calculate the drawing power.
4. A blanking machine is used to produce a product, which illustrated in figure1 from cold rolled steel with shearing strength is 40MPa. The blanking die was designed safe under impact pressure. If the scrape web is 5mm and the sheet metal thickness is 2mm, Find: - the scrape percent, the total shearing force and the pressure center of the punch holder.
5. A cup of inside radius 40mm and thickness 5mm is to be drawn from a blank with a radius of 50mm. The shear yield stress is 14 MPa and allowable stress in tension is 50MPa, determine: -
 - (a). the drawing force,
 - (b). the minimum possible radius of the cup, which can be drawn from the given blank without causing a fracture. Given $\mu= 0.1$ and $\beta = 0.05$.
6. Classify the welding processes based on form of energy input, explain each group and state an example for each one. Also define the friction welding process parameters and Draw the variation of the welding parameters with time in direct drive friction welding?
7. Calculate the average welding energy (Q) during the friction welding time (t) for SW7Mo steel- assuming the volume heat capacity $C_v = 5.2$ [J / (Cm³.0C)], the work piece of welder bars diameter = 12mm, the upsetting distance is 5 mm and the friction time t_f is 12.5 sec , the upsetting time t_s is 2 sec, and wedding temperature $T_{max} = 1240$ 0C.

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING MECHANICAL POWER ENGINEERING DEPARTMENT				
	PROGRAM/ YEAR	2020 – 2021		SEMESTER	
	COURSE TITLE:	STEAM TECHNOLOGY		COURSE CODE:	MPE325
DATE:	22-2-2021	TOTAL ASSESSMENT MARKS	60	TIME ALLOWED:	3 HOURS
					FRESH

Question No.1 (10 Marks) ILOs [A4-2, A4-3, B5-2, B6-1, B9-2, D1-1]

1) Explain, with the help of a net sketch, the working procedures of Gas Recirculation System which uses to control the superheat temperature.

2) Answer only one question of the following:

A. Steam Boilers

1. Explain, with the help of a net sketch, the working procedures of Lancashire Boiler. What are the advantages and disadvantages of this Boiler?
2. What are the different causes of the Boiler collapse and explosion?

B. Steam Condensers

1. Explain, with the help of a net sketch, the working procedures of Hyperbolic Draft Cooling Tower System. Mention the advantages and disadvantages of this system.
2. What are the different methods used for cleaning the condenser?

C. Firing Systems

1. What is meant by combustion? Mention the different flame stabilization methods? Illustrate with the help of net sketches.
2. Explain, with the help of a net sketch, the working procedures of Air Atomized Burner. Mention the advantages and disadvantages of this Burner.

Question No.2 (24 Marks) ILOs [A1-1, A1-2, A1-3, A4-1, A4-2, B5-2, B9-1, C1-1, C16-1]

Superheated steam is generated in a boiler and flows into a reheat-regenerative-cogeneration steam power plant. The steam line leaving the boiler is divided into three branches. The first main branch goes to the steam turbine, the second branch goes to the live steam reheater, and the third branch goes to an industrial process. Steam conditions at boiler exit are 100 bar and 500°C, it expands in the HPT to the pressure of 9 bar then reheated up to 300°C using the live steam reheater. The reheated steam is expands in the LPT and exits at 1.5 bar. Steam is bled off at 5 bar into an open feed water heater. A heat exchanger replaces the condenser to make use of heat rejected for a water desalination process. The main flow exits from the heat exchanger as saturated liquid. Sea water enters at 1.2 bar and 18°C where it exits as saturated vapour. The heating steam which goes to the industrial process is discharged to the atmosphere as saturated liquid. Make-up water is fed

into the open feed water heater wherein the resultant water is at a saturation temperature corresponding to the working pressure. The reheating steam leaving the reheater is re-joined to the boiler inlet.

The ratio of the mass flow rate of the heating steam goes to: the industrial process, live steam reheater, and open feed water heater are 1:6:1 respectively.

The mass flow rate of desalinated water is found to be 7776 ton/day. Generator efficiency 97%, boiler efficiency 92%, and auxiliary needed power 1.5 MW. Draw the flow diagram of the components and plot clearly the cycle on a "T-s" diagram then **calculate:**

- The net power output, MW,
- The back work ratio,
- The overall efficiency, give a comment on the result,
- The mass flow rate of the fuel consumption, ton/day.

Question No.3 (13 Marks) ILOs [A1-1, A1-2, A1-3, B5-1, B5-2]

Desalination process is considered as one of the applied usage of the live steam. Live steam entering a Multiple Effect Evaporator of surface type operating between the following terminal conditions: Live steam condition 9 bar and dryness fraction 0.9, final pressure 1.25 bar. Sea water temperature is 22°C. The temperature difference in each stage is equal. Neglect the pumps work, the reduction losses, and blow down effect. Draw the flow diagram and plot clearly the cycle on a "T-s" diagram. If the number of stages is two, **Calculate:**

- The amount of desalinated water per kg of live steam,
- The amount of cooling water, if its temperature rise is 11°C.

Question No.4 (13 Marks) ILOs [A1-1, A1-2, A1-3, A4-3, B5-1]



The following data are applicable to a three passage surface condenser:

Rate of live steam = 20 ton/h	Vacuum in condenser = 70 cm Hg
Overall heat transfer coefficient = 3.44 Kw/m ² .K.	Average velocity of the cooling water = 2 m/s
Inlet temperature of the cooling water = 24 °C	Outlet temperature of the cooling water = 33 °C
Inner diameter of the cooling water pipe = 20 mm	Outer diameter of the cooling water pipe = 22 mm
Rate of heat transfer to the cooling water = 2000 KJ/kg of live steam	

Calculate:

- The state of the live steam at condenser inlet.
- The total number of the pipes,
- The length of the pipes,
- The condenser efficiency,

Good Luck,
Prof.Dr. Aly K. Abd El-Samed.

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF MECHANICAL POWER ENGINEERING					
	PROGRAM / YEAR	(MECHANICAL POWER ENGINEERING) 2020 - 2021	SEMESTER	First		
	COURSE TITLE:	INTERNAL COMBUSTION ENGINES	COURSE CODE:	MPE322		
DATE:	13-3-2021	TOTAL ASSESSMENT MARKS:	75	TIME ALLOWED:	3 HOURS	FRESH

Question No. 1 [15 Marks]

ILOs (a8.1, a14.1, a19.1, b16.1)

- (a)- Classify the internal combustion engines according to: The types of ignition, engine cycle, basic design, method of fuel input for SI engines and fuel used. **[5 Marks]**
- (b)- Explain with drawing the valve timing and P- θ diagrams for the four-stroke spark ignition engines. **[2 Marks]**
- (c)- Define the combustion and flame showing their types. **[3 Marks]**
- (d)- What are the types of the lubricating systems? **[2 Marks]**
- (e)- In a limited pressure fuel air cycle having fuel air ratio of 0.051 the inlet and exhaust pressures are 1 and 1.2 bar, respectively. The compression ratio is 15 and the ambient temperature is 320 K. After the expansion, take the pressure and temperature as 4.4 bar and 1200 K, respectively. Assume the specific heats at constant pressure for the residual and air are equal and as 1005 J/kg. $^{\circ}$ C. For the given conditions, find the temperature at the beginning of compression process and the residual fraction. **[3 Marks]**

Question No. 2 [20 Marks]

ILOs (a8.1, a14.1, a18.1, a19.1, b13.1, b14.1)

- (a)- What are the meaning of the following terminology and abbreviations: CEDC, bTDC, IDI, clearance volume, ORC and FI? **[3 Marks]**
- (b)- Compare between the assumptions of the air and fuel-air standard cycles. **[5 Marks]**
- (c)- What are the factors affecting compression in the IC engine? **[3 Marks]**
- (d)- What are the main components of the water-cooling system in ICEs? **[2 Marks]**
- (e)- A four-cylinder SI engine has a bore of 60 mm and a stroke of 85 mm. The engine runs at 3000 rpm and is tested at this speed against a brake which has a torque arm of 0.35 m. The net brake load is 160 N and the fuel consumption is 6.6 L/h. The specific gravity of the fuel used is 0.78 and it has a lower calorific value of 44000 kJ/kg. A Morse-test is carried out and the cylinders are cut out in the order 1, 2, 3,4 with the corresponding brake loads of 114, 110, 112 and 116 N, respectively. Calculate for this speed the brake power, brake mean effective pressure, the brake thermal efficiency, the brake specific fuel consumption, the indicated power, the indicated mean effective pressure and the mechanical efficiency. **[7 Marks]**

Question No. 3 [20 Marks]


ILOs (a14.1, a18.1, a19.1, b14.1, b16.1, c18.1)

- (a)- What are the functions of the following parts in the internal combustion engines: Catalytic converter, fan, fuel injector, glow plug, push rods, spark plug and turbocharger? [7 Marks]
- (b)- Explain in detail the Morse test for the IC engines. [4 Marks]
- (c)- Illustrate a detailed comparison between SI and CI engines. [3 Marks]
- (d)- Calculate the volume of air required for complete combustion of methane per kg and per kmol of fuel. The air is supplied at 0.98 bar and 25 °C. [3 Marks]
- (e)- Calculate the higher and lower heat values of Benzene by using the Junker calorimeter where the latent heat of change of 1 kg vapor to water at the atmospheric pressure is 2428 kJ/kg. Take the cooling water = 10 kg, fuel consumption = 10 gram and condensate water = 13.5 gram. The readings for the inlet and outlet water temperatures give average values of 15.2°C and 27°C, respectively. [3 Marks]

Question No. 4 [20 Marks]

ILOs (a8.1, a14.1, a18.1, a19.1, b13.1, b14.1, c18.1)

- (a)- Explain in detail the cycle operation for the two-stroke spark ignition engines? [4 Marks]
- (b)- Define the followings: Charge efficiency, Octane number, heating value of a fuel, complete combustion of hydrocarbon fuel, theoretical air to fuel ratio, excess air factor, indicated thermal efficiency and indicated specific fuel consumption. [4 Marks]
- (c)- What are the main parts required lubrication in the engines? (At least 6 parts) [3 Marks]
- (d)- What are the internal combustion engines fuels requirements? [3 Marks]
- (e)- Explain with drawing the difference between the actual cycle and the fuel-air cycle for constant volume cycle. [2 Marks]
- (f)- A four stroke supercharged diesel engine has six cylinders having bore 10 cm, stroke 15 cm and it runs at 1800 rpm. The engine has inlet pressure of 1.86 bar, inlet temperature of 390 K and air coefficient of 1.6. If the volumetric efficiency for the supercharger and the engine combined is 1.34, atmospheric pressure is 1.03 bar and atmospheric temperature of 323 K, find the volumetric efficiency of the engine only. Comment on the result. [4 Marks]

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF MECHANICAL ENGINEERING				MECH. POWER ENG. DEPT	
	PROGRAM/ YEAR	(MECHANICAL POWER) 2020-21	SEMESTER			FIRST
	COURSE TITLE:	أمن و سلامة المعدات الميكانيكية	COURSE CODE:			HUD 303
DATE:	10 - 3 - 2021	TOTAL ASSESSMENT MARKS:	40	TIME ALLOWED:	2 HOURS	FRESH

السؤال الأول: (10 درجات) ILOs: a6-1, a6-1, a6-3, a9-1, a11-1

1. اذكر مع الشرح والرسومات التوضيحية أنواع الخزانات المستخدمة لتخزين المواد البترولية.
2. الخلية الكهروضوئية (Photoelectric cell) هي إحدى الأجهزة التي تستخدم كوسيلة للحماية للمعدات و الآلات. اشرح فكرة عملها .

السؤال الثاني: (10 درجات) ILOs: a6-2, a6-3, a9-1, a11-1

- 1- قارن بين كواشف الحريق من حيث نظرية العمل مع الرسم التوضيحي لكل من:
Photoelectric detector & Ionization type smoke detector (4 درجات)
- 2- ما هي العوامل التي تتوقف عليها شدة الاصابة من الصدمات الكهربائية؟ (3 درجات)
- 3- اذكر مع الشرح: انواع قصر الدائرة الكهربائية و ماهي المخاطر الناتجة عنه؟ (3 درجات)

السؤال الثالث: (12 درجة) ILOs: a6-1, a6-1, a6-3, a9-1, a11-1, b4-1

- 1- "يتعرض العاملون في منشآت الاحتراق للمجالات الكهربائية والمغناطيسية بدرجة أكبر مما يتعرض له الجمهور العام، نظراً للعمل بالقرب من مولدات الطاقة الكهربائية، المعدات، وخطوط النقل عالية الجهد التي توصل بينها. ويجب العمل على منع التعرض للمجالات الكهربائية والمغناطيسية أو الحد منه". ما هي العناصر التي يتضمنها برنامج السلامة من الإشعاع غير المؤين. (4 درجات)
- 2- " تشمل المواد الأساسية المنبعثة في الهواء نتيجة لاحتراق الوقود الأحفوري أو الكتلة الحيوية: ثاني أكسيد الكبريت (SO₂)، (أكاسيد النيتروجين NO_x) و المواد الجسيمية (PM)، وأول أكسيد الكربون (CO)، وغازات الدفيئة مثل ثاني أكسيد الكربون (CO₂)". اذكر التدابير الواجب اتخاذها لمنع انبعاث ثاني أكسيد الكبريت و الحد منه و مكافحته. (4 درجات)
- 3- "تشمل المصادر الأساسية للضوضاء في محطات الطاقة الحرارية المولدة التربينات وملحقاتها؛ الغلايات وملحقاتها، مثل أجهزة تفتيت الفحم؛ المحركات الترددية؛ المراوح وشبكة المواسير؛ المضخات؛ المكابس؛ المكثفات؛ أجهزة الترسيب، قواطع الدوائر؛ وأبراج التبريد." ما هي التدابير الموصى بها لمنع الضوضاء الصادرة من محطات الطاقة الحرارية، والحد منها، والسيطرة عليها. (4 درجات)

السؤال الرابع: (8 درجات) ILOs: a6-1, a6-1, a6-3, a9-1, a11-1, b10-1

- 1- ما هي الإجراءات الواجب اتباعها للتعامل مع تسرب المواد المشعة؟ (4 درجات)
- 2- عرف ملصقات RTK واذكر أهميتها. (4 درجات)



Program/ Year	(Mechanical Power) 2020-2021	Semester	First
COURSE TITLE:	MECHANICAL VIBRATIONS	COURSE CODE:	MPE 324
DATE:	21-2-2021	TOTAL ASSESSMENT MARKS:	70
		TIME ALLOWED:	3 HOURS
			FRESH

ANSWER SEVEN QUESTIONS ONLY (Each equal 10 Points)**QUESTION NO. 1**

An elastic support was used to hold a vertical single cylinder engine of mass 200 kg. The system was permitted to have a single degree of freedom and the allowed vibrating motion is vertical. The piston of this engine weights 3 kg and its reciprocating motion with a stroke of 15 cm. It is required that the maximum vibratory force transmitted through elastic support to the foundation of the engine at a speed of 800 rpm to be 600 N. Determine:

- The necessary stiffness of the elastic support.
- The amplitude of vibration at 300 rpm.
- If the engine speed is reduced below 800 rpm, at what speed will the transmitted force become again 600 N. What will be the effect of transmitted force to the foundation if a damping medium exists in parallel to the elastic one between the engine and its foundation? Give reasons to your answer.
- The speed at which maximum transmitted force occurs.

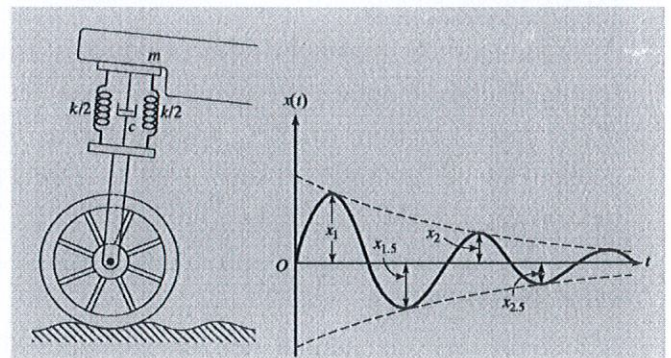
QUESTION NO. 2

A machine weighting 750 N is mounted on springs of stiffness 1200 N/mm with an assumed damping factor of 0.2. A piston within the machine weighting 20 N has a reciprocating motion with a stroke of 80 mm and a speed of 3000 r.p.m. Assuming that the motion of the piston to be a simple harmonic motion (S.H.M), determine:

- The amplitude of the motion of the machine.
- The force transmitted to the foundation.
- The phase angle with respect to the exciting force.
- The phase angle of the transmitted force with respect to the exciting force.

QUESTION NO. 3

An under damped shock absorber is to be designed for a motorcycle of mass 200 kg. When the shock absorber is subjected to an initial vertical velocity due to a road bump, the resulting displacement-time curve is to be as indicated in the Figure. Find the necessary stiffness and damping constants of the shock absorber if the damped period of vibration is to be 2 s and the amplitude is to be reduced to one-fourth in one half cycle.

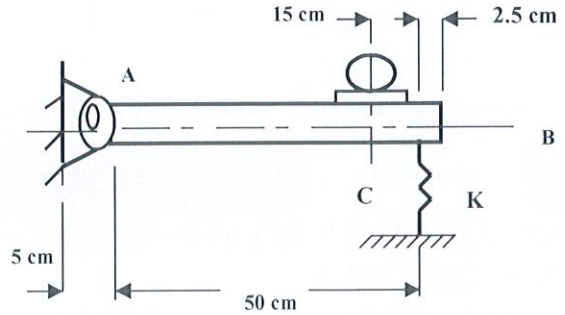
**QUESTION NO. 4**

A 6.25 cm diameter steel shaft ($I = 75 \cdot 10^{-4} \text{ cm}^4$) is mounted in two bearings 50 cm apart which act as a simple support. In the midway between the bearings, a block, weighting 4.25 N with a center of gravity 25 mm from the shaft centerline, is put. The shaft rotates at 700 rpm, neglect the shaft weight. Determine the maximum stress on the shaft surface if:

- The shaft is vertical.
 - The shaft is horizontal.
- $E = 20 \cdot 10^{10} \text{ N/m}^2$.

QUESTION NO. 5

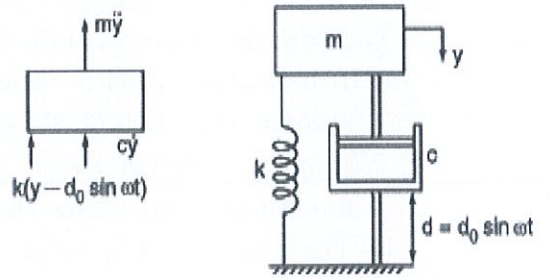
A motor is mounted on a rigid rectangular plate of mass 15 kg which is hinged along one side A and is supported on the opposite side B by helical spring of an equivalent stiffness of 300 N/m. The motor has a mass of 25 kg and is fitted with a crank of 5 cm radius which rotates at 400 rpm. The mass of the rotating weight at the crank pin is 1 kg. If the vertical forces applies at the point C as shown in figure, Determine:



- i- The natural frequency of vibration of the system.
- ii-The maximum amplitude of vibration at C. (Neglect the horizontal motion and damping)

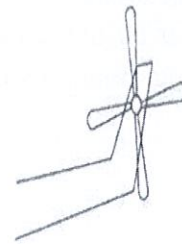
QUESTION NO. 6

An automobile tested in a laboratory shown in figure modelled as 3000 kg mass on a spring stiffness $k = 400$ kN/m. The system has a damping factor of $c/cc = 0.4$. Assume that the spring and dash pot are attached to the base whose vertical displacement are defined by $d = 0.04 \sin 6t$. Write the equation of motion of m for steady state vibration. Determine the magnification factor of the amplitude of vibration, the amplitude A and phase angle ψ .



QUESTION NO. 7

The tail rotor section of the helicopter consists of four blades, each of mass 2.3 kg, and an engine box of mass 28.5 kg. The center of gravity of each blade is 170 mm from the rotational axis. The tail section is connected to the main body of the helicopter by an elastic structure. The natural frequency of the tail section is observed as 135 rad /s. During flight, the rotor operates at 900 r/min. What is the vibration amplitude of the tail section if one of the blades falls off during flight? Assume a damping ratio of 0.05.



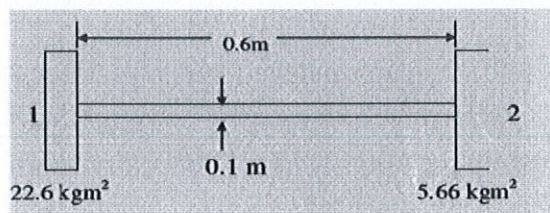
QUESTION NO. 8

A single-cylinder vertical diesel engine has a mass of 400 kg and is mounted on a steel chassis frame. The static deflection owing to the weight of the chassis is 2.4 mm. The reciprocating masses of the engine amount to 18 kg and the stroke of the engine is 160 mm. A dash pot with a damping coefficient of 2N/mm/s is also used to dampen the vibrations. In the steady state of vibration, determine:



- i-The amplitude of vibration of the driving shaft which rotates at 500 rpm,
- ii- The speed of the driving shaft when the resonance occurs.

QUESTION NO. 9

Obtain the torsional natural frequency of the system shown in Figure using data given
Take $G = 0.8 \times 10^{11}$ N/m²



5/5

	Port Said University Faculty of Engineering Chemical Engineering Department					
	Level	3 rd year	semester	1 st semester 2020/2021		
	Course title	Chemical Reactor Design	Course code	CHE 319		
Date	-/1/2021	Total marks	100 marks	Time allowed	3 hours	Fresh

Final Exam

Answer all the following FOUR questions.

Question one:	20 marks
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The reaction described by the data in Table 2-2

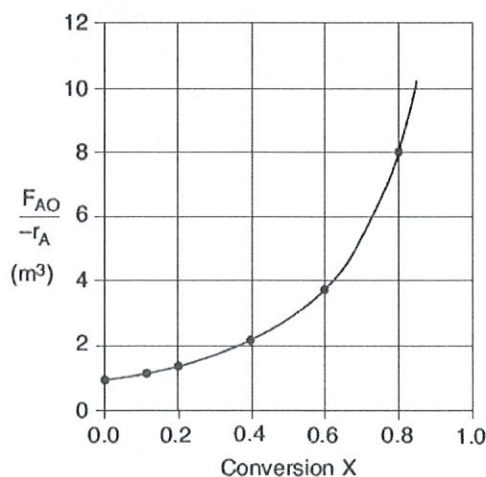


is to be carried out in a CSTR. Species A enters the reactor at a molar flow rate of $F_{A0} = 0.4 \frac{\text{mol}}{\text{s}}$, which is the flow rate used to construct Figure 2-2B.

- (a) Using the data in either Table 2-2 or Figure 2-2B, calculate the volume necessary to achieve 80% conversion in a CSTR.
- (b) Shade the area in Figure 2-2B that would give the CSTR volume necessary to achieve 80% conversion.

Given data:

X	0.0	0.1	0.2	0.4	0.6	0.7	0.8
$-r_A \left(\frac{\text{mol}}{\text{m}^3 \cdot \text{s}} \right)$	0.45	0.37	0.30	0.195	0.113	0.079	0.05
$(1/-r_A) \left(\frac{\text{m}^3 \cdot \text{s}}{\text{mol}} \right)$	2.22	2.70	3.33	5.13	8.85	12.7	20
$(F_{A0}/-r_A) (\text{m}^3)$	0.89	1.08	1.33	2.05	3.54	5.06	8.0



Question two:**25 marks**

It is desired to produce 200 million pounds per year of EG. The reactor is to be operated isothermally. A 16.1 mol/dm^3 solution of ethylene oxide (EO) in water is mixed (see Figure E5-2.1) with an equal volumetric solution of water containing 0.9 wt % of the catalyst H_2SO_4 and fed to a CSTR. The specific reaction-rate constant is 0.311 min^{-1} , as determined in Example 5-1. Practical guidelines for reactor scale-up are given by Mukesh.¹

- If 80% conversion is to be achieved, determine the necessary CSTR volume.
- If two 800-gal reactors were arranged in parallel with the feed equally divided, what would be the corresponding conversion?
- If two 800-gal reactors were arranged in series, what would be the corresponding conversion?

Question three:**25 marks**

Ethylene ranks first in the United States in total pounds of organic chemicals produced each year, and it is the number-one organic chemical produced each year. Over 60 billion pounds were produced in 2016, and it sold for \$0.28 per pound. Sixty-five percent of the ethylene produced is used in the manufacture of fabricated plastics, 20% for ethylene oxide, 16% for ethylene dichloride and ethylene glycol, 5% for fibers, and 5% for solvents.

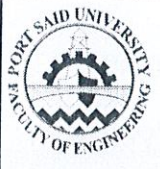

Determine the plug-flow reactor volume necessary to produce 300 million pounds of ethylene a year by cracking a feed stream of pure ethane. The reaction is irreversible and follows an elementary rate law. We want to achieve 80% conversion of ethane, operating the reactor isothermally at 1100 K and at a pressure of 6 atm. The specific reaction rate at 1,000 K is 0.072 s^{-1} and the activation energy is 82,000 cal/mol.

Question four:**30 marks**

- Normal butane is to be isomerized to isobutane in a plug-flow reactor. Isobutane is a valuable product that is used in the manufacture of gasoline additives. For example, isobutane can be further reacted to form iso-octane.
- This elementary reversible reaction is to be carried out adiabatically in the liquid phase under high pressure using essentially trace amounts of a liquid catalyst that gives a specific reaction rate of 31.1 h^{-1} at 360 K. You are to process 100,000 gal/day (163 kmol/h) and achieve 70% conversion of n-butane from a mixture 90 mol % n-butane and 10 mol % i-pentane. The feed enters at 330 K.
 - Set up the CRE algorithm to calculate the PFR volume necessary to achieve 70% conversion.
 - Calculate the PFR volume necessary to process 100,000 gal/day (163 kmol/h) at 70% conversion of a mixture 90 mol % n-butane and 10 mol % i-pentane, which is considered an inert.
 - Plot and analyze X , X_e , T , and $-r_A$ down the length of the reactor.
 - Calculate the CSTR volume for 40% conversion.

-End of Exam-

Dr. Usama Eldemerdash

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF CHEMICAL ENGINEERING					
	PROGRAM/YEAR	CHEMICAL ENGINEERING, 2020-21	SEMESTER	5th		
	COURSE TITLE:	Mass transfer	COURSE CODE:	CHE 308		
DATE	12-1-2021	TOTAL ASSESSMENT MARKS:	75	TIME ALLOWED:	3 H	Third
Instructor	Dr. Samah Hawash					

Answer all the following questions:

Question No. 1

(10 Marks)

- a) The two film theory based on assumption, explain the statement. (4 Marks)
- b) Air flows over a solid slab of frozen carbon dioxide (dry ice) with an exposed cross-sectional surface area of $1 \times 10^{-3} \text{ m}^2$. The carbon dioxide sublimates into the 2 m/s flowing stream at a total release rate of $2.29 \times 10^{-4} \text{ mol/s}$. The air is at 293 K and $1.013 \times 10^5 \text{ Pa}$ pressure, the vapor pressure of CO_2 is $4.74 \times 10^3 \text{ Pa}$. At that temperature, the diffusivity of carbon dioxide in air is $1.5 \times 10^{-5} \text{ m}^2/\text{s}$ and the kinematic viscosity of the air is $1.55 \times 10^{-5} \text{ m}^2/\text{s}$. Determine the value of mass transfer coefficient of CO_2 sublimating into the following air under the conditions of the experiments (6 Marks)

Question No. 2

(20 Marks)

Estimate the value of the mass-transfer coefficient in a stream of air at 325.6 °K flowing in a duct past the following shapes made of solid naphthalene. The velocity of the air is 1.524 m/s at 325.6K and 202.6 kPa. The D_{AB} of naphthalene in air is $3.511 \times 10^{-6} \text{ m}^2/\text{s}$ at 325.6 °K and 202.6 kPa and the viscosity of air is $1.958 \times 10^{-5} \text{ kg/m.s}$ and density of air is 2.155 kg/ m^3

- (a) For air flowing parallel to a flat plate 0.152 m in length
- (b) For air flowing past a single sphere 12.7 mm in diameter

Question No. 3**(20 Marks)**

Porous silica gel is used to adsorb propane from helium at 373 K and 1 atm. Typical values of parameters for porous silica gel are as follows: porosity = 0.486, tortuosity = 3.35, and pore diameter = 22°A.

- (a) Calculate the Knudsen number for flow inside the pores.
- (b) Calculate the effective diffusivity of propane under these conditions.

Question No. 4**(10 Marks)**


- a) Explain the difference between the two-film and penetration theory. (5 Marks)
- b) A small diameter tube closed at one end was filled with acetone to within 18 mm of the top and maintained at 290 K with a gentle stream of air blowing across the top. After 15000 sec, the liquid level was fallen to 27.5 mm, the vapour pressure of acetone was 21.95 kPa and atmospheric pressure was 99.75 kPa. Calculate the diffusivity of acetone in air. Given: the density of acetone is 790 kg/m³ and the molecular weight of acetone is 58 kg/kmol. (5 Marks)

Question No. 5**(15 Marks)**

An FCC iron-carbon alloy initially containing 0.20 wt% C is carburized at an elevated temperature and in an atmosphere that gives a surface carbon conc. constant at 1.0 wt%. If after 49.5 h the concentration of carbon is 0.35 wt% at a position 4.0 mm below the surface, determine the temperature at which the treatment was carried out.

Best of Luck,

Dr. Samah Hawash

	PORT SAID UNIVERSITY FACULTY OF ENGINEERING DEPARTMENT OF ARCHITECTURAL ENGINEERING & URBAN PLANNING				
	Program / Year	Architectural Engineering & Urban Planning 2020/2021	Semester		First
Date	1-3-2021	Course Title	Architectural Design (4)	Course Code	ARC318
		Total Assessment Marks	50	Time allowed	6 Hours
					Fresh

مركز للعيون

مطلوب إنشاء مركز لفحص وعلاج العيون بمدينة بورسعيد وذلك على قطعه الأرض الموضحة ادناه , وذلك بمساحة 50م * 70م محاطة بالشوارع من جميع الإتجاهات.

❖ مع مراعاة النواحي الوظيفية والتشكيلية والجمالية للمبنى وكذلك التوجيه بحيث يحتوي التصميم على جميع العناصر الموضحة بالبرنامج, مع مراعاة الإظهار المناسب.

برنامج المشروع:

• أولاً المدخل والبهو الرئيسي:

التسجيل والإستقبال - قطع تذاكر - أمن - أماكن الانتظار - دورات مياه.
محل لبيع النظارات - صيدلية.

• ثانياً قسم الإدارة:

عدد 4 مكاتب إدارية (حسابات - خزينة - أرشيف - شئون عاملين)
بالإضافة الى مكتب لمدير المركز ملحق به غرفة إجتماعات
وسكرتارية + الخدمات الملحقة.

• ثالثاً قسم الخدمات الصحية :

استعلامات - عدد 4 غرف فحص وكشف - أماكن انتظار لا تقل عن
25 شخص.

غرفتين عمليات بملحقاتهم - غرفة عناية مركزة بها عدد 2 سرير - غرفتين إقامة
بالإضافة الى الخدمات الملحقة مثل: تمرير - مخازن - صيدلية - غرفة تخزين مناشف - دورات مياه.....

• رابعاً دور البدروم (أماكن انتظار السيارات والخدمات):

يتم توزيع أماكن انتظار السيارات في دور البدروم مع ضرورة توضيح المداخل والمخارج وحركة مرور السيارات
والمناسب وعلاقتها بالنظام الإنشائي.



الرسومات المطلوبة:

1. الموقع العام 1:400 موضحاً به الشوارع وعناصر تنسيق الموقع والمبنى المطلوب تصميمه . (5 درجات)
2. مسقط أفقى للدور الأرضى 1:100 كاملاً (يظهر فيه الاستعمالات والمساحات والمناطق المفتوحة والمناسيب إن وجدت,...) فى حالة وجود أكثر من طابق يمكن رسم المساقط الأفقية الأضافية بمقياس رسم 1:200 . (15 درجة)
3. المسقط الأفقى لدور البدروم بمقياس رسم 1:200 . (10 درجات)
4. قطاع رأسى 1:100 . (10 درجات)
5. الواجهة الرئيسية 1:100 . (10 درجات)

* يمكن افتراض أى بيانات ناقصة.

دكتور المادة/ / د.داليا الغرناوى

مع أطيب التمنيات بالتوفيق والنجاح،،،

	Port Said University Faculty of Engineering Department of Architecture & Urban Planning					
	Program/year:	Architecture 2020/21	Semester:	First		
	Course title:	E.C.I: Green Architecture	Course code:	ARC 324		
Date:	10-3-2021	Total assessment marks:	70	Time allowed:	3 hours	Fresh

الامتحان مكون من ثلاثة أسئلة في ورقة واحدة، وجه واحد
أجب عن الأسئلة الآتية موضحا اجابتك بالرسوم والاستكشافات التوضيحية ما أمكن:

السؤال الأول: (30 درجة)

(1) عرف ما يأتي (12 درجة):

- | | |
|--------------------------------------|---|
| 1) Embodied carbon..... (1,5 درجة) | 5) Inverter (1,5 درجة) |
| 2) Urban heat island..... (1,5 درجة) | 6) Centrifuge (1,5 درجة) |
| 3) Cut-off lighting (1,5 درجة) | 7) Drainage layer..... (1,5 درجة) |
| 4) VOCs..... (1,5 درجة) | 8) Membrane bioreactor (1,5 درجة) |

- (2) ما هي الاستراتيجيات الخضراء التي يمكن تطبيقها على المبنى السكنى القائم الذى تعيش فيه؟.....(8 درجة)
 (3) قارن بين النظم الانشائية التالية: Sand bags ، Rammed earth (نظم اجابتك فى جدول).....(10 درجة)

السؤال الثانى: (18 درجة)

- (1) تعتبر الراحة السمعية أحد معايير تحقيق جودة البيئة الداخلية، اشرح طريقة للعزل الصوتى للأرضيات مع التوضيح بالرسم (8 درجة)
 (2) وضح أجزاء ومكونات نظام الخلايا الشمسية للتركيب على المباني (بالرسم فقط) مع توضيح البيانات (10 درجة)

السؤال الثالث: (22 درجة)

- (1) وضح باختصار كيف يحصل المبنى على شهادة لييد البلاطينية (LEED PLATINUM).....(10 درجة)
 (2) وضح المعالجات المستدامة المستخدمة بالمباني التالية مع الشرح: (12 درجة)

