	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT F PHYSICS		
	EXAMINATION THIRD YEAR FRESH STUDENTS OF PHYSICS		
COURSE TITLE:	Solar Energy		COURSE CODE: PH3212
DATE:	24 / 5 /2018	TERM: JUNE	TOTAL ASSESSMENT MARKS: 100 TIME ALLOWED: 2 HOURS

Answer the following questions:

1) Explain in details the different parameters affecting the efficiency of the flat - plate solar collector. **(25 Marks)**

2) *Write briefly on:* **(30 Marks)**

- i) Different types of heat exchangers for latent heat thermal energy storage and give an example for each.
- ii) The integration of a stratified hot water tank in solar system for space heating and hot water production.
- iii) Methods to minimize radiation and convection losses in solar collector

3) a- Write the definition and explain the physical meaning of the dimensionless Numbers Nusselt , Prantdl, Grasshof **(10 Marks)**

b- *Write short notes on :* **(15 Marks)**

- i) The compatibility the molten PCM with the heat exchanger materials
- ii) Different types solar radiation and different devices to measure them
- iii) The differential energy equation for time dependent and time independent with and without internal source

4) a) Explain how you can calculate the thermal resistance in the three heat transfer mechanisms (conduction, convection and radiation) . **(10 Marks)**

b) Write the Hottel-Whiller equation, draw and discuss its graphical presentation for single glass and double glass solar collector and show the maximum efficiency in each case **(10 Marks)**

Best Wishes

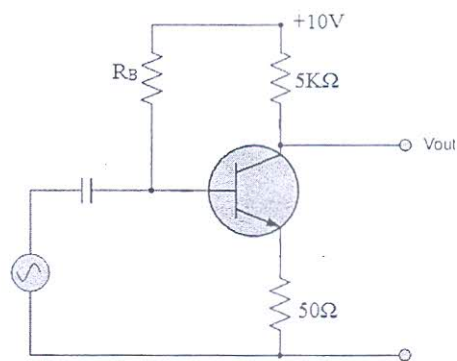
Examiner :Dr Saad Aboul Enein

 1969	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	FINAL EXAMINATION FOR FRESHMEN (THIRD LEVEL) MATERIAL SCIENCE STUDENTS شعبة علوم المواد طلاب المستوى الثالث			
	COURSE TITLE:	ANALOG ELECTRONICS الكترونييات تناظرية		COURSE CODE: MS3252
DATE:	MAY 2018	TERM: SECOND	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

Answer the following questions:-

1- a- compare between different types of transistor, BJT, FET, and MOSFET.

b- In the following circuit calculate R_B necessary to have a good amplifier if transistor $\beta = 200$. **(37.5 Marks)**



2- a- TIL222 is a LED diode. Design a circuit to use it, if its forward voltage is 2.3V and current is 17mA. Use a transistor with $\beta = 100$ and battery 5V.

b- Why we use voltage divider in biasing a transistor? **(37.5 Marks)**

3- a- Compare between SCR and Triac.

b- Design a circuit to control the power in heater if the main voltage is 220V, 50Hz. Describe the function of each components. **(37.5 Marks)**

4- a- By using the full wave rectifier, draw a circuit to supply a load with 100mA and the optimum variation of the voltage is $\pm 0.1V$. Explain the function of the capacitor.

b- Explain the characteristics of diac. **(37.5 Marks)**

With my best wishes

<i>Examiner</i>	<i>Prof. Mostafa K, Elnimr</i>
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TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF PHYSICS

EXAMINATION FOR THRID YEAR PHYSICS

COURSE TITLE:

ELECTRONICS AND DEVICES

PH 3252

DATE: 27 - 5- 2018

MARKS:

100

TIME 2 HOURS

Answer all the following questions:

- 1- (A) draw and discuss the operation of **JFET** transistors. (15 Marks)
(b) Draw and discuss any application circuit of a **JFET** (10 Marks)
- 2- (A) Discuss the **Miller theory** and calculate the equivalent input and output **Miller** impedance (10 Marks)
- (B) Discuss the effect of capacitors and transistor **inter-electrode** capacitance on the frequency response of a transistor amplifier and show its response **only** in case **Low frequency** signals (15 Marks)
- 3- (A) Find the condition necessary to get maximum power on a load R_L from a voltage source with resistance R_s (10 Marks)
- (B) Draw a **Common Emitter** transistor Amplifier and by solving its equivalent circuit deduce all important circuit parameters (15 Marks)
- 4-(A) Write the different types of **Feed Back** classifications and drive the general relation between gains **with** and **without** feed back. (15 Marks)
- (B) Just write the different possible advantages of **Negative** Feed Back in amplifier circuits and **prove only any two cases**. (10 Marks)

Examiner	Dr. Mahmoud Kamel
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