University of Palestine Faculty of Applied Engineering and Urban Planning

Course Name	Engineeri	ng Hydrology			Course N	No.	CIVL 4332
Academic Year	2018/2019	Semester	2 nd		Exam Ty	ype	2ndMidterm
Exam Date	18/04/2019			Exam Time		1pm – 2pm	

جامعي:	الرقم ال		اسم الطالب(بالعربي):
الرقم المتسلسل:	وقت المحاضرة:	رقم الشعبة:	اسم المدرس: أ. د. م. حسن حمودة

Important Instructions

- This is a closed-book exam; all related material must be placed away from your desk.
- <u>Cell phone use is prohibited for any purpose</u>: Your cell phone must be turned off and placed off of the desk. Cell phones may not be accessed during the exam. Failure to comply may be treated as a violation of the Honor Code.
- Headphones of any kind are not permitted.
- This exam is 60 minutes long.
- Make sure that you have 4 pages including this page.
- This exam has 7 essay questions. Read each question carefully before answering.
- Calculators can be used <u>but cannot be shared</u>.
- When you finish, you must:
 - Check that you have written your information in the spaces provided.
 - Give the exam package (all papers) to the proctor before you leave.

For Teacher's Use OnlyFor Proctor's Remarks

QN	KPI/ILO	SO	DL	Mark	Weight	
1		a, j	2		1	
2		j, c	3		1	
3		j, c, e	3		2	
4		a, c, e	4		2	
5		a, b, c, e	3		3	
6		a, b, c, e	4		3	
7		a, b, c, e	4		3	
	Tota	al			15	
				1		

KPI: Key Performance Indicator, ILO: Intended Learning Outcomes, SO: ABET Student Objectives, DL: Difficulty Level (1. Very easy, 2. Easy, 3. Moderate, 4. Somewhat hard, 5. Hard, 6. Very Hard)

Q1: Discuss the Difference between heat flux and heat capacity ?

Q2. Differentiate between Infiltration and percolation?

Q3. Compare the water Budget method with Rational method (concepts).

Q4. Explain in detail the Abstractions in run off concept and write the final water Budget equation.

Q5. Estimate the daily Evaporation using Penman Formula. $T_s = 32^{\circ}C$, $T_d = 20^{\circ}C$, $E=0.013(1+0.0.2u)(e_s-e)$ and $Q_N = 450cal/cm^2$.day. Given also:

$$\Delta = \frac{2.7489 \times 10^8 \times 4278.6}{(T+242.79)^2} \exp\left(-\frac{4278.6}{T+242.79}\right)$$

Q6. Given C=0.28 , I=30 mm/hr., A=5 km².

- calculate needed volume of circular Injection basin for 5 hours ?? - $Q_{inf.} = 1.5 Q_{outflow}$, calculate outlet dimension D, if basin height 4 m.

Disus thekind of the flow if μ =0,.53Ns/m²

Q7. Explain the Infiltration rate diagram. For given $f_0 = 89$ mm/hr., $f_c = 50$ mm/hr., c = 0.18 hr⁻¹

- - a) Calculate the Infiltration rate after 3 hours
 - b) Calculate the Infiltration volume between 4th and 9th hour of the Storm.