Department of Computer Systems Engineering
University of Engineering & Technology
Peshawar, Pakistan

Dated: January 11, 2019

Subject:	**Engineering Economics**
Exam:	**Final Term**
Weightage:	**50 %**
Time Allowed:	**2 Hrs (Part A: 30 minutes, Part B: 1 hour and 30 minutes)**

Part B [Marks 60]

Read the following instructions:

1. *Be clear and precise in your answers. **Do NOT** include unnecessary details.*
2. *You are expected to have brought **calculator** and **necessary stationary** only, anything else found in possession would be tantamount to cheating. **No sharing** of calculators is allowed during exam.*
3. *Consider **1dollar =130 Rupees** wherever required. Draw **cash flows** wherever required.*
4. *Pages are numbered from **5 of 8** to **8 of 8**. Make sure you have all of them*
5. *You can use the **interest table** attached for help in some questions; still you have to write the formula used for getting the factor value.*

Question 01 [Marks 10] **[CLO-3]**

Mrs. Akhtar is planning to place her savings earned by selling her jewelry in a bank account. She earns an amount of **Rs. 19,69,000** from the sale. She has to choose among four different offers provided by the saving institutions i.e. nominal interest rates of **6.35% compounded annually, 6.45% compounded quarterly, 6.55% compounded monthly, 6.325% compounded daily** and **6.255% compounded continuously.** She wishes to select the savings institution that will give her the highest return on this money. Which option should she select and why?

Question 02 [Marks 10] **[CLO-2]**

Pakistan International Airways has recently conducted a survey on its services and revenues. The surveys show that there was revenue of **Rs. 1,460,000** the first three years since **2001** and it reduced with constant rate of **Rs. 135,000** every year for next **12 years (i.e 2015)**. PIA wants to calculate what cumulative sum would be equivalent to these revenues in **2000** if the budget had an interest rate of **9%** compounded annually.

Question 03 [Marks 15] **[CLO-2]**

Microsoft lends **$10,000,000** for small projects in rural areas of India. The loan has to be refunded at **8%** interest rate compounded annually. Repayment should be made in such a way that an amount **A** must be paid for the first **8 years**, amount **3A** for next 5 **years** and amount **5A** for remaining years, keeping the interest rate **8%.** Total time period for which the loan is allotted is **20 years**. What sum of annuities still remains to be paid just after the **12th payment** is made? **(Hint: Take $10,000 equivalent to the present worth of all these annuities)**

Question 04 [Marks 10] **[CLO-3]**

Mr. Cod is opening its restaurant near cantt area. It is expecting initial revenue of **$72,000** per year with an annual increase of about **$400** as per statistics. The initial investment required for the restaurant is **$170,000** and MARR per year is **8%**. The yearly expenses are expected to reach around **$35,000**. Find out if this income is large enough to cover the investment for a study period of **15 years**.

Question 05 [Marks 15] **[CLO-3]**

Nike is constructing a mall near industrial estate. The initial investment includes land costs **$400,000**, working capital **$560,000,** building costs **$600,000** and other materials required costs **$250,000.** It is expected that the sales of the mall will reach up to **$750,000** per year for **12 years** at which time the land can be sold for **$500,000,** the building for **$350,000,** the materials for **$50,000** and all the working capital will be recovered **(Hint: Salvage values)**. The annual expenses for labor and other items will sum up to **$475,000** per year. If the company requires an **MARR** of **9%** on return, determine if it should invest in this mall? Use **AW** method to support your argument.

Good Luck

(CR) = 208127.

E = 475000

R = 750000

put in

CR = R - E - CR

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you will get answer