KFU Mati	PM	t Dant		Term 181								Durrati	Date: 11/	12/2018	
Mati	n & Sta	t Dept.				Class	A 1 319 5 Test ∦1			Durati	on: 40 n	ninutes			
Nam	e.			ID#:							Section #1				
The electric power consumed (Y) e						ach month by a chemical plant is					thought to be related to the a				
ambie	ent tem	peratur	$e(X_1),$	the nur	nber of	days i	n the m	$onth(\dot{X})$	2), the	average	e produ	ct puri	ty (X ₃),	and the	
metri	c tons o	f produ	ct proc	luced ()	(4). Th	e past y	vear's his	storical	data ar	e show	n in the	e table l	below:		
	Ŷ	240	236	270	274	301	316	300	296	267	276	288	261		
	X 1 X 1	30	31	45 24	60 25	65 25	72 26	80 25	84 25	75 24	60 25	50 25	38		
	Λ2 Χ2	24 91	25 90	24 88	25 87	20 91	20 94	25 87	20 86	24 88	20 95	25 90	23 89		
	X4	100	95	110	88	94	105	97	100	110	105	100	98		
Answ	er the t	wo que	stions	below											
1. G	iven tha	at the re	sponse	variabl	e is Y a	nd the	predict	or is χ_3 ,	answe	r the fo	llowing				
a.	a. The slope of the regression line =										C	,			
		_	_												
b.	The in	tercept	of the 1	regressi	on line	=									
,		<u>-</u>													
с.	The es	timated	l regres	sion equ	lation	is									
				[
d.	d. The error in fitting the electric power consumption for an														
	averag	e produ	et puri	ty of 91											
e.	The o	correlat	ion co	oefficier	it bet	ween	the el	ectric	power						
	consur	nption	and the	e averag	e prodı	act pur	ity =								
f.	The de	cision,	of testi	ng for a	positiv	ve linea	r correla	ation be	etween						
	the ave	erage pr	oduct	purity a	nd the	power	consum	iption, i	S						

 $\mathbf{2.}$ Given the Minitab output below, answer the parts that follow

Predictor SE Coef Т Coef Ρ -33.5 -0.16 0.880 Constant 1.0114 0.3701 0.029 Х1 9.412 0.52 0.622 Х2 1.764 0.74 0.481 X3 0.9005 -0.28 0.787 Χ4 S = R-Sq = 71.9% R-Sq(adj) =Analysis of Variance Source DF SS MS F Р 0.041 Regression Residual Error 7 6572.9 Total Predicted Values for New Observations New Obs Fit SE Fit 99% CI 99% PI 1 248.43 8.76 (217.77, 279.09) (183.87, 312.99) Values of Predictors for New Observations New Obs Х1 Х2 XЗ Χ4 30.0 24.0 91.0 100 1 a. The slope of the average ambient temperature = b. The intercept of the regression equation = c. The standard error of the estimate = d. A 99% C.I. for the mean electric consumption for an ambient temperature of 30, 24 days in the month, a 91 average product purity, and a 100 tons of product is e. The percentage of variation in the power consumption that is explained by the variation in the four predictors accounted for the included number of independent variables and the size of the selected sample = f. Testing the significance of all the predictors to the electric power consumption yields a test statistic value = g. Testing the significance of all the predictors to the electric power consumption yields a test statistic with degrees of freedom = h. Testing the significance of all the predictors to the electric power consumption results in a decision of

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KFU Mat	JPM h & Sta	t Dept.		Term 181 STAT 319								Date: 11/12/2018 Duration: 40 minutes				
		T				Class	s Test ∦	3								
Nan	ne:			ID#:							ction #	⁴ 2	Serial			
The e	electric	power	consun	ned (Y)	each n	nonth b	oy a che	mical p	olant is	though	it to be	related	l to the	average		
ambi	ent tem	peratui	$e(X_1),$	the nur	nber of	f days i	n the m	onth(X	(2), the	average	e produ	ct puri	ty (X_3) ,	and the		
metr	ic tons o	t produ	ict proc	duced ()	χ_4). The	e past y	vear's his	storical	data ar	e show	n in the	e table h	below:			
	r X.	240 30	230 31	270 45	274 60		72	300 80	290 84	207 75	270 60	∠oo 50	201 38			
	X ₁ X ₂	24	25	40 24	25	25	26	25	25	24	25	25	23			
	X ₃	91	90	88	87	91	94	87	86	88	95	90	89			
	X 4	100	95	110	88	94	105	97	100	110	105	100	98			
Ansv	ver the t	wo que	stions	below												
l . <u>G</u>	Fiven that	at the re	esponse	e variabl	e is Y a	nd the	predict	or is $\chi_{ m l}$,	answei	r the fo	llowing					
а	. The slo	ope of t	he regr	ession li	ine =											
b	. The in	tercept	ofthe	regressi	on line	=										
c	. The es	timated	l regres	sion eq	uation	is										
	1.000	<u></u>	1	1			<u> </u>		1.							
d	. A 99%	o C.I. fo	or the 1	mean el	ectric (consum	ption fo	or an ai	nbient							
	tempe	rature	50 IS													
e.	. The co	efficier	nt of de	termina	tion =											
f.	The st	andard	error o	f the slo	pe of t	he regre	ession li	ne =								

 $\mathbf{2.}$ Given the Minitab output below, answer the parts that follow

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