Question one

A- $H_0: M_1 = M_2 = M_3 = M_4$

$H_a:$ at least one two of the mean are not equal

Source	SS	df	MS	fcomp
treatment	$SSA = 13939$	$K-1 = 3$	$s_1^2 = 13939/3$	$f = \dfrac{s_1^2}{s^2} = 3.56$
Error	$SSE = 53376$	$N-K = 41$	$s^2 = 53376/41$	

ftable $\Rightarrow (\alpha, K-1, N-K)$ $f(0.05, 3, 41) = 2.84$

reject H_0

B-

$b_K(\alpha; n_i) = \dfrac{1}{N}\left[n_1 b_K(\alpha; n_1) \cdots n_K b_K(\alpha; n_K)\right]$

$= \dfrac{1}{45}\left[20*0.858 + 9*0.689 + 9*0.689 + 7*0.704\right]$

$b_4 = 0.75$

$Sp^2 = \dfrac{1}{N-K}\sum_{i=1}^{K}(n_i-1)s_i^2 = \dfrac{1}{41}\left[19*662.862 + 8*2219.781 + 8*2168.434 + 6*946.032\right]$

$Sp^2 = 1301.86$

$b_{comp} = \dfrac{1}{Sp^2}\left[(s_1^2)^{n_1-1} \cdots (s_K^2)^{n_K-1}\right]^{\frac{1}{N-K}}$

$= \dfrac{1}{1301.86}\left[(662.862)^{19} * (2219.781)^{8} * (2168.434)^{8} * (946.032)^{6}\right]^{\frac{1}{41}}$

$= 0.85$ accept H_0

Question two

2018 هو وهو سؤال الثاني في

Question three

2018 هو وهو سؤال الثالث في

Mostafa Abdelkarem Desoky

Question one

A- ① $H_0 : M_1 = M_2 = M_3 = M_4$

H_a : at leat two of the means are not equal

② $K = 4$ $n = 6$

Source of variation	sum of square	df	Mean square	Fcomp
treatment	SSA	K-1	$S_1^2 = \dfrac{SSA}{K-1}$	$f = \dfrac{S_1^2}{S^2}$
Error	SSE	K(n-1)	$S^2 = \dfrac{SSE}{K(n-1)}$	
total	SST	Kn-1		

$SSA = 745$ $SSE = 2200$ $K-1 = 3$ $K(n-1) = 20$

$S_1^2 = \dfrac{745}{3} = 248.33$ $S^2 = \dfrac{2200}{20} = 110$ $f_{comp} = \dfrac{248.33}{110} = 2.2575$

$f_{table}(\alpha, K-1, K(n-1)) = f(0.05, 3, 20) = 3.10$ $f_{comp} < f_{table}$

accept H_0

B- ① $H_0 : \delta_1^2 = \delta_2^2 = \delta_3^2 = \delta_4^2$

H_a : all variances are not equal

② $K = 4$ $n = 6$ $N = 6 * 4 = 24$

$b_K(\alpha ; n_1 ... n_4) = \dfrac{1}{N}[n_1 b_K(\alpha ; n_1) .... n_K b_K(\alpha, n_K)]$

$= \dfrac{1}{24}[4 * n_K b_K(\alpha, n_K)] = \dfrac{1}{24}[4 * n_4 b_4(0.05 ; n_4)]$

$= 0.6559$ $4 * 6 * 0.6559$

$Sp^2 = \dfrac{1}{N-K}\sum_{i=1}^{K}(n_i - 1)S_i^2$

$= \dfrac{1}{24-4}\sum_{i=1}^{4}(n_i - 1)S_i^2 = \dfrac{1}{20}[(n_1-1)S_1^2 + (n_2-1)S_2^2 + (n_3-1)S_3^2 + (n_4-1)S_4^2]$

$= \dfrac{1}{20}[5 * 12.62 + 5 * 2.66 + 5 * 7.915 + 5 * 10.63] = 8.45625$

$b_{comp} = \dfrac{1}{Sp^2}[(S_1^2)^{n_1-1} * .... (S_K^2)^{n_K-1}]^{\frac{1}{N-K}}$

$= \dfrac{1}{8.45625}[(12.62)^5 * (2.66) * (7.915)^5 * (10.63)^5]^{\frac{1}{20}}$

$= 0.8620$

$b_{comp} > b_{Ktable}$ accept H_0

Question Two

A - $\bar{y}_0 = 51.44$ $\bar{y}_1 = 53.5$ $\bar{y}_2 = 54.04$ $\bar{y}_3 = 49.38$

① $H_0: M_0 = M_i$ $H_a: M_0 \neq M_i$

② $|d_i| = \dfrac{\bar{y}_i - \bar{y}_0}{\sqrt{\dfrac{2s^2}{n}}}$ $d_1 = \dfrac{\bar{y}_1 - \bar{y}_0}{Q} = \dfrac{53.5 - 51.44}{0.9593} = $ ~~2.14~~ | 2.14 |

$Q = \sqrt{\dfrac{2s^2}{n}} = \sqrt{\dfrac{2 * 2.3007}{5}}$ $d_2 = \dfrac{\bar{y}_2 - \bar{y}_0}{Q} = \dfrac{54.04 - 51.44}{0.9593} = $ ~~2.71~~ | 2.71 |

$= 0.9593$ $d_3 = \dfrac{\bar{y}_3 - \bar{y}_0}{Q} = \dfrac{49.38 - 51.44}{0.9593} = $ -2.14

$\nu = k(n-1)$ $= $ | 2.14 |

$d_{table}(\frac{\alpha}{2}, k, \nu) = d(\frac{0.05}{2}, 3, 16) = 2.59$

$d_1, d_3 < d_{table}$ accept H_0 $d_2 > d_{table}$ reject H_0

B - $H_0: M_1 = M_2 = M_3 = M_4 = M_5 = M_6$
$H_a:$ The M_i are not equal

Source of variation	SS	df	MS	f_{comp}
treatment	SSA	k-1	$s_1^2 = \dfrac{SSA}{k-1}$	$f = \dfrac{s_1^2}{s^2}$
blocks	SSB	b-1	$s_2^2 = \dfrac{SSB}{b-1}$	
Error	SSE	(k-1)(b-1)	$s^2 = \dfrac{SSE}{(k-1)(b-1)}$	
Total	SST			

$s_1^2 = 5.31$ $s_2^2 = 8.42$ $s^2 = 1.59$ $k = 4$

$f_{comp} = \dfrac{s_1^2}{s^2} = \dfrac{5.31}{1.59} = 3.3396$ $b = 6$

$f_{table}(\alpha, k-1, (k-1)(b-1)) = f(0.05, 3, 15) = 3.29$

$f_{comp} > f_{table}$ reject H_0

Question three

A - $H_0: \alpha_1 = \alpha_2 = \cdots \alpha_a = 0$

H_a: at least one the α_i is not equal

$H_0': \beta_1 = \beta_2 = \cdots \beta_6 = 0$

H_a': at least one of the β_j is not equal

$H_0'': (\alpha\beta)_{11} = (\alpha\beta)_{12} \cdots (\alpha\beta)_{ab} = 0$

H_a'': at least one of the $(\alpha\beta)_{ij}$ is not equal

$a = 3$
$b = 4$
$n = 2$

Source	SS	df	MS	
A	14.52	2	$s_1^2 = 14.52/2 = 7.26$	
B	40.08	3	$s_2^2 = 40.08/3 = 13.36$	
AB	22.16	6	$s_3^2 = 22.16/6 = 3.693$	
Error	14.91	12	$s^2 = 14.91/12 = 1.2425$	
Total				

$f_1 = \dfrac{s_1^2}{s^2} = \dfrac{7.26}{1.24} = 5.85$ $f_2 = \dfrac{s_2^2}{s^2} = \dfrac{13.36}{1.24} = 10.77$ $f_3 = \dfrac{s_3^2}{s^2} = \dfrac{3.69}{1.24} = 2.97$

$f_{table}(0.05)$, $f_{table}(\alpha, df, ab(n-1)) \Rightarrow f_1(0.05, 2, 12) = 3.89$

f_1, f_2 reject H_0, H_0' $= f_2(0.5, 3, 12) = 3.49$

f_3 accept H_0'' $= f_3(0.05, 6, 12) = 3.00$

B - $a = 3$ $b = 3$ $C = 2$

Source	SS	df	MS	F$_{COMP}$
A	SSA = 13.98	$a-1 = 2$	$s_1^2 = 13.98/2$	$f_1 = \dfrac{13.98/2}{1.2}$
B	SSB = 10.18	$b-1 = 2$	$s_2^2 = 10.18/2$	$f_2 = \dfrac{10.18/2}{1.2}$
C	SSC = 1.19	$C-1 = 1$	$s_3^2 = 1.19/1$	$f_3 = \dfrac{1.19/1}{1.2}$
AB	SSAB = 4.77	$(a-1)(b-1) = 4$	$s_4^2 = 4.77/4$	$f_4 = \dfrac{4.77/4}{1.2}$
AC	SSAC = 2.91	$(a-1)(C-1) = 2$	$s_5^2 = 2.91/2$	$f_5 = \dfrac{2.91/2}{1.2}$
BC	SSBC = 3.63	$(b-1)(C-1) = 2$	$s_6^2 = 3.63/2$	$f_6 = \dfrac{3.63/2}{1.2}$
ABC	SSABC = 4.91	$(a-1)(b-1)(C-1) = 4$	$s_7^2 = 4.91/4$	$f_7 = \dfrac{4.91/4}{1.2}$
Error	SSE = 21.6	$abc(n-1) = 18$	$s^2 = 21.6/18$	

$f_{table}(\alpha, df, abc(n-1)) \Rightarrow f_1 = 3.32$ $f_2 = 3.32$ $f_3 = 4.17$ $f_4 = 2.69$

$f_5 = 3.32$ $f_6 = 3.32$ $f_7 = 2.69$ compare حسابية

f comp > f table reject H_0

Question one   A-   جو هو سؤال الثاني A في 2018

B- $\bar{y}_1 = 26.9$ $\bar{y}_2 = 49.4$ $\bar{y}_3 = 51.6$ $y_4 = 44.1$

$\bar{y}_3 - \bar{y}_1 = 24.7$	$\bar{y}_2 - \bar{y}_1 = 22.5$	$\bar{y}_4 - \bar{y}_1 = 17.2$
rej	rej	rej

$\bar{y}_3 - \bar{y}_2 = 2.2$ $\bar{y}_2 - \bar{y}_4 = 5.3$
acc   rej

$\bar{y}_3 - y_4 = 7.5$ $q_{table}(\alpha, k, \upsilon)$ $k = 4$

rej $n = k-1$
                                 $= 3$

$q_{comp} = q_{table} * \sqrt{\dfrac{s^2}{n}}$ $q_{table}(0.05, 4, 8) = 4.53$ $\upsilon = 4(3-1)$

$= 4.53 * \sqrt{\dfrac{3.84}{3}} = 5.125$ $= 8$

$= 5.13$

قارن يبقى الفزوق بيها   الفزق هو الأكبر اوفضه

Question two

A&B   جو هو سؤال الاول في 2018

Question three

A- جو هو سؤال الثاني B في 2018

B- جو هو سؤال الثالث A في 2018

Mostafa Abdel Karen

Question one

A & B ⟵ موضوع السؤال الاول في 2017

Question two

A- $H_0 : M_1 = M_2$ ② $\qquad$ $H_a : M_1 \neq M_2$ ①

$\bar{y}_5$ ④ $= 16.75$	$\bar{y}_1$ ③	$\bar{y}_3$	$\bar{y}_6$	$\bar{y}_4$	$\bar{y}_2$
16.75	(19.84)	14.50	22.90	23.20	14.50

$\bar{y}_4 - \bar{y}_5 = 6.45$ $\qquad$ $\bar{y}_6 - \bar{y}_5 =$ $\qquad$ $k = 6$ $\qquad$ $Q = \sqrt{\dfrac{S^2}{n}} = \sqrt{\dfrac{2.45}{5}} = 0.7$

$\bar{y}_4 - \bar{y}_1 = 3.36$ $\qquad$ $\bar{y}_6 - \bar{y}_1 =$ $\qquad$ $n = k-1$

$\bar{y}_4 - \bar{y}_3 = 8.68$ $\qquad$ $\bar{y}_6 - \bar{y}_3 =$ $\qquad$ $= 5$

$\bar{y}_4 - \bar{y}_6 = 0.3$ $\qquad$ $\bar{y}_6 - \bar{y}_2 =$ $\qquad$ $q_{table}(\alpha, k, \nu) = q(0.05, 6, 24)$

$\bar{y}_4 - \bar{y}_2 = 8.7$ $\qquad\qquad\qquad\qquad$ $\nu = k(n-1)$ $\qquad = 4.37$

$\bar{y}_4 - \bar{y}_5 = 6.45$ rej	$\bar{y}_6 - \bar{y}_5 = 6.15$ rej	$\bar{y}_1 - \bar{y}_5 = 3.09$ rej	$\bar{y}_5 - \bar{y}_3 = 2.25$ acc	$\bar{y}_3 - \bar{y}_2 = 0$ acc
$\bar{y}_4 - \bar{y}_1 = 3.36$ rej	$\bar{y}_6 - \bar{y}_1 = 3.06$ rej	$\bar{y}_1 - \bar{y}_3 = 5.34$ rej	$\bar{y}_5 - \bar{y}_2 = 2.25$ acc	
$\bar{y}_4 - \bar{y}_3 = 8.7$ rej	$\bar{y}_6 - \bar{y}_3 = 8.4$ rej	$\bar{y}_1 - \bar{y}_2 = 5.34$ rej	-8 acc	
$\bar{y}_4 - \bar{y}_6 = 0.3$ acc	$\bar{y}_6 - \bar{y}_2 = 8.4$ rej			
$\bar{y}_4 - \bar{y}_2 = 8.7$ rej				

$q_{comp} = q_{table} \times Q = 4.37 \times 0.7 = 3.059$

بعد كدة قارت بالفروق لو الفرق أكبر ارفض H_0

Mostafy Abdelader

B - using ~~No Dat~~ Duncan test $H_o: M_i = M_j$ $H_a: M_i \neq M_j$

	$\bar{y}_2$	$\bar{y}_3$	$\bar{y}_5$	$\bar{y}_1$	$\bar{y}_6$
$\bar{y}_4$	$\bar{y}_4 - \bar{y}_2 = 8.7$ R_6	$\bar{y}_4 - \bar{y}_3 = 8.7$ R_5	$\bar{y}_4 - \bar{y}_5$ $R_4 = 6.45$	$\bar{y}_4 - \bar{y}_1$ $R_3 = 3.36$	$\bar{y}_4 - \bar{y}_6 = 0.3$ R_2
$\bar{y}_6$	$\bar{y}_6 - \bar{y}_2 = 8.4$ R_5	$\bar{y}_6 - \bar{y}_3 = 8.4$ R_4	$\bar{y}_6 - \bar{y}_5$ $R_3 = 6.15$	$\bar{y}_6 - \bar{y}_1$ $R_2 = 3.06$	
$\bar{y}_1$	$\bar{y}_1 - \bar{y}_2 = 5.34$ R_4	$\bar{y}_1 - \bar{y}_3 = 5.34$ R_3	$\bar{y}_1 - \bar{y}_5$ $R_2 = 3.09$		
$\bar{y}_5$	$\bar{y}_5 - \bar{y}_2 = 2.25$ R_3	$\bar{y}_5 - \bar{y}_3 = 2.25$ R_2			
$\bar{y}_3$	$\bar{y}_3 - \bar{y}_2 = 0$ R_2				

$$Q = \sqrt{\frac{s^2}{n}} = \sqrt{\frac{2.45}{5}} = 0.7$$

$$R_P = r_P \sqrt{\frac{s^2}{n}}$$
$$= r_P \cdot Q$$

P	2	3	4	5	6
r_P	2.919	3.066	3.160	3.226	3.276
R_P	2.043	2.146	2.212	2.258	2.293

قارن القيم بالفروق والفرق أكبر ارفض الفروض

$R_6 \Rightarrow$ reject $R_5, R_5 \Rightarrow$ reject $R_4, R_4, R_4 \Rightarrow$ reject

$R_3, R_3, R_3, R_3 \Rightarrow$ reject $R_2 = 3.06 = 3.09 = 2.25$ ~~xy~~   reject

$R_2 = 0.3$ accept H_o

Question three

A,B وهو سؤال الامتحان في 2018 و 2017 look 😊

look you 😊

Mostafa Abdelkarem

نَ بمجلة المنح والاصطاد ك ٢

بحمد الله يارب ارزقنا الخير

خرجنا أعضاء من الجيش

Mostafa Abdelkarem