

國立臺灣海洋大學 101 學年度研究所碩士班暨碩士在職專班入學考試試題

考試科目：統計學

系所名稱：海洋事務與資源管理研究所碩士班甲組

*可使用計算器

1.答案以橫式由左至右書寫。2.請依題號順序作答。

PART I：(共 50 分)

1. 針對不同資料性質以及變項個數應採用不同的檢定方法，請問以下情況應採用何種檢定？並說明何種情況使用母數統計，何種情況使用無母數統計？(15 分)

樣本性質	母數統計	無母數統計
單一樣本		
二獨立樣本差異比較		
二成對樣本差異比較		
二變項間關聯		
多組獨立樣本差異比較		

2. 當進行抽樣調查時，會期望樣本結構具有代表性，假設抽樣調查樣本中男性為 115 人，女性為 85 人，該樣本結構是否符合 1:1 性比？請完整說明執行本檢定之假設、檢定統計量以及判定結果(15 分)。

3. 假設你到貢寮、桃園、高雄取得數尾鰻魚苗測量體長得到下表，請問你三地鰻魚苗體長是否有顯著差異？請說明(1)採用檢定方式之前提(assumption), (2) 假設(hypothesis), (3) 檢定表(summary table). (4)結果，(5)如果檢定有差異，如何比較哪二組有差異？(20 分)

Sample(x)	貢寮	桃園	台南
1	5.2	11.4	7.2
2	11.5	9.1	15.9
3	6.3	6.6	10.3
4	6.6	10.5	9.5
5	7.7	3.6	
6	3.8		
7	7.6		
ΣX	48.7	41.2	42.9
ΣX^2	374.03	379.54	500.99

備註：

$$F_{0.05(2,12)}=3.89 ; F_{0.05(2,13)}=3.81 ; F_{0.05(2,14)}=3.74 ; F_{0.05(2,15)}=3.68 ;$$

$$t_{0.05,1} = 6.314 \quad t_{0.05,2} = 2.920 \quad \chi_{0.05,1}^2 = 3.84 \quad \chi_{0.05,2}^2 = 5.991$$

PART II : (共 50 分)

1. 解釋名詞(15 分)

- (a) central limit theory
- (b) inferential statistics
- (c) confidence interval

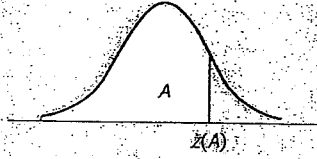
2. 某廠商宣稱其產品的不良率為 0.03，若隨機抽樣 200 件該產品，結果有 10 件不良的機率為何？(10 分)

3. 請敘述 4 種採樣的方法(sampling methods)，並描述其優缺點。若要估計全臺灣 20 歲男子的平均身高，應採用何種方法較佳？為何？(15 分)

4. 隨機從一副撲克牌(52 張)抽出一張牌，(a)結果為紅心 A 的機率為何？(b)若已知抽中是紅心，結果為紅心 A 的機率為何？(c)上述何者機率較高？為何？(10 分)

Cumulative Probabilities of the Standard Normal Distribution.

Entry is area A under the standard normal curve from $-\infty$ to $z(A)$



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

Selected Percentiles

Cumulative probability A	.90	.95	.975	.98	.99	.995	.999
$z(A)$	1.282	1.645	1.960	2.054	2.326	2.576	3.090