

# 銘傳大學 101 學年度研究所碩士班招生考試

## 企業管理學系碩士班乙組

### 第一節

#### 「生產與作業管理」試題

(第一頁共二頁) (限用答案本作答)

可使用計算機  不可使用計算機

考試時可以使用計算機。公式及相關資料請參閱附件。計算題請列出詳細計算過程。

1. The XYZ company purchases a component used in the manufacture of automobile generators directly from a supplier. XYZ needs 5000 units of this component in a year, and the demand is considered pretty stable. The ordering cost is \$49 per order. The annual inventory holding cost is 20% of the unit cost. The supplier offers the following quantity discounting scheme: (15%)

Order Quantity	Unit price (\$)
1 to 999	5.00
1000 to 2499	4.85
2500 and over	4.75

- A. What is the best order quantity? (10%)  
B. What is the minimum annual total cost? (5%)
2. A project consists of 8 activities, lettered A through H, below. For each activity, the predecessor activity is given, and probabilistic estimates of the time required to complete it. The critical path consists of activities A, C, E, F, and H.

Activity	Immediate Predecessor	Optimistic Time (days)	Most Likely time (days)	Pessimistic time (days)
A	-	2	4	6
B	A	3	6	9
C	A	2	5	11
D	-	2	10	12
E	C, D	4	8	15
F	B, E	2	4	12
G	D	3	4	11
H	F, G	1	1	1

- A. What is the expected completion time and its variance of the project? (20%)  
B. What is the probability of finishing this project in 21 days or less? (10%)
3. A manufacturer produces connector leads for electronic ignition components. A customer wants to place an order that specifies the length of the connector leads to be 8.000 +/- 0.010 cm. The customer wanted to know the manufacturer's process capability, and he took a few samples from the production process. His analysis showed that the process mean of the lead length was 8.003 cm with a standard deviation of 0.002 cm.
- A. What are the UTL and LCL? (10%)  
B. What is the manufacturer's  $C_{pk}$ ? (10%)  
C. What can the customer conclude about the manufacturer's process? (5%)
4. All processes are constrained by the bottlenecks. What are the characteristics of a bottleneck? How can you deal with bottlenecks? Use an example to illustrate your answers. (20%)
5. Product A has to be assembled with the following bill-of-material. The order lead time for product A is two weeks, and one week for component C.

本試題係兩面印。  
Exam Printed on 2 sides.

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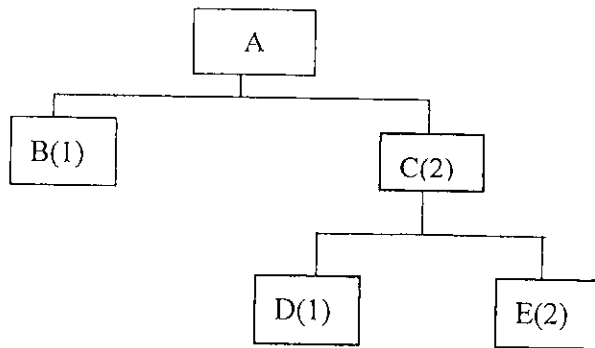
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### 第一節

#### 「生產與作業管理」試題

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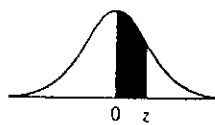


Finish the following MRP report with correct numbers of each part/component required based on the BOM. (10%)

	Week	1	2	3	4	5	6	7
Gross requirements (A)				70	30	30	60	80
On-hand	60							
Net requirement								
Planned order release								
Gross requirements (C)								
On-hand	100							
Net requirement								
Planned order release								

公式及相關資料:

表格中的數值為  $z = 0$  與該  $z$  值之間的面積。



本試題係兩面印刷  
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z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2703	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986

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