Management Optional Test 1- Paper II

Time Allowed- Three hours   Maximum Marks- 250

INSTRUCTIONS

1. Please read each of the following instructions carefully before attempting questions.

2. There are 8 questions divided into Two Sections. The candidate has to attempt 5 questions in all. Questions No 1 and 5 and compulsory and out of remaining, any 3 are to be attempted choosing at least 1 question from each section.

3. Assume suitable data, if considered necessary, also indicate the same clearly.

Keep the following handy, before you start attempting this test paper.

(a) Standard Normal distribution table (b) t distribution table (c) Chi-Square distribution table (d) F distribution table (e) Two Graph papers

Note: Do not open the test paper, unless you are ready to appear in the mock test for next 3 hours.

For any discussion, clarification or feedback, contact us at contact@humanperitus.com

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Are you targeting the **UPSC Civils Exam with a Management optional** in 2023 or 2024?

The preparation plan at Human Peritus has 5 components:

1. *Coaching classes* for approximately 350-400 hours to cover 100% of the syllabus. (View a few videos on our website to assess the style and quality of teaching.)

2. Special *numerical classes* for around 25 identified topics frequently asked in exams, such as CPM-PERT, Aggregate Planning, Capital Budgeting, Accounting, Hypothesis Testing, ANOVA Decision tree, etc.

3. *Printed booklets* to cover the entire syllabus. (Examine the sample booklets on our website to assess the quality of content.)

4. Detailed solutions for every *PYQ question from 2000 to 2023*. (Check out sample PYQs in the middle of this page.)

5. *Mock test papers* and answer writing practice. (Evaluate the quality of our mock tests on the website.)

By following this **5 points approach** for approx. one year, you can rely on us completely for 100% coverage and the confidence to face any possible question in the actual UPSC exam. Our promise is that the Management optional is our responsibility. You can focus on the GS paper.

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Section A

1. (a) Describe the characteristics of a Bernoulli process. How is a Bernoulli process associated with the binomial distribution? (10)

1. (b) What is Rapid Application Development (RAD)? Describe the tools that are commonly included in RAD packages. What capabilities can they provide? (10)

1. (c) (i) What is the central limit theorem? Does the central limit theorem specify that individual cases follow a normal distribution?
(ii) Why is it correct to say, "We are 95% sure that the population mean is between Rs 15.85 and Rs 19.36" but not proper to say, "The probability is 0.95 that the population mean is between Rs 15.85 and Rs 19.36"? (5+5)

1. (d) (i) List the assumptions of the basic single-server queuing model (Model A, or M/M/1).
(ii) Harish bakery prepares all its cakes between 4 a.m. and 6 a.m. so they will be fresh when customers arrive. Day-old cakes are virtually always sold, but at a 50% discount off the regular Rs 10 price. The cost of baking a cake is Rs 6, and demand is estimated to be normally distributed, with a mean of 25 and a standard deviation of 4. Find out the optimal stocking level. (5+5)

1. (e) Identify five people, along with their contributions, who have contributed to the theory and techniques of Operations Management. (10)

2. (a) The Vice President for Human Resources for a large manufacturing company noticed an increase in absenteeism that he thinks is related to the general health of the employees. Four years ago, in an attempt to improve the situation, he began a fitness program in which employees exercise during their lunch hour. To evaluate the program, he selected a random sample of eight participants and found the number of days each was absent in the six months before the exercise program began and in the last six months. Below are the results. At the 0.05 significance level, can he conclude that the number of absences has declined? Estimate the p-value. (15)

Employee	Before	After
1	6	5
2	6	2
3	7	1
4	7	3
5	4	3
6	3	6
7	5	3
8	6	7

2. (b) Once a candidate is selected after clearing all stages of written, interview, group discussion, the Indian Air Force conducts a physical examination to assess the physical suitability of the candidate. It involved the number of activities, which are listed in the table. The average time of each activity is also given in minutes.

Activity	Average time
Medical history	10
Blood tests	8
Eye examination	5
Measurements (e.g., weight, height, blood pressure)	7
Medical examination	16
Psychological interview	12
Exit medical evaluation	10

These activities can be performed in any order, but there are two exceptions. The Medical history must be taken first, and Exit medical evaluation is last. At present, there are three paramedics and two physicians on duty during each shift. Only physicians can perform exit evaluations and conduct psychological interviews. Other activities can be carried out by either physicians or paramedics.
(i) Develop a layout with a precedence diagram and balance the line.
(ii) How many candidates can be evaluated per hour?
(iii) Which activity accounts for the current bottleneck?
(iv) What is the total idle time per cycle and balance delay? (6+3+3+3)

2. (c) During June 2021, the income tax return filing portal of Income Tax Department witnessed technical glitches for several weeks. The portal was developed by one of major IT companies named Infosys. What are key challenges for development of e-Governance projects? Which challenges are unique to country like India? How these challenges should be addressed? (20)

3. (a) Karnal's machine shop sells a variety of tractors for agricultural purposes. A farmer wants to purchase a Mahindra JIVO 474 DI tractor from the shop. The model JIVO 474 DI sells for Rs 1,80,000, but the shop is out of this model. The farmer says he will wait for the shop to get a model JIVO 474 DI in stock. The owner of Karnal's machine shop knows that there is a wholesale market for JIVO 474 DI from which he can purchase. The owner can buy an JIVO 474 DI today for Rs 1,50,000, or he can wait a day and buy an JIVO 474 DI (if one is available) tomorrow for Rs 1,25,000. If at least one JIVO 474 DI is still available tomorrow, the owner can wait until the day after tomorrow and buy an JIVO 474 DI (if one is still available) for Rs 1,10,000.

There is a 0.40 probability that there will be no model JIVO 474 DI available tomorrow. If there are model JIVO 474 DI available tomorrow, there is a 0.70 probability that by the day after tomorrow, there will be no model JIVO 474 DI available in the wholesale market. Three days from now, it is certain that no model JIVO 474 DI will be available on the wholesale market. What is the maximum expected profit that the owner of shop can achieve? What should the owner do? (10)

3. (b) Demand at Manali Trails Ski Resort has a seasonal pattern. Demand is highest during the winter, as this is the peak ski season. However, there is some ski demand in the spring and even fall months. The summer months can also be busy as visitors often come for summer vacation to go hiking on the mountain trails. The owner of the Resort would like to make a forecast for each season of the next year. Total annual demand has been estimated at 4000 visitors. Given the last two years of historical data, what is the forecast for each season of the next year? (5)

Season	Visitors	
	Year 1	Year 2
Fall	200	230
Winter	1400	1600
Spring	520	580
Summer	720	831

3. (c) (i) Explain the term 'concurrent engineering'. Why is it important? What is reverse engineering?
(ii) What is the purpose of phantom bills, K-bills, and modular bills of material? Explain each of them.
(5+5)

3. (d) Vishal produces 300 units of a product per hour and 30 units are needed to fill a container. It takes 15 minutes to receive the materials needed from the previous workstation, in an assembly line. The company currently uses a safely stock of 10 percent. Determine the number of kanbans needed between Vishal's station and the previous process. (10)

3. (e) The electricity department of a small town tracks the consumer complaints received per week.

Week	No. Of complaints
1	4
2	5
3	4
4	11
5	3
6	9

(i) What type of control chart would you use to monitor this process? Give Reasons.
(ii) What are the three-sigma control limits for this process? Assume that the historical complaint rate is unknown.
(iii) Is the process in control, according to the control limits? Why or why not?
(iv) Assume that the historical complaint rate has been four calls a week. What would the 3-sigma control limits for this process be now? Has the process been in control according to the control limits? (3+5+4+3)

4. (a) Professor J.K. Mitra teaches two sections of Strategic Management at FMS Delhi, which combined will result in 130 final exams to be graded. Professor Mitra has two teaching assistants (TAs), Juhi and Ankur, who will grade the final exam. There is a three-day period between the time the exam is administered and when final grades must be posted. During this period Juhi has 14 hours available and Ankur has 12 available hours to grade the exams. It takes Juhi an average of 8.4 minutes to grade an exam, and it takes Ankur 15 minutes to grade an exam; however, Juhi's exams will have errors that will require Professor Mitra to ultimately regrade 12% of his exams, while only 5% of Ankur's exams will require regrading. Professor Mitra wants to know how many exams to assign to each TA to grade in order to get all of them graded, but he also wants to minimize the number of exams that he will be required to regrade. Formulate a linear programming model for this problem. Solve this model using graphical analysis. (15)

4. (b) A regional distributor purchases discontinued appliances from various suppliers and then sells them on demand to retailers in the region. The distributor operates 5 days per week, 52 weeks per year. Only when it is open for business can orders be received. Management wants to re-evaluate its current inventory policy, which calls for order quantities of 440 counter-top mixers. The following data are estimated for the one product, mixer:

Average daily demand = 100 mixers

Standard deviation of daily demand = 30 mixers

Lead time = 3 days

Holding cost = Rs 9.40/unit/year

Ordering cost = Rs 35/order

Cycle-service level = 92 percent

The distributor uses a continuous review system.

(i) What order quantity Q, and reorder point, R, should be used?

(ii) What is the total annual cost of the system?

(iii) If on-hand inventory is 40 units, one open order for 440 mixers is pending, and no backorders exist, should a new order be placed? (5+3+2)

4. (c) The Information Systems plan should be linked to the strategic plan for the overall organization. Why is this important? Discuss the role of the Chief Information Officer (CIO) and the implications of this role to the objectives of the form. (10)

4. (d) (i) What is the difference between authorized and authenticated users?

(ii) Identify the five factors that contribute to the increasing vulnerability of information resources and how a firm can address these vulnerabilities?

(iii) What is big data? Identify three characteristics associated with big data. What is Hadoop? (5+5+5)

Section B

5. (a) List down objectives of the Information Technology Act 2000. What is digital signature and how it works? (10)

5. (b) Resource-based view theory asserts that resources are actually what helps a firm exploit opportunity and neutralize threats. Examine. How does VRIO framework helps in identifying competencies? (10)

5. (c) Using the concepts of Purchasing Power Parity (PPP) and law of one price, explain how changes in the exchange rate between two countries' currencies is linked to changes in the countries' price levels. (10)

5. (d) List at least three Chambers of Commerce and Industry in India. How are these chambers aiding in facilitating interactions between the Business and Government? (10)

5. (e) What reasons account for firms' decisions to use acquisition strategies as one means of achieving strategic competitiveness? Explain with examples from Indian context. (10)

6. (a) What are the challenges for the development of backward regions in India? Give a brief account on Transformation of Aspirational District programme. (15)

6. (b) How 'Essential Commodity' is defined in the Essential Commodities Act, 1955? Highlight the objectives of the Essential Commodities Act, 1955. (10)

6. (c) As per a report published by PIB in August 2021, in India, 84 Public Sector Undertakings (state-run companies) were in a loss as of 31st March 2020, with their total stress amounting to over Rs 44,000 crore collectively. Out of these, state-run carrier Air India, telecom companies Bharat Sanchar Nigam Ltd (BSNL) were the top two loss-making PSUs. Suggest a turnaround plan for any one of these two companies. (15)

6. (d) Analyze the factors and implications of India's decision of opting out from the Regional Comprehensive Economic Partnership (RCEP). (10)

7. (a) What is meant by public asset? Do you think Public-Private Partnership (PPP) is making public asset more efficient? Justify your argument. Discuss various types of PPP Model. (20)

7. (b) Peter Drucker says the "primary task of Strategic Management is thinking through the overall mission of a business". What is strategic intent? How does mission statement help in Strategic Management? Compare and contrast vision statements with mission statements, with examples. (15)

7. (c) Established in 1906, Hong Kong based Li & Fung is now one of the largest multinational trading companies in the developing world, with annual sales of more than $7 billion in 2020, up from just $1.2 billion in 2015. It sees itself as an expert in supply chain management for its 500 or so customers. These customers are a diverse group and include clothing retailers and consumer electronics companies. Li & Fung takes orders from customers and then shifts through its network of 7,500 independent suppliers located in 40 countries to find the right manufacturing enterprises to produce the product for customers at the most attractive combination of cost and quality. One of its customers is The Limited, Inc., a large U.S.-based chain of retail clothing stores. The Limited outsources much of its manufacturing and logistics functions to Li & Fung. The process starts when The Limited comes to Li & Fung with designer sketches of clothes for the next fashion season. Li & Fung takes the basic product concepts and researches the market to find the right kind of yarn, dye, buttons, and so on; it then assembles these into prototypes that The Limited can inspect. Once The Limited has settled on a prototype, it will give Li & Fung an order and ask for delivery within 5 weeks. The short time between an order and requested delivery is necessitated by the rapid rate of product obsolescence in the fashion clothing industry. With order in hand, Li & Fung distributes the various aspects of the overall manufacturing process to different producers depending on their capabilities and costs. For example, Li & Fung might decide to purchase yarn from a Korean company but have it woven and dyed in Taiwan. So, Li & Fung will arrange for the yarn to be picked up from Korea and shipped to Taiwan. The Japanese might have the best zippers and buttons, but they manufacture them mostly in China. So, Li & Fung will go to YKK, a big Japanese zipper manufacturer, and order the right zippers from its Chinese plants. Then Li & Fung might decide that due to constraints imposed by export quotas and labor costs, the best place to make the final garments might be in Thailand. So, everything will be shipped to Thailand. In addition, because The Limited, like many retail customers, needs quick delivery, Li & Fung might divide the order across five factories in Thailand. Five weeks after the order has been received, the garments will arrive on the shelves of The Limited, all looking like they came from one factory, with colors perfectly matched. The result is a product that may have a label that says "Made in Thailand," but it is a global product. To better serve the needs of its customers, Li & Fung is divided into numerous small, customer-focused divisions. Thus, Li & Fung uses information systems to manage,

coordinate, and control the globally dispersed design, production, and shipping process to ensure that the time between receipt of an order and delivery is minimized, as are overall costs.

Answer following questions.
(i) What are the everyday issues being faced by Li & Fung in managing its global production?
(ii) How should a globally dispersed supply chain be managed, and what is the role of Internet-based information technology in the management of global logistics?
(iii) Should the firm manage global logistics itself, or should it outsource? Discuss pros and cons of both approaches. (3+7+5)

8. (a) The first formal regulatory framework for listed companies specifically for Corporate Governance was established by the SEBI in February 2000, following the recommendations of Kumarmangalam Birla Committee Report. What have been key initiatives by the Government or Regulator since 2000 till now on Corporate Governance? What is Corporate Governance? (10)

8. (b) Write short note on the following strategy evaluation and control techniques:
(i) Balanced scorecard
(ii) McKinsey 7 S model (8+7)

8. (c) "Operating internationally exposes managers to diverse and conflicting pressures from wide-ranging groups in different nations." Enumerate the factors that affect managers decision making in international business? Describe the steps involved in assessing country risk once all relevant factors have been gathered. (15)

8. (d) "People living and working in foreign environments should be sensitive to the dangers of excessive polycentrism and excessive ethnocentrism. In such cases, usually, geocentrism is a safer approach." Do you agree with this statement? Give reasons to support your answer. (10)