

Test Series: November'2021

MOCK TEST PAPER – 2

FINAL COURSE: GROUP – II

PAPER – 5: STRATEGIC COST MANAGEMENT AND PERFORMANCE EVALUATION

Question No. 1 is compulsory

*Answer any **four** questions from the remaining **five** questions*

Time Allowed – 3 Hours

Maximum Marks – 100

1. A preliminary investigation for the Vidyut Dam Project was completed in 1962 in a South-Asian country (here-in-after referred as country) and its design was completed in 1973 with a 600 MW capacity power plant. Construction began in 1979, but was delayed due to economic, environmental and social impacts. In year 1987, technical and financial assistance was provided by the neighbouring country to said country after signing of MoU, but this was interrupted just a year later with political instability. Hence, said country was forced to take control of the project and at the first, it was placed under the direction of the irrigation department of concerned home state of said country. However, in July 1989 the Vidyut Hydro Development Corporation Limited (VHDCL) was formed to manage 1,900 MW Vidyut Hydro Power Complex; wherein 75% stake held by union government and remaining 25% stake by concerned home state government. The 1,900 MW Vidyut Hydro Power Complex comprises of Vidyut Dam & 1,000 MW Vidyut Hydro Power Plant (250MW×4), Beejuree HEP (400 MW), and Vidyut PSP (500 MW).

The Vidyut Dam is a 260.61 m (855 ft) multi-purpose high rock and earth-fill embankment dam on the Karaka River near Chapala town. Its length is 574.85 m (1,886 ft), crest width 20.11 m (66 ft), and base width 1,128.06 m (3,701 ft). The dam creates a reservoir of 4.0 cubic kilometres (~32,00,000 acre ft).

The 1,000 MW Vidyut Hydro Power Plant (Vidyut HPP) was commissioned in 2007-08 as a multipurpose project, with variable speed features which can optimize the round-trip efficiency under varying water levels in its reservoirs. Power is distributed to 10 northern states (including concerned home state) of said country. The complex will afford irrigation to an area of 2,71,139 hectares (=6,70,000 acres), irrigation stabilization to an area of 6,07,028 hectares (=15,00,000 acres), and a supply of 270 million imperial gallons ($1.23 \times 10^6 \text{ m}^3$) of drinking water per day. 162 million gallons of drinking water for around 4 million people of the neighbouring state, apart from 108 million gallons of drinking water for around 3 million people of the concerned home state. Due to regulated releases from the Vidyut storage reservoir, the existing downstream hydro projects are also benefited by way of augmentation in generation at no additional cost to them. Concerned home state also gets 15% of generated power as free. The total expenditure for this project was USD 1 billion. Since 2007-08, which was the first year of operation, VHDCL has been a profit making company.

The Vidyut Dam has been the object of protests by environmental organizations and local people of the region. The protest was against the displacement of town inhabitants and environmental consequences of the weak ecosystem. "We don't want the dam. The dam is the mountain's end" was the prominent slogan.

The relocation of nearly 1.5 lakh people or may be even more, from the area has led to protracted legal battles over resettlement rights and, ultimately, resulted in the project's delayed completion despite the fact that land acquisition was started in 1980. There is no master plan for rehabilitation nor even a clear estimate of the number of people affected. According to the 2003 status report of the public work department of Chapala town, the Dam replaced 15,550 families. This estimate excludes a large number of people who lost their lands but have not been officially recognised as project affected. Among those officially recognised, allotted with land of poor quality or with multiple ownership claims.

Near to year 2006, while filling of the reservoir has led to the reduced flow of Karaka River's water from the normal 1,000 cu ft/s (28 m³/s) to a mere 220 cu ft/s (6.3 m³/s). This reduction has been central to local protest against the dam, since the Karaka River is considered sacred river whose waters are crucial to religious beliefs.

Old Chapala town shifted and named as New Chapala Town (NCT) which is semi-ultra-modern hill station at height of 1,555-1,855 m above MSL, with better road network and district head quarter (shifted to NCT, earlier about 65 kms away from Chapala). NCT equipped with better health (got 80 bed modern hospital against 25 bed hospital in old Chapala, and also got 5 primary health centres with additional 75 bed facility in total) and education facilities (hostel facility of 900 students, degree college with university campus which can accommodate 440 residential students and faculties, and against 1 inter college in old Chapala, 5 inter-college established (one in NCT and 4 in nearby villages). This all done at project cost.

In addition to the human rights concerns, the project has spurred concerns about the environmental consequences of locating such a large dam in the fragile ecosystem of the foothills of great mountain range. There are further concerns regarding the dam's geological stability. The Vidyut dam is in a major geologic fault zone. This region was the site of a 6.7 magnitude earthquake in September 1992, with an epicentre 55 km (34 mi) from the dam. Dam proponents claim that the complex is designed to withstand an earthquake of 8.4 magnitude, but some seismologists say that earthquakes with a magnitude of 8.5 or more could occur in this region. Were such a catastrophe to occur, the potentially resulting dam-break would submerge numerous towns downstream, whose populations total near half a million.

In spite of concerns and protestation, operation of the Vidyut Dam continues and is completed. But VHDCL was aware of these and tried to respond in a constructive way. The spirit of CSR initiative is depicted by its CSR initiative title 'VHDC Sahridaya' (Corporate with a Human heart), wherein focus areas are:

- Shiksha - Education Development
- Svasth - Nutritional Health and Sanitation and Drinking Water Projects
- Nipun - Livelihood Generation and Skill Development Initiatives
- Unnaati - Rural & Infrastructure Development
- Yogy - Empowerment Initiatives
- Srrishti - Environment Protection Initiatives

Out of these 'VHDC Srrishti' has some special mentions, 'Environment Focused Initiatives' is working with three objectives Soil & Water Conservation, Green Energy Generation & Technology Promotions and Environment Protection & Promotion.

To conserve soil and water VHDC is working on water harvesting and water harvesting tanks (capacity 3,000 litres each) were installed in the project affected villages for rainwater harvesting. Through this activity, beneficiaries were able to store almost 9 lakh litres of rainwater during monsoon. In addition, VHDC under this program installed more than 730 LED based Solar Street Lights and more than 180 LED based Solar High Mast Lights in near-by towns and villages in year 2019-20. Moreover, to promote plantation of different fruit, fodder, and medicinal plants, VHDC planted 2,70,202 plants/sampling till now.

VHDC has won many awards in last decade in different categories including CSR domain, but most recent and relevant (for case study) among them are→

- HR Platinum Award for Training Excellence in 2019-20
- National CSR Leadership Award 2020
- CSR Innovation and Leadership Award 2020

It not only recognition in term of awards, VHDC has obtained following Certifications:

- ISO 9001:2015 Certification (Quality Management System).
- ISO 14001:2015 Certification (Environment Management System).
- OHSAS 18001:2007 Certification (Occupational Health and Safety Management System).

Required

As part of policy initiative, if VHDC is willing to implement the Triple Bottom Line (TBL) reporting initiative; then ADVISE the management regarding dimensions of TBL, and what are perspectives composed by different dimensions of TBL. Also, enumerate the challenges, expected benefits, and initiatives under each dimension in context of Vidyut Dam & Vidyut Hydroelectric Power Plant (1,000 MW). (20 Marks)

2. X Ltd. first opened its door in 1991 for business and now it is a major supplier of metals supporting over a dozen different industries and employs experts to support each industry.

These include Wood & Panel Products Manufacturing, Hearth Products, Site Furnishings, Commercial and Residential Construction etc. It has grown through devotion to its customers, dedication to customer service and commitment to quality products. The company has two divisions: Division 'Z' and Division 'E'. Each division work as an investment centre separately. Salary of each divisional manager is ₹ 7,20,000 per annum with the addition of an annual performance related bonus based on divisional return on investment (ROI). A minimum ROI of 12% p.a. is expected to be achieved by each divisional manager. If a manager only achieves the 12% target, he will not be rewarded a bonus. However, for every whole 1% point above 12% which the division achieves for the year, a bonus equal to 3% of annual salary will be paid subject to a maximum bonus of 20% of annual salary. The figures belonging to the year ended 31 March 2020 are given below:

	Division 'E' ('000)	Division 'Z' ('000)
Manager Responsible	JAM	SAM
Profit	3,940	5,290
Less: Head Office Cost	(1,368)	(2,530)
Net Profit	2,572	2,760
Non- Current Assets	29,960	19,520
Current Assets (Cash, Inventory, and Trade Receivable)	6,520	4,960
Total Assets	36,480	24,480
Trade Payable	2,800	5,920
Revenue	17,400	29,000

During the financial year 2019-20, JAM manager of Division 'E' invested ₹ 13.6 million in new equipment including an advanced cutting machine, which will increase productivity by 10% per annum. SAM, manager of Division 'Z', has made no investment during the year, even its computer system needs updation. Division 'Z''s manager has already delayed payments of its suppliers due to limited cash & bank balance although the cash balance at Division 'Z' is still better than that of Division 'E'.

Required

- (i) For each division, COMPUTE, ROI for the year ending 31 March 2020. EXPLAIN the figures used in your calculation. (6 Marks)
- (ii) COMPUTE bonus of each manager for the year ended 31 March 2020. (4 Marks)
- (iii) DISCUSS whether ROI provides justifiable basis for computing the bonuses of managers and the problems arising from its use at X Ltd. for the year ended 31 March 2020. (10 Marks)

3. Star Industries Ltd. manufactures standard heavy duty steel storage racks for industrial use. Each storage rack is sold for ₹750 each. The company produces 10,000 racks per annum. Relevant cost data per annum are as follows:

Cost Component	Budget	Actual	Actual Cost p.a. (₹)
Direct Material	5,00,000 sq. ft.	5,20,000 sq. ft.	20,00,000
Direct Labour	90,000 hrs.	1,00,000 hrs.	10,00,000
Machine Setup	15,000 hrs.	15,000 hrs.	1,50,000
Mechanical Assembly	2,00,000 hrs.	2,00,000 hrs.	30,00,000

The actual and budgeted operating levels are the same. Actual and standard rates of material procurement and hourly labor rate are also the same. Any variance in cost is solely on account of difference in the material usage and hours required to complete production. Aggressive pricing from competitors has driven down sales. A comparable rack is available in the market for ₹675 each. Vishal, the marketing manager has determined that in order to maintain the company's existing market share of 10,000 racks, Star Industries must reduce the price of each rack to ₹675.

Required

- (i) CALCULATE the current cost and profit per unit. IDENTIFY the non-value added activities in the production process. (6 Marks)
- (ii) CALCULATE the new target cost per unit for a sales price of ₹675 if the profit per unit is maintained. (2 Marks)
- (iii) RECOMMEND what strategy Star Industries should adopt to attain target cost calculated in (ii) above. (12 Marks)
4. (a) 'F' manages the school canteen (approximately 1,600 students) at Delhi. The current cash payment system requires three clerks (paid ₹90 per hour), employed for about 4 hours a day. The canteen operates approximately 240 days a year.

'F' is considering a Wireless Cash Management System (WCMS), where a student could just swipe an ID Card for payment. This system would cost ₹1,25,000 to setup and ₹36,000 per year to operate. 'F' believes that he could manage with one clerk if he were to implement the system.

Required

ADVISE 'F' on the choice of a plan, assuming working life of WCMS as 5 years. (Ignore the time value of money) (5 Marks)

- (b) The MD of P Limited, a 150 persons engineering company, decided it was time to fire the company's biggest client. Although the client provided close to 60% of the

company's annual revenue, P Limited decided that dropping this client was necessary. The client was profitable.

The MD of P Limited stated "We cannot be a great place to work without employees, and this client was bullying my employees. Its demands for turnaround were impossible to meet even with people working seven days a week. No client is worth losing my valued employees".

The initial impact on revenues was significant. However, P Limited was able to cut costs and obtain new customers to fill the void. Moreover, the dropped client later gave P Limited two projects on more equitable terms.

Required

- (i) DISCUSS the reasons behind dropping of a profitable client by P Limited.

(5 Marks)

OR

- (ii) STATE five qualitative factors that management should consider in outsourcing and make or buy decisions.

(5 Marks)

- (c) 'Xu' and 'Yu' are two divisions of the Shenzhen group. The 'Xu' division manufactures electrical components which it sells to other divisions and external customers.

The 'Yu' division has designed a new product, Product B, and has asked 'Xu' to supply the electrical component, Component A, that is needed in the new product. This will be a completely new style of component. Each unit of Product B will require one Component A. This component will not be sold by 'Xu' to external customers. 'Xu' has quoted a transfer price to 'Yu' of ₹ 180 for each unit of Component A.

It is the policy of the Shenzhen group to reward managers based on their individual division's return on capital employed.

Details of the monthly production for each division are as follows:

'Xu' Division

Output	Component A will be produced in batches of 1,000 units. The maximum capacity is 6,000 components per month.
Variable Cost	₹ 60 per component
Fixed Costs	₹ 2,00,000 (these are incurred specifically to produce Component A)

'Yu' Division

Output	Product B will be produced in batches of 1,000 units. The maximum customer demand is 24,000 units of Product B per month.
Variable Cost	₹ 36 per unit the cost of Component A
Fixed Costs	₹ 3,00,000 (these are incurred specifically to produce Component B)

The relationship between monthly customer demand and the selling price of Product B is shown below:

Demand	Selling Price per unit (₹)
1,000 units	480
2,000 units	440
3,000 units	400
4,000 units	360
5,000 units	320
6,000 units	268

Required

- (i) CALCULATE, based on a transfer price of ₹ 180 per Component A, the monthly profit that would be earned as a result of selling Product B by: 'Xu' division, 'Yu' division, Shenzhen group. (5 Marks)
 - (ii) CALCULATE the maximum monthly profit from the sale of Product B for the Shenzhen group. (5 Marks)
5. (a) ABC Limited specializes in the manufacture of chemical intermediaries in a very competitive business environment. ABC is a public listed company, with majority of its shareholders being institutional investors like mutual funds, banks and insurance companies.

It is located in a water scarce zone in Tamil Nadu. There are restrictions on the tapping and usage of groundwater under the relevant laws. Penal provisions of the law will apply in case of violations. The production process requires water and the amount of water that the company can draw is limited to 19,000 kilo-litres (1 Kilo-litre is 1,000 litres). Purchase of water is not an option as availability is highly erratic and exorbitant on cost.

The company manufactures two types of chemicals "A" and "B" and these are sold in kilograms. The company is in the process of making the business plan for the year 2021.

Based on the actual operating data for 2020 and taking into consideration the inflation and possible price increases that it can obtain from the market, the following product costing details have been arrived at:

Product	A	B
Capacity Volume kg. (not inter-changeable)	8,25,000	9,30,000
Selling Price per kg.	₹2,000	₹1,000
Variable Cost per kg.	₹1,500	₹650
Water (litre/ kg.)	12.5	10

Under the relevant income tax laws prevalent, companies with a turnover of ₹250 Cr. (Crores) or less are taxed at a lower rate of 25% as against the normal 30%. The company intends to keep its sales for 2021 equal to ₹250 Cr. or slightly lesser to avail this concessional income tax benefit.

With capacity constraints, the company has calculated that it would be still beneficial for the company to stick to ₹250 Cr. as only a marginal increase in turnover is possible over ₹250 Cr.; after a higher tax @30%, the PAT would be still lower than the PAT arrived at after doing just ₹250 Cr. and availing the lower income tax rate.

CFO asked management consultant to work out the volumes in kg. of products "A" and "B" which would give an optimal (maximum) contribution given the constraints on capacity, water usage and turnover to avail the concessional income tax benefit.

Consultant work out with the following product mix using Linear Programming. She also proposes another mix which does not meet the constraint on water usage where the company could end up drawing excess water than permitted by 113 kilo-litres but would result in an increase of ₹30 lacs in contribution. She says that it is easily possible to do this by managing reporting to the water authorities.

Product		Optimal	Suggested
A (Volume in kg.)		8,00,000	7,85,000
B (Volume in kg.)		9,00,000	9,30,000
Contribution in ₹Cr.		71.5	71.8
	Constraints		
Sales	<= 250 Cr.	250	250
Volume of "A" in kg.	<= 8,25,000	8,00,000	7,85,000
Volume of "B" in kg.	<= 9,30,000	9,00,000	9,30,000
Water usage (in KL)	<= 19,000	19,000	19,113

Required

The CFO is not satisfied with the calculations. He wants you (Sr. Finance Manager) to come up with a proper DISCUSSION. (10 Marks)

- (b) P Ltd. uses standard costing system for manufacturing its single product 'P-2'. Standard Cost Card per unit is as follows:

	(₹)
Direct Material (0.50 kg per unit)	10
Direct Labour (3 hrs @ ₹8 per hour)	24
Variable Overheads	12

Actual and Budgeted Activity Levels in units for the month of Feb'21 are:

	Budget	Actual
Production	50,000	52,000

Actual Variable Costs for the month of Feb'21 are given as under:

Direct Material	5,32,800
Direct Labour (1,50,000 hrs)	12,21,000
Variable Overheads	6,14,000

Required

INTERPRET Direct Labour Rate and Efficiency Variances. (10 Marks)

6. (a) Great Eastern Appliances Ltd. (GEAL) manufactures consumer durable products in a **very highly competitive market**. GEAL is considering launching a new product 'Kitchen Care' into the market and gathered the following data:

Expected Market Price.....₹5,000 per unit
Direct Material Cost.....₹1,850 per unit
Direct Labour Cost.....₹80 per hour
Variable Overhead Cost.....₹1,000 per unit
Packing Machine Cost (specially to be purchased for this product)...₹5,00,000

GEAL expects the selling price for the new product will continue throughout the product's life and a total of 1,000 units can be sold over the entire lifetime of the product.

Direct labour costs are expected to reduce as the volume of output increases due to the effects of 80% learning curve (index is -0.3219). The expected time to be taken for the first unit is 30 hours and the learning effect is expected to end after 250 units have been produced. Units produced after first 250 units will take the same time as the 250th unit.

Required

- (i) CALCULATE the expected total labour hours over the life time of the product 'Kitchen Care'. (3 Marks)
- (ii) CALCULATE profitability of product 'Kitchen Care' that GEAL will earn over the life time of the product. (3 Marks)
- (iii) CALCULATE average target labour cost per unit over the life time of the product if GEAL requires average profit of ₹800 per unit, to achieve its long term objectives. (2 Marks)
- (iv) Implementation of the target costing technique requires intensive marketing research. Why intensive marketing research is required to implement target costing technique? COMMENT. (2 Marks)

Note: $250^{-0.3219} = 0.1691$, $249^{-0.3219} = 0.1693$

- (b) ZYB, a leading school of management in the heart of India's financial centre of Mumbai, preparing its budget for 2021. In previous years, the director of the school has prepared the budget without the participation of senior staff and presented it to the school board for approval.

Last year the Board blasted the director over the lack of participation of his senior staff in the budget process for 2020 and requested that for the 2021 budget the senior staff were to be involved.

Required

LIST the potential advantages and disadvantages to the ZYB of involving the senior staff in the budget preparation process. (10 Marks)