

**Question 1 is compulsory and attempt any four out of remaining five questions**

**Question 1:**

'HAL' is a manufacturer, retailer, and installer of Cassette Type Split AC for industrial buyers. It started business in 2001 and its market segment has been low to medium level groups. Until recently, its business model has been based on selling high volumes of a standard AC, brand name 'Summer', with a very limited degree of customer choice, at low profit margins. 'HAL's current control system is focused exclusively on the efficiency of its manufacturing process and it reports monthly on the following variances: material price, material usage and manufacturing labour efficiency. 'HAL' uses standard costing for its manufacturing operations. In 2018, 'HAL' employs 20 teams, each of which is required to install one of its 'Summer' AC per day for 350 days a year. The average revenue per 'Summer' AC installed is Rs. 36,000. 'HAL' would like to maintain this side of its business at the current level. The 'Summer' installation teams are paid a basic wage which is supplemented by a bonus for every AC they install over the yearly target of 350. The teams make their own arrangements for each installation and some teams work seven days a week, and up to 12 hours a day, to increase their earnings. 'HAL' usually receives one minor complaint each time a 'Summer' AC is installed and a major complaint for 10% of the 'Summer' AC installations.

In 2016, 'HAL' had launched a new AC, brand name 'Summer – Cool'. This AC is aimed at high level corporate and it offers a very large degree of choice for the customer and the use of the highest standards of materials, appliances, and installation. 'HAL' would like to grow this side of its business. A 'Summer- Cool' AC retails for a minimum of Rs. 1,00,000 to a maximum of Rs. 5,00,000. The retail price includes installation. In 2017 the average revenue for each 'Summer – Cool' AC installed was Rs. 3,00,000. Currently. 'HAL' has 7 teams of 'Summer – Cool' AC installers and they can install up to 240 AC a year per team. These teams are paid salaries without a bonus element. 'HAL' has never received a complaint about a 'Summer – Cool' AC installation. 'HAL's business is generated from repeat orders, recommendations, and local press advertising. It employs three sales executives who earn an annual salary of Rs. 3,00,000 each. It offers a six – month money back guarantee and this has to be fulfilled for 1% of its installations. 'HAL' has always been in profits but was shocked to see that in its results in 2017 it only earned 0.2% net profit on its turnover.

**Required:**

- (i) EVALUATE the appropriateness of 'HAL's current control system.
- (ii) RECOMMEND four Critical Success Factors (CSFs) which could assist 'HAL' in achieving future success.

- (iii) ADVISE 'HAL' about the changes it could implement in its standard costing and reporting system to achieve improved control. **(20 marks)**

**Question 2:**

**(A)**

The following data pertain to two divisions, W<sub>1</sub> and W<sub>2</sub>, of a large Shipping Company.

	<b>W<sub>1</sub>(Rs.)</b>	<b>W<sub>2</sub> (Rs.)</b>
Profit	1,20,00,000	31,20,000
Investment	9,60,00,000	1,56,00,000

Cost of Capital at 10%

**Required:**

INTERPRET the conflicting results based on financial performance measure ROI and RI. **(5 marks)**

**(B)**

SSK Pharmaceuticals Ltd. is producing medical products (pills, balms etc.) and can be called high volume based production environment. There are several different automated production machines located in the plant, through which production of medicines is accomplished and fulfilled the demands. Plant operates in double shift a day each consisting of 8 hours with 30 minutes' lunch break and tea break of 15 minutes. Following data pertains to automated machine 'X – 78'.

**14 February 2018, Wednesday**

Breakdown, repair and start up time	68 minutes
Standard cycle time	2.5 minutes per tablet
Quality loss due to scrap, rework and rejection	50 tablets
Total quantity produced	280 tablets

**Required :**

COMMENT on OEE. **(5 marks)**

**(C)**

West Coast community operates Homelessness Services (HS) on a not-for-profit basis as a local solution to local housing needs. The primary objective is to meet the accommodation needs of persons within its locality targeting those living in the low/middle income groups and senior citizens. Accommodation is basically furnished; it consists of a small house, with kitchen, bathroom, bedroom/(s), and a sitting room. HS manages 450 such houses across various localities. Exclusive Services (ES) is a profit-seeking organisation which provides rented accommodation to the public. ES manages 200 such houses across localities similar to HS' operations.

Income and Expenditure accounts for the year ended 31<sup>st</sup> March 2018 were as follows:

	HS (Rs.)	ES (Rs.)
Rent Received	1,02,98,600	1,09,98,000
Less:		
Employee Costs	24,00,000	38,00,000
Planned Maintenance and Substantial Repairs	34,19,500	10,41,000
Running Repairs	23,91,600	6,38,000
Miscellaneous Operating Costs	15,27,500	11,75,000
Insurance, Property Taxes, and Interest etc.	13,15,500	18,75,000
Operating (Deficit)/ Surplus	(7,55,500)	24,69,000

#### **Operating Information** in respect of the year ended 31<sup>st</sup> March 2018

was as follows:

House and rental information:

Size of House	Number of Houses		Rent per Week (Rs.)	
	HS	ES	HS	ES
1 Bedroom +	40	20	400	750
2 Bedrooms +	80	40	450	800
3 Bedrooms +	250	140	500	1,175
4 Bedrooms +	80	Nil	700	N.A.

HS had certain houses that were unoccupied during part of the year. The rents lost as a consequence of unoccupied properties amounted to Rs.18,17,400. ES did not have any unoccupied houses at any time during the year.

Employees were paid as follows:

Number of Staff		Salary per Staff Member (Rs.) per annum	
HS	ES	HS	ES
1	2	3,00,000	5,00,000
2	2	2,50,000	3,00,000
4	11	2,00,000	2,00,000
8	-	1,00,000	-

Planned maintenance and substantial repairs undertaken:

Nature of Work	Number of Houses		Cost per House (Rs.)	
	HS	ES	HS	ES
Miscellaneous Building Work	10	-	12,500	-
Sanitary Fittings (Kitchen + Bathroom) [all are the same size]	45	5	26,100	52,200

AC Upgrades/ Replacements	8	-	15,000	-
Replacement of Wooden Structure for 3-Bedroomed Houses	50	13	40,000	60,000

Running Repairs Information:

Classification of Repair	Number of Repair Undertaken		Total Cost (Rs.)
	HS	ES	
Emergency	480	160	6,72,000
Urgent	990	376	11,28,000
Non-urgent	560	102	5,91,600

Each repair undertaken by ES costs the same irrespective of the classification of repair.

**Required:**

Critically EVALUATE how the management of Homelessness Services could measure the 'Value for Money' of its service provision during the year ended 31 March 2018. **(10 Marks)**

**Question 3:**

**(A)**

Eastern Company Ltd. has **two Divisions** namely Casnub Bogie Division (CBD) and Wagon Division (WD). CBD manufactures Casnub Bogies and WD manufactures BOBN types of Wagons. To manufacture a Wagon WD needs four Casnub Bogies. CBD is the only manufacturer of the Casnub Bogies and supplies both WD and outside customers. Details of CBD and WD for the coming financial year 2014 – 15 are as follows:

	CBD	WD
Fixed Costs (Rs.)	9,20,20,000	16,45,36,000
Variable Cost per unit (Rs.)	2,20,000	4,80,000*
Capacity per month (units)	320	12

\*excluding transfer costs

Market research has indicated that the demands in the market for Eastern Company Ltd.'s products at different quotations are as follows :

For Casnub Bogies : Quotation price of Rs. 3,20,000 no tender will be awarded, but demand will increase by 30 Casnub Bogies with every Rs. 10,000 reduction in the unit quotation price below Rs. 3,20,000.

For Wagons : Quotation price of Rs. 17,10,000 no tender will be awarded, but the demand for Wagons will be increased by two Wagons with every Rs. 50,000 reduction in the unit quotation price below Rs. 17,10,000.

**Required:**

- (i) Calculate the unit **quotation price** of the Wagon that will maximise Eastern Company Ltd.'s profit for the financial year 2014 – 15. **(4 marks)**
- (ii) Calculate the unit quotation price of the Wagon that is likely to emerge if the **divisional managers of CBD and WD both set quotation prices** calculated to **maximise divisional profit** from sales to outside customers and the transfer price is set at market selling (quotation) price. **(6 marks)**

[Note : If  $P = a - bQ$  then  $MR = a - 2bQ$ ]

**(B)**

A company produces and sells a single product. The cost data per unit for the year 2018 is predicted as below:

Rs. per unit	
Direct Material	35
Direct Labour	25
Variable Overheads	15
Selling Price	90

The company has forecast that demand for the product during the year 2018 will be 28,000 units. However, to satisfy this level of demand, production quantity will be increased?

There are no opening stock and closing stock of the product.

The stock level of material remains unchanged throughout the period.

The following additional information regarding costs and revenue are given:

- 12.5% of the items delivered to customers will be rejected due to specification failure and will require free replacement. The cost of delivering the replacement item is Rs.5 per unit.
- 20% of the items produced will be discovered faulty at the inspection stage before they are delivered to customers.
- 10% of the direct material will be scrapped due to damage while in storage. Due to above, total quality costs for the year is expected to be Rs.10,75,556.

The company is now considering the following proposal:

1. To **introduce training programmes** for the workers which, the management of the company believes, will reduce the level of faulty production to 10%. This training programme will cost Rs.4,50,000 per annum.
2. To avail the services of **quality control** consultant at an annual charges of Rs.50,000 which would reduce the percentage of faulty items delivered to customers to 9.5%.

**Required:**

- (i) PREPARE a statement of **expected quality costs** the company would incur if it accepts the proposal. Costs are to be calculated using the four recognized quality costs heads. **(8 marks)**
- (ii) Would you **RECOMMEND the proposal?** Give financial and non-financial reasons. **(2 marks)**

**Question 4:**

**(A)**

S Ltd. produces and sells a single product. The product is manufactured by mixing two raw materials Q and R. The standard cost data of the product is as follows :

Raw Material input :	Q 3 kg @ Rs. 18.00 per kg	Rs. 54.00
	R 7 kg @ Rs. 6.00 per kg	Rs. 42.00
Raw material cost per kg of input		Rs. 96.00
Yield		96%
Raw material cost per kg of output		Rs. 100
Fixed production overheads per kg of output		Rs. 8.00
Total standard cost per kg of output		Rs. 108.00

The budgeted and actual data are as follows:

<b>Budgeted data</b>		<b>Actual data</b>	
Sales	72,000 kg	Sales	71,000 kg
Production	70,000 kg	Production	69,000 kg
Opening inventory	2,000 kg (valued at standard cost)	Cost per kg of Q	Rs. 18.10
		Cost per kg of R	Rs. 5.80
Selling price per kg	Rs. 200	Selling price per kg	Rs. 203.00
Fixed production overheads	Rs. 5,60,000	Fixed production overheads incurred	Rs. 5,08,000
		Input of Q	2,21,000 kg
		Input of R	4,79,000 kg

The fixed production overhead absorption rate is based on the budgeted production.

**Calculate:**

Sales price variance, Sales volume variance, Material price variance. Material mix variance, Material yield variance, Fixed overhead expenditure variance and Fixed overhead volume variance.

**(10 marks)**

**(B)**

Gulf Oil Ltd., an Indian oil company, is the leading manufacturer of all streams of oil and engaged in refining (processing capacity 50 MMTPA of crude oil), pipeline transportation and marketing of petroleum products to research & development, exploration & production, marketing of natural gas and petrochemicals. The company has high-caliber employees, sophisticated technologies and leading-edge R&D. By venturing itself into the renewables and the nuclear energy, Gulf Oil has grown and evolved itself from a pure petroleum refining and marketing company to a full-fledged energy company. Due to government's new environmental policy, environmental report is mandatorily required to be submitted yearly for the prescribed industries polluting environment substantially otherwise would be penalized. Energy sector also falls in these prescribed industries. Gulf Oil has already taken initiatives to control air pollution and water pollution like use of low sulphur fuel oil in boilers and heaters & NOx burners to minimize gas emission, network of underground sewers for segregated collection of various wastewater streams for waste water management, however while preparing and analyzing environmental report, Mr. K. Singh, CEO, is not happy with high environmental cost in terms of Waste (oily / chemical / biological sludge, scrape batteries, e-waste, chemical containers, effluents etc.), Raw Material Consumption, Water Consumption, Energy and Transportation. He raised his concern with Board of Directors and they have decided to appoint you as an environmental management accounting expert to manage environmental cost.

**Required:**

APPLYE **environmental Management Accounting** in Gulf Oil to manage environmental costs. **(10 marks)**

**Question 5:**

**(A)**

A company is planning to improve its profit level at least by 10% from the **preliminary budget** estimates of a profit of Rs.32,80,000 for the coming year. It has worked out the following profit improvement plan:

- (i) In the year just concluded the sales of the company were 10% of the total market of 12,00,000 units. For the preparation of the original budget estimate, the same market demand and the same share of market for the company was envisaged. Now it has been estimated that the total market demand will increase by 18 % and the company's market share will increase to 11% from the present level of 10%.
- (ii) The products are sold in two sizes - large and medium. The sales mix of each size was 50:50 so far. Now it is planned that the sales will be 40% of large and 60% of medium. The medium packs and large packs have a contribution of Rs.10 and Rs.8 per pack respectively. The budget proposes to raise the price in such a manner that the contribution per pack will increase by Rs.0.60 for each size.
- (iii) There will be an additional expenditure on sales promotion worth Rs.78,000.
- (iv) The company proposes to save Rs.9,000 by saving on interest cost in the coming year by better financial management.

You are required to draw a profit improvement plan in financial terms and spell out separately the effect of various factors on profit. (11 marks)

(B)

JTC Ltd. is specialists in the manufacture of sports goods. They manufacture croquet mallets but purchase the wooden balls, iron arches and stakes required to complete a croquet set.

Mallets consist of a head and handle. Handle use 2.5 board feet per handle at Rs. 50 per board foot. Spoilage loss is negligible for the manufacture of handles. Heads frequently split and create considerable scrap.

A head requires 0.40 board feet of high quality lumber costing Rs. 60 per board foot. Spoilage normally works out to 20% of the completed heads. 4% of the spoiled heads can be salvaged and sold as scrap at Rs. 10 per spoiled head.

In the department machining and assembling the mallets, 6 men work 8 hours per day for 25 days in a month. Each worker can machine and assemble 12 mallets per uninterrupted 40 minutes time frame. In each 8 hours working day, 15 minutes are allowed for coffee – break, 8 minutes on an average for training and 9 minutes for supervisory instructions. Besides 10% of each day is booked as idle time to cover checking in and checking out changing operations, getting materials and other miscellaneous matters. Workers are paid at a comprehensive rate of Rs. 6 per hour.

The department is geared to produce 20,000 mallets per month and the monthly expenses of the department are as under :

	Rs.
Finishing and painting of the mallets	20,000
Lubricating oil for cutting machines	600
Depreciation for cutting machine	1,400
Repairs and maintenance	200
Power to run the machines	400
Plant Manager's salary	9,400
Other overheads allocated to the department	60,000

**Required:**

As the mallets are machined and assembled in lots of 250, prepare a total cost sheet for one lot and advise the management on the selling price to be fixed per mallet in order to ensure a minimum 33.33% margin on the selling price.

(9 marks)

**Question 6:**

(A)

YP Ltd. (YPL) manufactures and sells one product called "YEIA". Managing Director is not happy with its current purchasing and product system. There has been considerable discussion at the corporate level as to use of 'Just in Time' system for "YEIA". As per the opinion of managing director of YPL Ltd. – "Just – in – time system is a pull system, which responds to demand, in contrast to a push system, in which

stocks act as buffers between the different elements of the system such as purchasing, production and sales. By using Just in Time system, it is possible to reduce carrying cost as well as other overheads".

YPL is dependent on contractual labour which has efficiency of 95%, for its production. The labour has to be paid for minimum of 4,000 hours per month to which they produce 3,800 standard hours.

For availing services of labour above 4,000 hours in a month, YPL has to pay overtime rate which is 45% premium to the normal hourly rate of Rs. 110 per hour. For avoiding this overtime payment, YPL in its current production and purchase plan utilizes full available normal working hours so that the higher inventory levels in the month of lower demand would be able to meet sales of month with higher demand level. YPL has determined that the cost of holding inventory is Rs. 70 per month for each standard hour of output that is held in inventory.

YPL has forecast the demand for its products for the first six months of year 2017 as follows:

Month	Demand (Standard Hrs)
Jan' 17	3,150
Feb' 17	3,760
Mar' 17	4,060
Apr' 17	3,350
May' 17	3,650
Jun' 17	4,830

Following other information is given :

- (a) All other production costs are either fixed or are not driven by labour hours worked.
- (b) Production and sales occur evenly during each month and at present there is no stock at the end of Dec' 16.
- (c) The labour are to be paid for their minimum contracted hours in each month irrespective of any purchase and production system.

**Required :**

As a chief accountant, you are requested to comment on managing director's view.

**(10 marks)**

**(B)**

Z Plus Security (ZPS) manufactures surveillance camera equipment that are sold to various office establishments. The firm also installs the equipment at the client's place to ensure that it works properly. Each camera is sold for Rs. 2,500. Direct material cost of Rs. 1,000 for each camera is the only variable cost. All other costs are fixed. Below is the information for manufacturing and installation of this equipment :

Particulars	Manufacture	Installation
Annual Capacity (camera units)	750	500
Actual Yearly Production and Installation (camera units)	500	500

**Required :**

The questions below are separate scenarios and are not related to each other.

- (i) IDENTIFY the **bottleneck in the operation cycle** that ZPS should focus on improving. Give reasoning for your answer. **(2 marks)**
  - (ii) An **improvement in the installation technique** could increase the number of installations to 550 camera units. This would involve total additional expenditure of Rs. 40,000. ADVISE ZPS **whether they should implement** this technique? **(3 marks)**
  - (iii) Engineers have identified ways to **improve manufacturing technique** that would increase production by 150 camera units. This would involve a cost Rs. 100 per camera unit due to necessary changes to made in direct materials. ADVISE ZPS **whether they should implement this new technique**. **(3 marks)**
- (C) Name the **4Ds** of IT Cost Optimization Framework. **(2 marks)**