**(GI–1, GI–2+4, GI–3, GI–5+6 & VDI–1, VI–1, SI–1)**
**DATE: 19.09.2020      MAXIMUM MARKS: 100      TIMING: 3¼ Hours**

## PAPER : COSTING

**Answer to questions are to be given only in English except in the case of candidates who have opted for Hindi Medium. If a candidate who has not opted for Hindi Medium. His/her answer in Hindi will not be valued.**
**Question No. 1 is compulsory.**
**Candidates are also required to answer any Four questions from the remaining Five Questions.**
**In case, any candidate answers extra question(s)/sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.**
**Wherever necessary, suitable assumptions may be made and disclosed by way of note.**

**Question 1:**
**(a)** CALCULATE from the following figures:
(i) Efficiency ratio
(ii) Activity ratio and
(iii) Capacity ratio.

| | |
|---|---|
| Budgeted Production | 880 units |
| Standard Hours per unit | 10 hours |
| Actual Production | 750 units |
| Actual Working Hours | 6,000 hours |

**(5 Mark)**

**(b)** CALCULATE a suggested fare per passenger-km from the following information for a Mini Bus:
(i) Length of route: 30 km
(ii) Purchase price Rs. 4,00,000
(iii) Part of above cost met by loan, annual interest of which is Rs. 10,000 p.a.
(iv) Other annual charges: Insurance Rs. 15,000, Garage rent Rs. 9,000, Road tax Rs. 3,000 , Repairs & maintenance Rs. 15,000, Administrative charges Rs. 5,000.
(v) Running Expenses: Driver & Conductor Rs. 5,000 p.m., Repairs/ Replacement of tyre-tube Rs. 3,600 p.a., Diesel and oil cost per km Rs. 5.
(vi) Effective life of vehicle is estimated at 5 years at the end of which it will have a scrap value of Rs. 10,000.
(vii) Mini Bus has 20 seats and is planned to make Six no. two way trips for 25 days/p.m.
(viii) Provide profit @ 20% of total revenue.

**(5 Mark)**

**(c)** The M-Tech Manufacturing Company is presently evaluating two possible processes for the manufacture of a toy. The following information is available:

| Particulars | Process A (Rs.) | Process B (Rs.) |
|---|---|---|
| Variable cost per unit | 12 | 14 |
| Sales price per unit | 20 | 20 |
| Total fixed costs per year | 30,00,000 | 21,00,000 |
| Capacity (in units) | 4,30,000 | 5,00,000 |
| Anticipated sales (Next year, in units) | 4,00,000 | 4,00,000 |

SUGGEST:
1. Which process should be chosen?
2. Would you change your answer as given above, if you were informed that the capacities of the two processes are as follows:
   A - 6,00,000 units; B - 5,00,000 units? STATE the reason?

**(5 Mark)**

**(d)**      Arnav Confectioners (AC) owns a bakery which is used to make bakery items like pastries, cakes and muffins. AC use to bake atleast 50 units of any item at a time. A customer has given an order for 600 cakes. To process a batch of 50 cakes, the following cost would be incurred:
Direct materials     - Rs. 5,000
Direct wages        - Rs. 500
Oven set-up cost    - Rs. 750
AC absorbs production overheads at a rate of 20% of direct wages cost. 10% is added to the total production cost of each batch to allow for selling, distribution and administration overheads.
AC requires a profit margin of 25% of sales value. Required:
(i) DETERMINE the price to be charged for 600 cakes.
(ii) CALCULATE cost and selling price per cake.
(iii) DETERMINE what would be selling price per unit If the order is for 605 cakes.

**(5 Mark)**

**Question 2:**
**(a)**    A company wants to outsource the operation of its canteen to a contractor. The company will provide space for cooking, free electricity and furniture in the canteen. The contractor will have to provide lunch to 300 workers of which 180 are vegetarian (Veg) and the rest are non-vegetarian (Non-Veg). In the case of non-veg meals, there will be a non-veg item in addition to the veg items. A contractor who is interested in the contract has analysed the costs likely to be incurred. His analysis is given below:

| Cereals | Rs. 8 per plate |
|---|---|
| Veg items | Rs. 5 per plate |
| Non-veg items | Rs. 15 per plate |
| Spices | Rs. 1 per plate |
| Cooking oil | Rs. 4 per plate |
| One cook | Salary Rs. 13,000 per month |
| Three helpers | Salary Rs. 7,000 per month per head |
| Fuel | Two commercial cylinders per month, price Rs. 1000 each. |

On an average the canteen will remain open for 25 days in a month. The contractor wants to charge the non-veg meals at 1.50 times of the veg meals.
You are required to calculate:
(i)     The price per meal (veg and non-veg separately) that contractor should quote if he wants a profit of 20% on his takings.
(ii)    The price per meal (separately for veg and non-veg) that a worker will be required to pay if the company provides 60% subsidy for meals out of welfare fund.

**(10 Mark)**

**(b)**      Two workmen, 'A' and 'B', produce the same product using the same material. Their normal wage rate is also the same. 'A' is paid bonus according to the Rowan system, while 'B' is paid bonus according to the Halsey system. The time allowed to make the product is 50 hours. 'A' takes 30 hours while 'B' takes 40 hours to complete the product. The factory overhead rate is Rs. 5 per man-hour actually worked. The factory cost for the product for 'A' is Rs. 3,490 and for 'B' it is Rs. 3,600.

Required:
(a) Compute the normal rate of wages;
(b) Compute the cost of materials cost;
(c) Prepare a statement comparing the factory cost of the products as made by the two workmen.

**(10 Marks)**

**Question 3:**
**(a)** Arnav Udyog, a small scale manufacturer, produces a product X by using two raw materials A and B in the ratio of 3:2. Material A is perishable in nature and if not used within 5 days of purchase it becomes obsolete. Material B is durable in nature and can be used even after one year. The company has estimated a sales volume of 30,000 kg. for the month of July 2016 and expects that the trend will continue for the entire year. The ratio of input and output is 5:3. The purchase price of per kilogram of raw material A and B is Rs.15 and Rs.22 respectively exclusive of taxes. Material A can be purchased from the local market within 1 to 2 days period. On the other hand Material B is purchased from neighbouring state and it takes 2 to 4 days to receive the material in the store.
To place an order the company has to incur an administrative cost of Rs.120. Carrying cost for Material A and B is 15% and 5% respectively.
At present Material A is purchased in a lot of 8,000 kg. to avail 10% discount on market price.
VAT applicable for material A is 4% (credit available) and CST on Material B is 2% (credit not available).
Company works for 25 days in a month and production is carried out evenly.
You are required to calculate:
(i) Economic Order Quantity (EOQ) for each material;
(ii) Maximum stock level for Material A;
(iii) Calculate saving/ loss in Material A if purchase quantity equals to EOQ.

**(10 Mark)**

**(b)** Happy Transport Service is a Delhi based national goods transport service provider, owning four trucks for this purpose. The cost of running and maintaining these trucks are as follows:

| Particulars | Amount |
|---|---|
| Diesel cost | Rs. 13.75 per km. |
| Engine oil | Rs. 4,200 for every 13,000 km. |
| Repair and maintenance | Rs. 12,000 for every 10,000 km. |
| Driver's salary | Rs. 18,000 per truck per month |
| Cleaner's salary | Rs. 7,500 per truck per month |
| Supervision and other general expenses | Rs. 12,000 per month |
| Cost of loading of goods | Rs. 150 per Metric Ton (MT) |

Each trucks were purchased for Rs. 20 lakhs with an estimated life of 7,20,000 km. During the next month, it is expecting 6 bookings, the details are as follows:

| Sl. No. | Journey | Distance in km | Weight- Up (in MT) | Weight- Down (in MT) |
|---|---|---|---|---|
| 1. | Delhi to Kochi | 2,700 | 14 | 6 |
| 2. | Delhi to Guwahati | 1,890 | 12 | 0 |
| 3. | Delhi to Vijayawada | 1,840 | 15 | 0 |
| 4. | Delhi to Varanasi | 815 | 10 | 0 |
| 5. | Delhi to Asansol | 1,280 | 12 | 4 |
| 6. | Delhi to Chennai | 2,185 | 10 | 8 |
|  | Total | 10,710 | 73 | 18 |

Required
(i) Calculate the total absolute Ton-km for the vehicles.
(ii) Calculate the cost per ton-km.

**(10 Mark)**

**Question 4:**

**(a)**

| | |
|---|---|
| Fixed Cost | Rs. 1,20,000 |
| Variable costs | Rs. 3 per unit |
| Selling price | Rs. 7 per unit |
| Output | Rs. 50,000 units |

CALCULATE the profit for each of the following situation with the above data:
(i)      with the data above
(ii)     with a 10% increase in output & sales.
(iii)    with a 10% increase in fixed costs.
(iv)    with a 10% increase in variable costs.
(v)     with a 10% increase in selling price.
(vi)    taking all the above situations.

**(10 Mark)**

**(b)**    Z. Ltd. uses standard costing system in manufacturing of its single product 'M'. The standard cost per unit of M is as follows:

| | Rs. |
|---|---|
| Direct Material – 2 metres @ Rs. 6 per metre | 12.00 |
| Direct labour- 1 hour @ Rs. 4.40 per hour | 4.40 |
| Variable overhead- 1 hour @ Rs. 3 per hour | 3.00 |

During July, 2016, 6,000 units of M were produced and the related data are as under: Direct material acquired- 19,000 metres @ Rs. 5.70 per metre.
Material consumed – 12,670 metres.
Direct labour – ? hours @ Rs. ? per hour   Rs. 27,950
Variable overheads incurred                Rs. 20,475
The variable overhead efficiency variance is Rs. 1,500 adverse. Variable overheads are based on direct labour hours. There was no stock of the material in the beginning
You are required to DETERMINE the missing figures and work out all the relevant variances.

**(10 Mark)**

**Question 5:**

**(a)**    Three products X,Y and Z alongwith a byproduct B are obtained again in a crude state which require further processing at a cost of Rs. 5 for X; Rs. 4 for Y; and Rs. 2.50 for Z per unit before sale. The byproduct is however saleable as such to a nearby factory. The selling prices for the three main products and byproduct, assuming they should yield a net margin of 25 percent of cost, are fixed at Rs. 13.75 Rs. 8.75 and Rs. 7.50 and Re. 1.00 respectively – all per unit quantity sold.
During a period, the joint input cost including the material cost was Rs. 90,800 and the respective outputs were:

| | |
|---|---|
| X | 8,000 units |
| Y | 6,000 units |
| Z | 4,000 units |
| B | 1,000 units |

By product should be credited to the joint cost and only the net joint costs are to be allocated to the main products.
CALCULATE the joint cost per unit of each product and the margin available as a percentage on cost.

**(10 Mark)**

**(b)**    In a factory, a machine is considered to work for 208 hours in a month. It includes maintenance time of 8 hours and set up time of 20 hours.
The expense data relating to the machine are as under:
Cost of the machine is Rs. 5,00,000. Life 10 years. Estimated scrap value at the end of life is Rs. 20,000.

|  |  | (Rs.) |
|---|---|---|
| – | Repairs and maintenance per annum | 60,480 |
| – | Consumable stores per annum | 47,520 |
| – | Rent of building per annum (The machine under reference occupies 1/6 of the area) | 72,000 |
| – | Supervisor's salary per month (Common to three machines) | 6,000 |
| – | Wages of operator per month per machine | 2,500 |
| – | General lighting charges per month allocated to the machine | 1,000 |
| – | Power 25 units per hour at Rs. 2 per unit | |

Power is required for productive purposes only. Set up time, though productive, does not require power.

The Supervisor and Operator are permanent. Repairs and maintenance and consumable stores vary with the running of the machine.

Required:

COMPUTE a two-tier machine hour rate for (a) set up time, and (b) running time.

**(10 Mark)**

**Question :6**

**(a)** Explain 'Just In Time' (JIT) approach of inventory management.

**(5 Mark)**

**(b)** Distinguish between 'Bin Card' and 'Stores Ledger'.

**(5 Mark)**

**(c)** M/s. Builders & Co. is proposing to take a contract to build a housing project for a big client. M/s. Builders & Co. is less confident about the price to be quoted for the contract. Suggest the appropriate contract pricing method to M/s. Builders & Co.

**(5 Mark)**

**(d)** A Ltd. is engaged in production of sugar. While producing sugar molasses is also produced. Molasses is identified as by-product of sugar. Suggest the treatment of molasses in the cost accounts of A Ltd.

**(5 Mark)**

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