

Total No. of Questions : 12]

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SEAT No. :

[Total No. of Pages : 3

[5670]-543

**B.E. (Mechanical Engineering)
INDUSTRIAL ENGINEERING**

(2015 Course) (Semester - II) (Elective - III) (402049B) (End Semester)

Time : 2½ Hours]

Instructions to the candidates:

- 1) *Answers should be written in one answer book.*
- 2) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*

[Max. Marks : 70

Q1) Define Industrial engineering. Explain in brief various function of Industrial engineering? **[8]**

OR

Q2) Discuss in details factors that affect productivity. **[8]**

Q3) Explain with proper example Multiple activity chart. **[8]**

OR

Q4) a) Differentiate between Value Engineering and Value Analysis. **[4]**

b) Show and describe method study symbols for recording the facts. **[4]**

Q5) A work sampling study was conducted to establish the standard time for an operation. The observations of the study given below; **[6]**

Total no. of operations = 160
Manual (hand controlled work = 14
Machine controlled work = 106
Average performance rating = 80%
No. of parts produced = 36
Allowance for personal needs and fatigue = 10%
Study conducted for 3 days
Available working hours/day = 8hrs
Calculate standard time per piece.

OR

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Q6) The elemental timings are given below along with the respective ratings. Assuming rest and personal allowances as 12% and contingency allowance as 2%, calculate the standard time for the operation. **[6]**

Element	Observed Time	Rating	Remark
A	0.2	90	
B	0.05	80	
C	0.03	100	
D	0.78	100	
E	0.06	100	
F	0.05	100	
G	0.02	85	Once in 5 Pieces
H	0.06	80	
I	0.10	90	
J	0.04	90	Once in 20 Pieces

Q7) a) Explain in details MRP and MRP -II. **[8]**

b) ABC Company uses exponential smoothing with $\alpha = 0.15$ for estimating a demand. Following table shows the demand for 6 months. The forecast for June is 500 units. Estimate the forecast for December. **[8]**

Month	Actual Demand	Forecast
June	450	500
July	505	
August	516	
September	488	
October	467	
November	554	

OR

Q8) a) Short Note on ERP with Block Diagram. **[8]**

b) Explain in brief various functions of Production Planning and Control. **[8]**

[5670]-543

2

- Q9)** a) Write short note on: (i) Material Flow Patterns, (ii) Line Balancing. [8]
 b) Define plant layout. What are various factors involved in selection in selection of site for good plant. [8]

OR

- Q10)** a) Enlist material handling equipments. Describe any three material handling equipment with suitable illustration. [8]
 b) A manufacturing company requires 9500 units per year. Ordering cost is Rs. 125 per order & carrying cost is 20%. Purchase price per unit is Rs. 45. Determine: [8]

- EOQ
- Optimum no. of orders
- Total cost including acquisition of material.

- Q11)** a) A Company has given following information. [8]

Data	Rs.
Sales	150000
Variable Overheads	120000
Gross Profit	60000
Fixed Overheads	20000
Net Profit	40000

Find

- P/V ratio
 - BEP
 - Net Profit when the sales are Rs. 400000
 - Sales required to earn a profit of Rs. 80000
- b) What is importance of standard costing? Explain different elements of costs. [8]

OR

- Q12)** a) Explain break-even analysis with neat chart? What are assumptions made in break-even analysis? What are different applications of break-even analysis. [8]

- b) Explain in brief different functions of human resource department. Comment on concept of key result areas and performance appraisal of employee. [8]

