



COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Government of Maharashtra.)
SHIVAJI NAGAR, PUNE - 411 005

END Semester Examination

(PE-305) Industrial Engineering and Management

PE-09008

Course: T.Y. B.Tech

Branch: Production Engineering (Sandwich)

Semester: Sem VI

Year: 2014-2015

Max.Marks:100

Duration: 3 Hours Time:-2 – 5 PM

Date: 21-11-2014

Instructions:

MIS No.

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1. Solve **all** questions.
2. Figures to the right indicate the full marks.
3. Mobile phones and programmable calculators are strictly prohibited.
4. Writing anything on question paper is not allowed.
5. Exchange/Sharing of anything like stationery, calculator is not allowed.
6. Assume suitable data if necessary.
7. Write your MIS Number on Question Paper.

- Q.1 Briefly describe the pioneering work done by F.W.Taylor, F.B.Gilbreth and Charles Babbage in developing the scientific management. 12
- Q.2 1) Discuss concept, features, merits and demerits of 'State Enterprises'. 6
2) Explain 'factors affecting the Productivity' of an organization. 6
- Q.3 1) State motion economy principles related to 'Time conservation'. 6
2) Discuss type of Organizations in details. 6
- Q.4 1) Construct the 'Travel Chart' for following activities performed by a helper on shop floor having 6 workstations. Movements of messenger is as follows:
1) Station 1 to Station 2 to Station 4 to Station 5 to Station 6, back to Station 1,
2) Station 3 to Station 6 to Station 5 to Station 1 to Station 4, back to Station 3, 8
3) Station 4 to Station 3 to Station 2 to Station 6 to Station 1, back to Station 4,
4) Station 5 to Station 1 to Station 6 to Station 2 to Station 4, back to Station 5,
Summarize the 'FROM' and 'INTO' movements.
- 2) Construct a 'S.I.M.O. Chart' for an operation of parting-off a thin plate into two pieces using a chisel and Hammer. (Assume suitable time/duration for each element/activity). 8

Chisel	Plate	Hammer
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Positions of chisel, hammer, plate and workman are shown in the layout.

- Q.5 1) Using a suitable process chart, plot the following activities for 'material' movement.

Raw material stored in stores, moved to cutting machine (machine-1) located at a distance of 15m. by trolley. After cutting at machine-1, it is moved to machine-2 by conveyor located at a distance 4 m. from machine-1. After welding at machine-2, it is moved to grinding machine by conveyor located at a distance of 1m. from machine-2, where material needs to wait for 5 min., then it is ground. After grinding, it is taken to the inspection station (using trolley) located at a distance of 3 m. from grinding machine. After inspection, wait for a trolley for 10 min., then material goes to the assembly stores located at 25 m. by trolley.

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- 2) Using '50-50 Hasley Plan' and 'Rowan Plan' calculate wages of the operator for following data:

- 1) Hourly wage rate= Rs.20/-
- 2) Standard time to complete the job= 8 Hours.
- 3) Actual time taken to complete the job= 5 Hours.

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- Q.6 1) Construct 'Multiple activity chart' for the duration of 75 min. study and find working (productive) time & idle (non productive) time of an operator, and all 4 machines, for activities at a machine shop section (4 machines) handled by an operator.

	Set-up time (min.)	Cycle time (min.)
MACHINE-1	5	5
MACHINE-2	5	20
MACHINE-3	10	15
MACHINE-4	10	10

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- 2) Explain 'Design of Ergonomic Experiment'.

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- Q.7 1) Explain 'Job evaluation' Process in details.

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- 2) Explain different types of 'Employee Training methods' followed in practice.

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