

B.Met. & Matl. Engg. Examination, 2017

(4th year, 2nd Semester- Old)

INDUSTRIAL MANAGEMENT

Full Marks:100

Time: Three Hours

Answer Any Five

(All Parts Of Any One Question Must Be Answered Together)

- 1 a) Summarize F.W. Taylor's contributions to Scientific Management. 05
- b) What is meant by Product layout? Discuss the same with a suitable diagram 05
- c) Draw and explain an Organization Chart for Line and Staff Organization Structure. Discuss its advantages and disadvantages. 10
- 2.(a) List the factors you would consider for deciding location of a Mini Steel Plant. 10
- (b) Graphically explain how Break-even analysis helps in— 10
- (i) To find out cut-over point between two manufacturing processes.
- (ii) In taking a make OR buy decision.
- 3.(a) A manufacturer requires 15000 units of a part annually for an assembly operation. It 14
can produce this part @100 units/day and the set-up cost=Rs.2400/- per set-up.
Holding cost=Rs.5/- per unit/ year. Cost per part=Rs.7/-
- (i) Calculate the EBQ, assuming 300 working days/year.
- (ii) Deduce any formula used.
- (b) Define Reliability. An equipment is to operate for 5000 hrs.; Failure rate is estimated 06
as one in 50000 hrs. Calculate the probability of survival.

[Turn over

4. WRITE SHORT NOTES ON:(Any Four):

05X4

- (a) Quality Circles (b) Acceptance Sampling (c) Network Crashing (d) Man-Machine Diagrams
 e) Selective inventory control f) Bath-tub curve g) JIT.

5.(a) A project consists of the following activities:

Activity	1-2	1-3	1-4	2-5	2-7	3-6
Duration (days)	2	2	1	5	8	4
Activity	4-7	5-8	6-8	7-9	8-9	
Duration (days)	3	4	1	5	3	

(i) Draw the network and identify the critical path.

(ii) Calculate the Early Start(ES), Early Finish(EF),Late Start(LS) & Late Finish(LF) times of the activities.

10

5.(b) Solve the following Transportation Problem by Vogel's Approximation Method(VAM) and hence compute the total initial cost of transportation.

10

Destination \ Origin	D ₁	D ₂	D ₃	Capacity
O ₁	20	8	22	350
O ₂	24	10	16	250
O ₃	18	14	12	150
Demand	200	250	300	

6.(a) We have five jobs, each of which must go through the machines A,B and C in the order ABC.

Processing Time in Hours						
Job No(i)	:	1	2	3	4	5
M/C A	:	5	7	6	9	5
M/C B	:	2	1	4	5	3
M/C C	:	3	7	5	6	7

Determine a sequence for the jobs that will minimize the total elapsed time. 10

6. (b) Define Reliability & discuss the modern methods of assuring reliability. 06

6.(c) Determine the standard time for the assembly of a small component, given: 04

Mean observed time for assembly= 2.1 min. ; PRF= 120%;

Allowances total= 20%

7. (a) A firm is considering 4 alternative locations A, B, C & D for setting up a new facility. A study of all relevant costs reveal the following:

COST FACTOR	SITE A	SITE B	SITE C	SITE D
A) Sum of all variable costs	Rs.120/unit	Rs.180/unit	Rs.130/unit	Rs.160/unit
B) Land & Construction-	Rs.46 lacs	Rs.39 lacs	Rs.40 lacs	Rs.42 lacs
Depreciated annual value				
C) Other fixed costs/year	Rs.7 lacs	Rs.6 lacs	Rs.10 lacs	Rs.7 lacs

For an annual output of 1,000,000 units, which of the above would be the most economic location. 10

[Turn over

7. (b) Time taken by M/cs A, B & C to complete jobs 1, 2 & 3 are as below:(in mins.)

M/c \ Job	1	2	3
A	60	50	40
B	40	45	55
C	55	70	60

Complete the assignment so as to minimize the total time, hence calculate the total time.