S.D.E.

M.B.A. (E) SEM-IV (2 YEAR COURSE) : SUMMER - 2018

SUBJECT: ELECTIVE –II: c) OPERATIONS RESEARCH (PRODUCTION MANAGEMENT)

Day: **Thursday**
Date: **31/05/2018**

Time: **02.00 P.M. TO 05.00 P.M.**
Max. Marks: 70

S-2018-4581

N.B.:

1) Attempt any **FOUR** questions from Section –I and any **TWO** questions from Section– II.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer book.
4) Use of non-programmable **CALCULATOR** is allowed.

SECTION-I

Q.1 Explain Post Optimality Analysis with examples. **(10)**

Q.2 Explain the ABC Analysis. **(10)**

Q.3 Describe the Replacement Models. **(10)**

Q.4 A television repairman finds that the time spent on his jobs has an exponential distribution with a mean of 30 minutes. If he repairs the sets in the order in which they came in, and if the arrival of sets follows a Poisson distribution with an approximate average rate of 10 per 8-hour day, what is the repairman's expected idle time each day? How many jobs are ahead of the average set just brought in? **(10)**

Q.5 Write short notes on any **TWO** of the following: **(10)**

a) System Reliability
b) Floats
c) Queue Discipline

SECTION-II

Q.6 An Architect has been awarded a contract to prepare plans for an urban renewal project. The job consists of the following activities and their estimated times: **(15)**

Activity	Description	Immediate predecessors	Time (days)
A	Prepare preliminary sketches	-	2
B	Outline specifications	-	1
C	Prepare drawings	A	3
D	Write specifications	A, B	2
E	Run off prints	C, D	1
F	Have specification	B, D	3
G	Assemble bid packages	E, F	1

i) Draw the network diagram of activities for the project.
ii) Indicate the critical path, and calculate the total float and free float for each activity.

P. T. O.

Q.7 Use Dynamic Programming to solve the following linear programming problem. **(15)**

Max. $Z = 2x_1 + 5x_2$

Subject to the constrains

i) $2x_1 + x_2 \leq 43$, ii) $2x_2 \leq 46$

and $x_1, x_2 \geq 0$.

Q.8 Use Wolfe's method to solve the quadratic programming problem: **(15)**

Maximize : $Z = 4x_1 + 6x_2 - 2x_1^2 - 2x_1x_2 - 2x_2^2$

Subject to the constraint

$x_1 + 2x_2 \leq 2$ and $x_1, x_2 \geq 0$.

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