**American International University-Bangladesh**

**Faculty of Business Administration**

**Department of Operations & Supply Chain Management**

**Engineering Management**

**Case Study Assignments**

**Section: .**

|  |  |
| --- | --- |
| **NAME:** | **ID:** |
|  |  |
| **INSTRUCTIONS:**  **1. Submission Date: 13.04.2020. Submission after 13th of April will not be marked.**    **2. How to Submit:**  Download the assignment file from VUES, solve the problems, no typing is allowed, e-mail the assignment to me.  E-mail address: [**shahnaz.zarin@aiub.edu**](mailto:shahnaz.zarin@aiub.edu)  Subject of the E-mail: **name\_ID\_Sec\_EM Assignmeent**  (Example: Shahnaz Zarin Haque\_14-20202-3\_E\_EM Assignment  3. Assignment Type: **Individual having 15 marks.**  4. Don’t forget to write down your name, ID and Section on the cover page of the assignment.  5. See the questions below. | |

**Case No:1**

Schedules and activities of a project ‘Organizing Boishakhi Mela on 14th Of April,2021’ are shown below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **Immediate Predecessor(s)** | **Duration**  **(Weeks)** |  | **Activity** | **Immediate Predecessor(s)** | **Duration**  **(Weeks)** |
| A |  | 4 |  | F | C, E | 2 |
| B |  | 5 |  | G | C, E | 3 |
| C | A | 2 |  | H | C, D, E | 7 |
| D | B | 2 |  | I | C, D, E | 5 |
| E | B | 3 |  | J | G, H | 6 |

1. Draw Gantt chart, Network diagram using AON, find the critical path and project completion time.
2. Calculate slack / float of the non critical activities.
3. Can activity I be delayed without delaying the project completion time? If so, how many weeks?
4. Activity G needs a delayed time of three weeks and an extra time of one week. Is it possible by keeping the project completion time unchanged? Explain.
5. The PM wants to shorten the duration of the activity E from 3 weeks to 1 week. What will be the impact of this change on the project completion time?

**Case No:2**

Schedules and activities of a project “ Arranging Gaye Holud for Elder Brother”are shown below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Activity | Predecessor(s) | Duration (days) |  | Activity | Predecessor(s) | Duration (days) |
| A |  | 4 |  | G | B | 2 |
| B |  | 3 |  | H | C, E, G | 6 |
| C |  | 2 |  | I | H | 8 |
| D | A | 3 |  | J | C | 4 |
| E | D | 5 |  | K | J | 7 |
| F | D | 3 |  | L | F, I, K | 3 |

a) Draw the Gantt chart and network diagram using AON and show, which tasks are on the critical path?

b) Calculate float/ slack of the all activities.

c) The person working on task K tells the PM he can’t start work until five days after the schedule starting date. What impact would this have on the completion time of the project? Why?

**Case No:3**

The activities for a project “ Creating a software to give the updated data on COVID-19 patients allover Bangladesh” are summarized in the following table.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **Immediate Predecessor(s)** | **Duration**  **(Weeks)** |  | **Activity** | **Immediate Predecessor(s)** | **Duration**  **(Weeks)** |
| N |  | 5 |  | G | B | 2 |
| A | N | 4 |  | H | B | 16 |
| B | N | 10 |  | I | H | 4 |
| C | N | 7 |  | J | H | 8 |
| D | A | 5 |  | K | I, J, L | 5 |
| E | D, G | 3 |  | L | C | 9 |
| F | E | 6 |  | M | J, L | 10 |

a) Draw the Gantt Chart, Network diagram using AON and find the critical path and project completion time.

b) Calculate float/ slack of the all activities.

c) Can activity I be delayed without delaying the project completion time? If so, how many weeks? How much dollar can be saved by keeping the project completion time unchanged, if $2000 can be saved for each delayed week of activity I?

d) What is the impact on the project if activity F needs a delayed time 2 weeks and extra time 5 weeks?

e) The PM wants to delay the duration of the activity M from 10 weeks to 16 weeks. What will be the impact on the project completion time?

**Case No:4**

Resource requirement of the activities of a project “ A Multistoried Building at Gulshan , Dhaka by BTI” is summarized below

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **Duration**  **(week)** | | **Planned Resources** | | | | |
| A | 4 | | 4 W, 3 OP, 2 ME, 2000 Br, 50 bags Cem., 50 cft Sand, 7 COMP | | | | |
| B | 5 | | 2 W, 1 ME, 180 cft Aggregate, 5 ton Rod, 30 truck earth | | | | |
| C | 3 | | 6 W, 2 ME, 5000 Br, 250m CIS, 150 cft Sand, 60 pole, 10m iron wire. | | | | |
| D | 8 | | 3 W, 2 ME, 8000 Bar, 400 bags Cem., 250 cft Sand, 50 ton Rod, 150 cft Aggregate | | | | |
| E | 4 | | 4 W, 5 Archit, 2 Elc., 2 PF, 500 m wire, 400 m pipe | | | | |
|  | | | | | | | |
| **Note: 5 working days in a week, 4 weeks in a month, and 8 hours working time in a day** | | | |  | **Price, Rent, and Salaries & Wages:** | | |
| W = Worker  OP = Operator  Cem = Cement  m = meter  Br = Brick  PF = Pipe Fitter | | ME = Management Employee  Archit = Architect  COMP = Computer  Elc. = Electrician  CIS = Corrugated Iron Sheet | | W = $1.5/hr  ME = $1500/Month  Archit = $2500  OP = $5/hr  COMP = $3/hr  Excavator = $10/hr  Elc. = $4/hr | PF = $2/hr  Earth = $155/truck  CIS = $1.5/m  Iron Wire = $0.5/m  Pole = $90/ piece  Bar = $4/m  Br = $0.3/piece | Cem. = $5/bag  Sand = $0.2/cft  Aggregate = $2/cft  Rod = $800/ton  Wire = $0.4/m  Pipe = $0.5/m |

(a) Calculate the Cost of each activity and that of the project

**Case No:5**

Completing a task should take 5 minutes on average. Seven samples of five observations each have been taken. Use the information to construct **Mean and Range Chart.** Do the results suggest that the process is in control?

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample 1 | Sample 2 | | Sample 3 | Sample 4 | | Sample 5 | Sample 6 | | Sample 7 | |
| 5 | 5.6 | | 4.8 | 5.2 | | 5.1 | 4.3 | | 4.4 | |
| 5.1 | 5.2 | | 4.9 | 4.7 | | 5.2 | 5.2 | | 4.6 | |
| 4.8 | 5.1 | | 5 | 4.6 | | 4.9 | 5.0 | | 5.2 | |
| 5.4 | 4.9 | | 5.3 | 5.5 | | 4.3 | 4.8 | | 4.1 | |
| 4.9 | 5.0 | | 4.5 | 4.6 | | 5.3 | 4.5 | | 4.1 | |
| **n** | | **A2** | | | **D3** | | | **D4** | |
| 5 | | 0.577 | | | 0 | | | 2.114 | |
| 6 | | 0.483 | | | 0 | | | 2.004 | |
| 7 | | 0.19 | | | 0.076 | | | 1.924 | |