



# MADE EASY

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**Test Centres:** Delhi, Hyderabad, Bhopal, Jaipur, Lucknow, Bhubaneswar, Pune, Kolkata, Patna

## ESE 2023 : Prelims Exam | GS & ENGINEERING CLASSROOM TEST SERIES | APTITUDE Test 9

**Section A :** Ethics and values in Engineering profession [All Topics]

**Section B :** Basics of Project Management [All Topics]

**Section C :** General Principles of Design, Drawing, Importance of Safety [All Topics]

- |         |         |         |         |         |
|---------|---------|---------|---------|---------|
| 1. (c)  | 11. (a) | 21. (a) | 31. (c) | 41. (d) |
| 2. (b)  | 12. (a) | 22. (d) | 32. (c) | 42. (a) |
| 3. (c)  | 13. (a) | 23. (b) | 33. (c) | 43. (d) |
| 4. (c)  | 14. (d) | 24. (a) | 34. (b) | 44. (d) |
| 5. (d)  | 15. (d) | 25. (c) | 35. (b) | 45. (d) |
| 6. (d)  | 16. (b) | 26. (d) | 36. (a) | 46. (d) |
| 7. (c)  | 17. (b) | 27. (c) | 37. (b) | 47. (b) |
| 8. (b)  | 18. (d) | 28. (a) | 38. (a) | 48. (a) |
| 9. (b)  | 19. (a) | 29. (b) | 39. (b) | 49. (b) |
| 10. (b) | 20. (b) | 30. (a) | 40. (c) | 50. (a) |

## DETAILED EXPLANATIONS

2. (b)

Loyalty to companies or their owner should not be equated with merely obeying one's immediate supervisor. Hence statement 1 is incorrect.

10. (b)

A whistleblower is a person who reveals wrong doing of an organization to the public. Hence statement 2 is incorrect.

12. (a)

Engineers shall avoid deceptive acts. Hence statement 2 is incorrect.

13. (a)

Unethical behavior is often triggered by pressure from higher management to achieve goals. Hence statement 1 is correct.

18. (d)

Double Dipping is a situation where an engineer can be compensated by more than one party for services on the same project.

20. (b)

Engaging in activities contrary to interests of department as perceived by management is disobedience by contrary action. Hence statement 1 is incorrect.

21. (a)

Plagiarism refers to use of another's work, words, or ideas without attribution.

26. (d)

Following are the stakeholders of a construction project :

Architect, Client (owner), Constructor, Engineering (consultant), Subcontractor/Supplier/Vendor, Lawyer, Insurer etc.

27. (c)

$$P = A \left[ \frac{(1+i)^n - 1}{i(1+i)^n} \right]$$

$$\text{CRF} = \frac{i(1+i)^n}{(1+i)^n - 1} = 0.16$$

$$\Rightarrow \frac{(1+i)^n - 1}{i(1+i)^n} = \frac{1}{0.16} = 6.25$$

$$\begin{aligned} \text{Present cost of alternative } A &= ₹500000 + ₹(250000)(6.25) \\ &= ₹2062500 \end{aligned}$$

$$\begin{aligned}\text{Present cost of alternative } B &= ₹750000 + ₹200000(6.25) \\ &= ₹2000000\end{aligned}$$

Alternative with lowest cost at present time would be most preferable. Since the present cost of alternative B is less than that of alternative A, it is preferable to choose alternative B.

28. (a)

$$\begin{aligned}P &= \frac{F}{\left(1 + \frac{i}{2}\right)^{2 \times 5}} \\ P &= \frac{50000}{(1.07)^{2 \times 5}} = \frac{50000}{(1.4)^2} \\ &= \frac{50000}{1.96} = ₹25510\end{aligned}$$

Note : Semi-annually means money is received two times (once in every 6 months) in a year and a total of 10 times in 5 years.

$$\therefore 1 + i_{eff} = \left(1 + \frac{i}{12} \times 6\right)^{10} = \left(1 + \frac{i}{2}\right)^{10}$$

30. (a)

Conflict resolution	Project Manager	Other Stakeholders
Collaborate/Problem solving	WIN	WIN
Forcing/Compelling	WIN	LOSE
Accomodating/Smoothing	LOSE	WIN
Reconcile/Compromise	LOSE	LOSE
Avoid/Withdraw	IGNORE	IGNORE

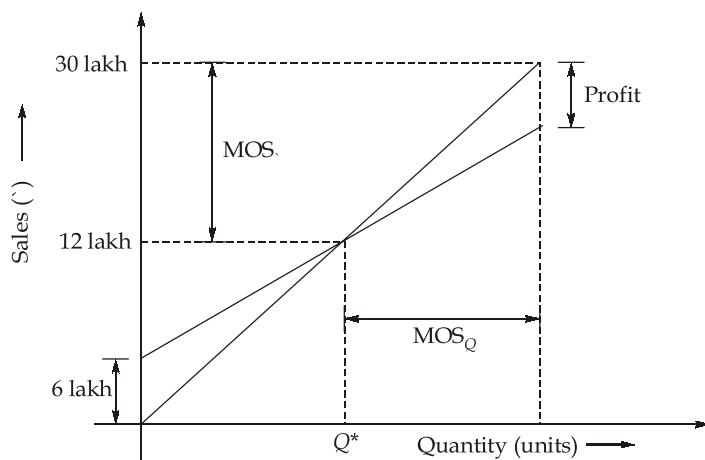
31. (c)

The APMBok (Association of project managers body of knowledge) defines the project sponsor as,

- (i) Individual or body for whom the project is undertaken, the primary risk taker.
- (ii) The individual representing the sponsoring body and to whom the project manager reports.
- (iii) A person or organization providing funds for the project.

Note : The project manager is appointed by the project sponsor and the project sponsor is appointed by portfolio manager or CEO.

32. (c)



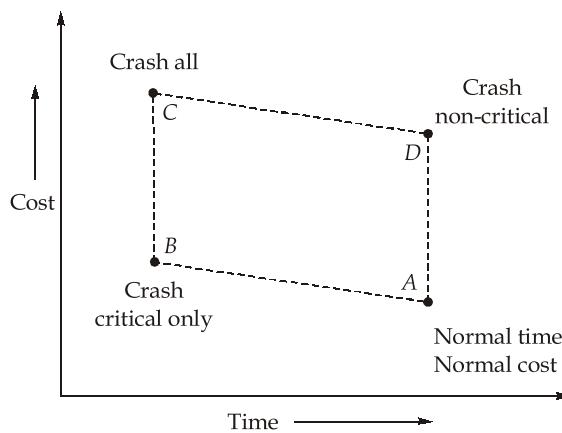
$$\frac{\text{Profit}}{\text{FC}} = \frac{\text{MOS}_Q}{Q^*} = \frac{\text{MOS}_{₹}}{\text{BES}}$$

$$\frac{\text{Profit}}{\text{FC}} = \frac{\text{MOS} (\text{in rupees})}{\text{BES}}$$

$$\frac{\text{Profit}}{₹6} = \frac{₹(30 - 12)\text{lakh}}{₹12\text{lakh}}$$

$$\Rightarrow \text{Profit} = ₹9 \text{ lakhs}$$

33. (c)



- By crashing all non-critical activities, the project will move to point 'D'. There will be no shortening of the project duration, but the cost would increase drastically. So it is not recommended.

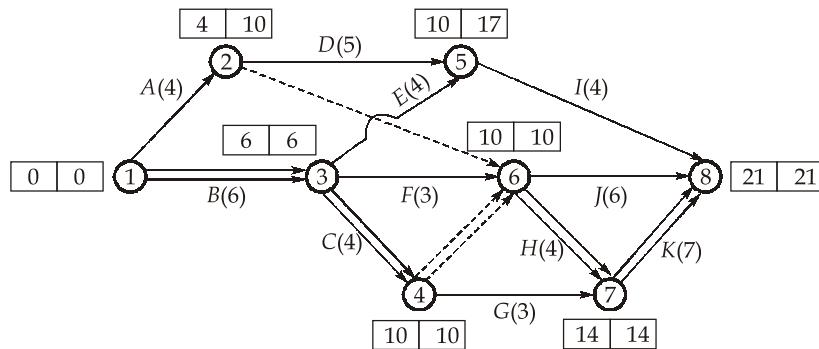
- By crashing all critical activities, the project will move to point 'B'. Crashing the critical activities reduces the duration of the project with small increase in costs.
- By crashing all the activities (critical and non-critical), project will move to point 'C'. This is not recommended because there is no time improvement over point B, yet the costs have increased tremendously.
- So, crash critical activities only.

34. (b)

$$F_{IN} = F_T - F_F = \text{Slack at head event}$$

$$F_{IN} = 24 - 23 = 1 \text{ day}$$

35. (b)



37. (b)

- CPM and Gantt charts focus on the execution phase of the project life cycle because it accounted for the greatest level of effort where the majority of the expenses were incurred.
- Now, the emphasis has shifted to focus more on the initial phases. This is where the project sponsor's business case solutions are proposed, and the project manager's feasibility study is conducted, project risks are assessed and project is designed.

39. (b)

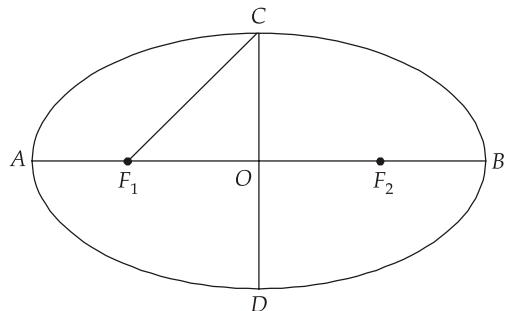
A technology evolves in three stages :

- Invention : The creative act by which a novel idea is conceived.
- Innovation : The process by which an invention is brought into successful practice and is utilised by the economy.
- Diffusion : The widespread knowledge of the capabilities of the innovation.

40. (c)

- Brainstorming and affinity diagram are used for problem definition.
- Check sheet, Histogram, Pareto chart, Run chart and scatter diagram are used for cause finding.
- Pugh chart is used for solution finding and implementation.

43. (d)



Here,

$$F_1F_2 = 80 \text{ mm}, AB = 100 \text{ mm}$$

We know that distance of the ends of minor axis from focus is equal to half the major axis.

$$\therefore CF_1 = \frac{AB}{2} = 50 \text{ mm}$$

$\therefore$  From  $\Delta CF_1O$ ,

$$\begin{aligned} OC &= \sqrt{(CF_1)^2 - (F_1O)^2} \\ &= \sqrt{(50)^2 - (40)^2} = 30 \text{ mm} \end{aligned}$$

$$\therefore CD = 2OC = 60 \text{ mm}$$

44. (d)

- First quadrant : Opposite side of the reference line.
- Second quadrant : Same side of the reference line.
- Third quadrant : Opposite side of the reference line.
- Fourth quadrant : Same side of the reference line.

45. (d)

According to the document, global strategy on occupational health for all, the ten high priority objectives proposed are :

1. Strengthening of international and national policies for health at work.
2. Developing healthy work environment.
3. Strengthening of OHS.
4. Development of healthy work practices and promotion of health at work.
5. Establishing of support services for occupational health.
6. Development of occupational health standards based on scientific risk assessment.
7. Development of human resources for occupational health.
8. Establishment of registration and data systems, development of information services for experts.
9. Strengthening of research.
10. Development of collaboration in occupational health and with other activities and services.

47. (b)

Scale of chord is used to set out or measure angles when protractor is not available.

48. (a)

Classes of fire	Extinguishing agent
Class A	Water
Class B	Foam, CO <sub>2</sub>
Class C	Dry chemical powders
Class D	Special dry chemical powders

49. (b)

Both are correct without any relation between them.

50. (a)

For the end of the product development process the tasks like process planning, design of tooling, negotiating with suppliers, developing a quality assurance plan, marketing plan, distribution plan, customer service plan, maintenance plan, plan for retirement of the product from service.

