

**MADE EASY**

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Test Centres: Delhi, Hyderabad, Bhopal, Jaipur, Bhubaneswar, Pune, Kolkata**ESE 2024 : Prelims Exam | GS & ENGINEERING
CLASSROOM TEST SERIES | APTITUDE****Test 9****Section A :** Ethics and values in Engineering profession**Section B :** Basics of Project Management**Section C :** General Principles of Design, Drawing, Importance of Safety**ANSWER KEY**

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

DETAILED EXPLANATIONS

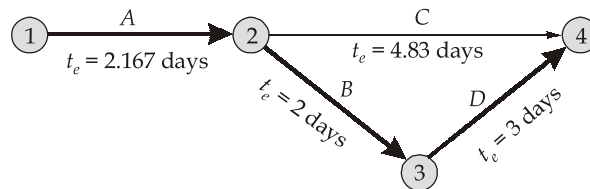
1. (c)
Metaethics is a branch of analytic philosophy that explores the status, foundations, and scope of moral values, properties, and words. Whereas the fields of applied ethics and normative theory focus on what is moral, metaethics focuses on what morality itself is.
2. (c)
Human action is explained as an act which proceeds from prior knowledge and free will. It differs from 'acts of humans' which result without the intervention of intellect and free will and as such normally they are beyond human control.
3. (a)
Utilitarianism is an ethical theory that determines right from wrong by focusing on outcomes. It is a form of consequentialism. Utilitarianism holds that the most ethical choice is the one that will produce the greatest good for the greatest number.
7. (c)
Nepotism is the unfair use of power in order to get jobs or other benefits for your family or friends.
8. (d)
Micro-ethics is about unawareness of the consequences of individual behavior. Micro-ethics understands that there is a wide variety of actions that are all within the law, but that have a wide variety of consequences, some of which are socially desirable and others are not.
10. (b)
Deontology is an ethical theory that uses rules to distinguish right from wrong. Deontology is often associated with philosopher Immanuel Kant.
11. (a)
Ethical egoism is the normative theory that the promotion of one's own good is in accordance with morality.
19. (c)
An ethical dilemma is a type of ethical issue that arises when the available choices and obligations in a specific situation do not allow for an ethical outcome.
20. (c)
Laws are not always necessarily enforced by the government under the threat of punishment.
24. (d)
Human desire is the fundamental motivation for all human action .

29. (b)

$$\text{Expected time, } t_e = \frac{t_0 + 4t_m + t_p}{\sigma}$$

$$\text{and standard deviation, } \sigma = \left(\frac{t_p - t_0}{\sigma} \right)^2$$

Now,

Now, standard deviation of project, σ is given as

$$\begin{aligned}\sigma &= \sqrt{(\sigma_A)^2 + (\sigma_B)^2 + (\sigma_D)^2} \\ &= \sqrt{(0.5)^2 + (0.33)^2 + (0.67)^2} \\ &= 0.898 \text{ days}\end{aligned}$$

31. (b)

A critical path is the longest path (time wise) connecting the initial and end event.

- (i) 1 - 2 - 4 - 6 - 7 $\rightarrow 10 + 10 + 0 + 7 = 27$ days
- (ii) 1 - 2 - 3 - 6 - 7 $\rightarrow 10 + 5 + 20 + 7 = 42$ days
- (iii) 1 - 2 - 4 - 5 - 7 $\rightarrow 10 + 10 + 10 + 10 = 40$ days

Hence, critical path will be 1 - 2 - 3 - 6 - 7

35. (b)

The payback period is the length of time required to recover the initial cash outlay on the project.

39. (a)

Quality function deployment (QFD) is a valuable tool for linking customer needs with design requirements.

40. (c)

In 1970 a committee was set up under the chairmanship of Lord Robens to look at safety and health at work. The main recommendations of the Robens committee were accepted and were incorporated in the health and safety at work etc Act 1974.

41. (c)

Factors Contributing to MSDs

- **Awkward and static postures:** Assuming positions that place stress on the body, such as prolonged or repetitive reaching above shoulder height, kneeling, squatting, leaning over a counter, using a knife with wrists bent, or twisting the torso while lifting.

- **Repetitive motions:** Performing the same motion or series of motions continually or frequently for an extended period of time.
- **Forceful exertions:** The amount of physical effort required to perform a task (such as heavy lifting, pushing or pulling), handle merchandise, or maintain control of equipment or tools.
- **Pressure points and Contact stress:** Pressing the body or part of the body (such as the hand) against hard or sharp edges, or using the hand as a hammer.
- **Vibration:** Segmental affecting the hands and arms, and whole-body vibration from standing or sitting in vibrating environments.

42. (a)

- The six elements of the life cycle of the fire are described by Dawson Powell in “The Mechanics of fire”. These elements are input heat, fuel, oxygen, proportioning, mixing and ignition continuity. All of these elements are essential for both the initiation and continuation of the diffusion flame combustion process.
- The diffusion flame process is defined by Richard Tuve in “The principles of fire protection chemistry as a rapid self-sustaining oxidation process accompanied by the evolution of heat and light of varying intensities.
- Halima Doski is related to the science of waste management.
- Prof. Andrea Rinaldo, selected as the 2023 winner of the Stockholm water prize.

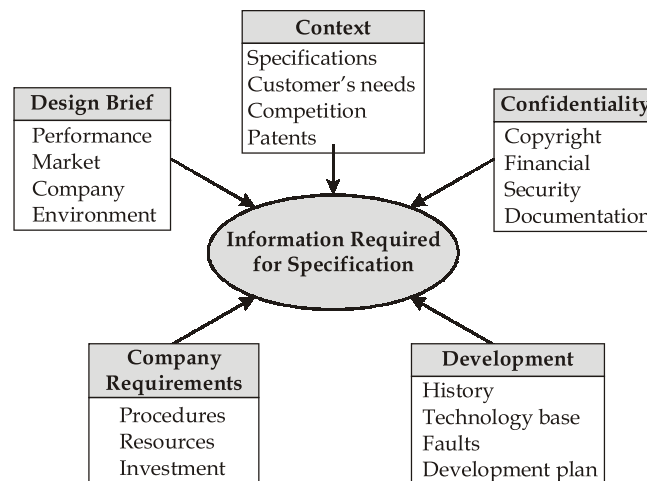
43. (b)

Highly visible barricades should be used to avoid falling of vehicles in deep interspaces ahead.

44. (d)

Information required for a Particular PDS

The information required cannot easily be categorized but falls mainly under the following broad headings.



Writing for a particular PDS

46. (d)

- Raise the load a few inches to verify balance and the effectiveness of the brake system.
- Crane platforms and walkways have antiskid surfaces.

47. (c)

- **Stretch tool** : It stretches object crossed by a selection window or polygon. Objects that are partially enclosed by a crossing window are stretched. Objects that are completely enclosed within the crossing window, or that are selected individually, are moved rather than stretched.
- **Extend tool** : It extends object to meet the edges of other objects.
- **Arrays tool** : The command creates multiple copies of selected object in a pattern.

48. (b)

- Cycloid is a curve generated by a point on the circumference of a circle which rolls along a straight line without slipping.
- Epicycloid is the curve generated by a point on the circumference of a circle, which rolls without slipping along another circle outside it.
- Epitrochoid is a curve generated by a point fixed to circle (within or outside its circumference, but in the same plane) rolling on the outside of another circle.

49. (a)

The true length of the line AB is given by,

$$l^2 = x^2 + y^2 + z^2$$

$$\Rightarrow l = \sqrt{x^2 + y^2 + z^2}$$

$$= \sqrt{(\sqrt{255})^2 + (\sqrt{148})^2 + (\sqrt{126})^2}$$

$$= \sqrt{529} \text{ units}$$

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