



# MADE EASY

India's Best Institute for IES, GATE & PSUs

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

## ESE 2022 : Prelims Exam | GS & ENGINEERING CLASSROOM TEST SERIES | APTITUDE

### Test 7

**Section A :** Basics of Project Management

**Section B :** General Principles of Design, Drawing, Importance of Safety

**Section C :** Basics of Energy and Environment

### ANSWER KEY

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

## DETAILED EXPLANATIONS

2. (b)

- P - Planning
- O - Organizing
- S - Staffing
- D - Directing
- CO - Coordinating
- R - Reporting
- B - Budgeting

3. (b)

Procurement of resources starts in execution phase.

4. (b)

It's very complex to manage

7. (b)

No one individual is directly responsible for project.  
Given statement is a disadvantage of classical organisation.

8. (c)

- Very low  $\Rightarrow < 10\%$
- Low  $\Rightarrow 10 - 25\%$
- Moderate  $\Rightarrow 25 - 50\%$
- High  $\Rightarrow 50 - 75\%$
- Very high  $\Rightarrow > 75\%$

9. (b)

Delphi method is a group process, based on panel of experts which may include anyone.

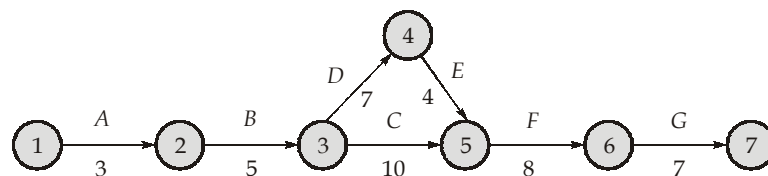
11. (b)

The payback period is the length of time over which the earnings on a project equals the investment

12. (b)

$$SD = 1.25 \times SMAD = 1.25$$

15. (c)



Critical path A  $\rightarrow$  B  $\rightarrow$  D  $\rightarrow$  E  $\rightarrow$  F  $\rightarrow$  G

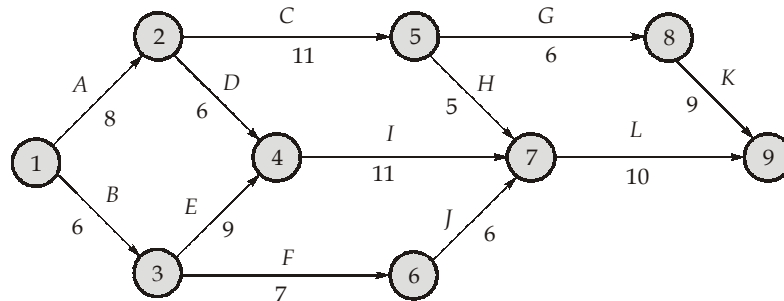
$$T_E = 3 + 5 + 7 + 4 + 8 + 7 = 34 \text{ days.}$$

16. (a)

$$Z = \frac{T_S - T_E}{6} = \frac{39 - 30}{6} = 1.5$$

Percentage probability = 93.32%

17. (a)



Critical path 1 → 3 → 4 → 7 → 9

$$6 + 9 + 11 + 10 = 36 \text{ weeks}$$

19. (b)

- No extra cost is charged for it
- It has many disadvantages like
- Increasing the cost of the project
- Scope inflation
- Customer backlash

20. (d)

$$A + C + D \Rightarrow 6 + 4 + 8 = 18 \text{ units}$$

$$B + C + D \Rightarrow 5 + 4 + 8 = 17 \text{ units}$$

$$B + C + E \Rightarrow 7 + 4 + 2 = 13 \text{ units}$$

21. (d)

→ Tuckman stage,

1. Forming
2. Storming
3. Norming
4. Performing
5. Adjourning

22. (c)

$$SPI = \frac{EV}{PV} = \frac{120000}{160000} = 0.75$$

23. (a)

$$P = 10000 + \frac{10000}{1.1} + \frac{10000}{(1.1)^2}$$

$$P = \text{Rs. } 27,355$$

25. (a)

Both *A* and *R* are correct and *R* is the correct explanation of

26. (b)

Market development  $\Rightarrow$  Conceptual design  $\Rightarrow$  Product design  $\Rightarrow$  Manufacturing  $\Rightarrow$  Product use

27. (b)

- Product architecture comes under embodiment design.
- Activities comes under embodiment design are (a) product architecture, (b) Design configuration, (c) Parametric design.

29. (a)

$$AO = 1 \text{ m}^2$$

$$A1 = \frac{1}{2} \text{ m}^2$$

$$A2 = \frac{1}{4} \text{ m}^2$$

$$A3 = \frac{1}{8} \text{ m}^2$$

$$A4 = \frac{1}{16} \text{ m}^2$$

30. (b)

$$RF = \sqrt{\frac{\text{Area of drawing}}{\text{Actual area}}} = \sqrt{\frac{1}{64}} = \frac{1}{8}$$

31. (c)

$$e = \sqrt{\frac{\text{Distance between focus}}{\text{Distance between directrix}}}$$

$$e = \sqrt{\frac{8 \text{ mm}}{200 \text{ mm}}}$$

$$e = \sqrt{\frac{1}{25}} = \frac{1}{5} = 0.2$$

32. (b)

There are five types dimension styles used on drawing are:

1. Parallel dimensioning
2. Chain/Continuous dimensioning
3. Superimposed running/progressive dimensioning
4. Combined dimensioning
5. Coordinate dimensioning

33. (c)  
The trace of a octagonal plane may be straight line.
34. (c)
- **Offset command:** To obtain parallel lines, concentric circles and parallel curves.
  - **Co-command:** To copy objects in Auto CAD.
  - **F(Fillet) command:** To add rounded corner at the sharp edges of the geometry.
35. (a)
- SC-command: Used to change the scale of an object.
  - C-command: Used to draw a circle.
  - S-command: Used to stretch an object.
36. (a)  
Risk can be defined as the likelihood of an accident occurring, 'or' the chances of having a loss due to occurrence of an event, 'or' An uncertainty or chance of loss, usually accidental loss, which is sudden, unusual or unforeseen.
37. (b)  
One of the main disadvantages of FMEA is that it is very difficult to assess combination of event interactions.
38. (c)  
Classification of Fire risk
1. Class A - Solid combustile materials
  2. Class B - Flammable liquids
  3. Class C - Flammable gases
  4. Class D - Combustible metals
  5. Class E\* - Electrical fires
  6. Class F - Cooking oils/fats
39. (d)  
India is a party to five major international conventions related to Wild Life conservation, viz., Convention on International Trade in Endangered Species of wild fauna and flora (CITES), the International Union for Conservation of Nature and Natural Resources (IUCN), the International Whaling Commission (IWC), United Nations Educational, Scientific and Cultural Organization-World Heritage Committee (UNESCO-WHC) and the Convention on Migratory Species (CMS).
41. (d)
- Greens Alliance for Conservation Eastern Ghats (GrACE) is an alliance to provide an ideal platform for the wide range people's movement for sustainability of the hill ranges of Eastern Ghats.
  - It is launched by the Council for Green Revolution, an environmental action group based at Hyderabad working for the protection of the environment and sustainable development.

42. (c)

- Gasification is done using a mixture of coal, water, air and/or oxygen.
- Coal gas or Syngas is a mixture consisting primarily of methane ( $\text{CH}_4$ ), carbon monoxide (CO), hydrogen ( $\text{H}_2$ ), carbon dioxide ( $\text{CO}_2$ ) and water vapor ( $\text{H}_2\text{O}$ )-from coal and water, air and/or oxygen.

43. (b)

The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of carbon dioxide. The larger the GWP, the more that a given gas warms the Earth compared to carbon dioxide over that time period.

GHG		Global Warming Potential (GWP)
• Carbon Dioxide ( $\text{CO}_2$ )	-	1
• Methane ( $\text{CH}_4$ )	-	6.5-56
• Perfluoro Carbons (PFCs)	-	4400 - 14000
• Sulfur Hexafluoride ( $\text{SF}_6$ )	-	16300 - 34900

44. (c)

Plants that do not occur naturally in a region but proliferate in the area they have been introduced into, and cause several negative impacts (such as affecting native biodiversity, causing economic losses and harming human health) in these new habitats, are called invasive plants.

45. (d)

Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-30 is an international Treaty that was approved by UN member states in March 2015, held in Sendai, Japan. It is a voluntary and non-binding treaty which recognizes that a UN member State has a primary role to reduce disaster risk.

46. (a)

- Geoengineering (Earth-engineering) is the currently fashionable term for making large-scale interventions in how the planet works to slow down or reverse the effects of climate change.
- Geoengineering aims to tackle climate change by removing  $\text{CO}_2$  from the air or limiting the sunlight reaching the planet. In theory, the word geoengineering could be used to describe almost any large scale scheme for tackling climate change.

47. (c)

Reasons for Greater Biodiversity in Tropics

- Ecologists and evolutionary biologists have proposed various hypotheses; some important ones are
- Speciation is generally a function of time, unlike temperate regions subjected to frequent glaciations in the past, tropical latitudes have remained relatively undisturbed for millions of years and thus, had a long evolutionary time for species diversification
- Tropical environments, unlike temperate ones, are less seasonal, relatively more constant and predictable. Such constant environments promote niche specialisation and lead to a greater species diversity.

48. (b)

Amensalism is a type of biotic interaction in which one species is harmed, the other is unaffected.

49. (d)

Energy Flow through the trophic levels from producers to subsequent trophic levels is unidirectional.

○○○○