# MADE EASY

**India's Best Institute for IES, GATE & PSUs**

**Test Centres:** Delhi, Hyderabad, Bhopal, Jaipur, Pune, Kolkata

## ESE 2024 : Prelims Exam
### CLASSROOM TEST SERIES

## GS & ENGINEERING APTITUDE

### Test 11

**Section A :** Information and Communication Technologies (ICT)
**Section B :** Ethics and Values in Engineering Profession
**Section C :** Basics of Project Management

## ANSWER KEY

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

Q.44* : *Marks to all*

## DETAILED EXPLANATIONS

**1.** **(c)**
- In SRAM, flip-flop circuit is used to store the data which can be accessed almost instantly whereas DRAM uses a capacitor to store data which requires constant refreshing to maintain the charge on the capacitor. Thus, Dynamic Random-Access Memory (DRAM) is slower than Static Random-Access Memory (SRAM).
- Cache and Memory Registers are part of Central Processing Unit (CPU), while Regular Random-Access Memory (RAM) and Hard Disk are not its part. It acts as temporary storage area that is more readily available to the processor than the computer's main memory source i.e. RAM or ROM.

**3.** **(d)**
National Agriculture Market (e-NAM) is a pan-India electronic trading portal which networks the existing Agricultural Produce Market Committee (APMC) mandis to create a unified national market for agricultural commodities. Launched on April 14, 2016, e-NAM is completely funded by the Central Government and is implemented by Small Farmers Agribusiness Consortium (SFAC), under the aegis of Ministry of Agriculture and Farmers' Welfare.

**5.** **(b)**
Correct sequence for Memory Access Time is Hard Disk > RAM > Cache > Memory Registers. In contrast for Speed, the sequence is Hard Disk < RAM < Cache < Memory Registers.

**6.** **(c)**
Voice over Internet Protocol, allows for making calls through the Internet. A VoIP system is more flexible than a traditional PBX because new devices can be added without adding to the physical infrastructure whereas PBX system requires the physical addition of new telephone wires and the installation of new wall jacks to support connectivity.

**7.** **(b)**
**Fireball:** Fireball is a browser hijacking malware that collects user information, manipulate web-traffic to generate ad-revenue, and executes malicious code on the infected machines.
**Virus:** A computer virus is a type of malware that propagates by inserting a copy of itself into and becoming part of another program. It spreads from one computer to another, leaving infections as it travels.
**Bots:** Bots often automate tasks and provide information or services that would otherwise be conducted by a human being. A malicious bot is self-propagating malware designed to infect a host and connect back to a central server or servers that act as a command and control (C&C) center for an entire network of compromised devices.
**Trojan:** A Trojan horse is any malware that misleads users of its true intent by disguising itself as a standard program.

**8.** **(a)**
Chromium is a free and open-source web browser project, primarily developed and maintained by Google. This codebase provides the vast majority of code for the Google Chrome browser, which is proprietary software with additional features.

**9.    (b)**

HTML is the standard markup language for creating web pages and web applications.

**10.   (d)**
- Every smart card has an operating system (OS).
- A chip card's operating system (COS) is a sequence of instructions permanently embedded in the ROM of the smart card.
- COS instructions are frequently used by on-card processes and applications. They provide functions for data and command exchange, data storage, data processing, cryptographic processes and more.

**11.   (c)**

A Taskbar is a bar displayed at the bottom of a GUI desktop that is used to launch and monitor running applications.

**12.   (d)**

A computer program that translates one instruction at a time into machine language is called an Interpreter. Whereas, a compiler translates the entire program into machine code.

**13.   (b)**

Operating system provides a basis for application programs and acts as an intermediary between the computer user and computer hardware. The main task an operating system carries out is the allocation of resources and services, such as the allocation of memory, devices, processors, and information. Data management is not a basic function of operating system as it is carried out by the higher-level software applications and databases.

**14.   (a)**

Routers operate at the Network Layer (Layer 3) of the OSI model. Its primary function is to route packets between different networks based on the network (IP) addresses.

**15.   (a)**
- An assembly language is a type of low-level/middle level programming language that is intended to communicate directly with a computer's hardware. It is designed to be more human-readable than machine code but still closely tied to the hardware. On the other hand, high-level programming languages are designed to be more human-readable and closer to natural language, making it easier for programmers to write code.
- Assembly language must be translated into machine language using an assembler before execution.

Hence, statements 2 and 3 are incorrect.

**16.   (d)**

Debugging is the process of identifying and correcting errors or bugs in a computer program to ensure its proper functionality.

**17.   (c)**

A firewall is a network security device that prevents unauthorized access to a network. It inspects incoming and outgoing traffic using a set of security rules to identify and block threats.

18.  **(b)**

Cookies are small files of information that a web server generates and sends to a web browser. Web browsers store the cookies they receive for a predetermined period of time, or for the length of a user's session on a website. They attach the relevant cookies to any future requests the user makes of the web server. Cookies help inform websites about the user, enabling the websites to personalize the user experience. For example, ecommerce websites use cookies to know what merchandise users have placed in their shopping carts. In addition, some cookies are necessary for security purposes, such as authentication cookies.

19.  **(c)**
   *   Kernel Mode in Operating System is based on Machine Level Language (MLL). It is the core component of the operating system that interacts directly with the hardware. It is also called Central Mode or Privileged Mode, and taken as Master Program staying close to Hardware and regulating its use. In Kernel mode, the executing code has complete and unrestricted access to the underlying hardware.
   *   High Level Language (HLL) is a programming language that uses a human-readable and understandable syntax, often consisting of alpha-numerical symbols (letters and numbers). Examples of high-level languages include C++, Java, Python, and many others.

20.  **(b)**
   *   Augmented Reality (AR) bridges the gap between Digital World of Computers and real-life space / environment and gives better real understanding.
   *   The term coined by Thomas Caudell, in 1990, AR denotes augmenting real world physical environment by synthetic computer-generated elements.
   *   It is developed with the use of Digital Vision and Computer Graphics, and a blending together of Real Environment and Virtual Environment.
   *   Game 'Pokémon Go' is good example of AR, however AR can be used anywhere in Real World for enhanced learning with help of Digital World / Digital Devices.

21.  **(b)**

The Digital India programme coordinated by MeitY is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy.  A Monitoring Committee on Digital India under the Chairpersonship of Prime Minister has been constituted with representation drawn from relevant Ministries/ Departments to provide leadership, prescribe deliverables and milestones, and monitor periodically the implementation of the Digital India Programme.

22.  **(b)**

As a peer-to-peer (P2P) technology, Blockchain manages data in a decentralized manner instead of keeping it on a central computer. It's a type of distributed ledger technology, and relies on the concept of decentralized consensus i.e. the decision-making power is distributed among a network of nodes that collectively validate and agree on the transactions to be added to the Blockchain.

23.  **(c)**

Near Field Communication (NFC) Technology is a type of modification on Radio Frequency

Identification (RFID), however it is brought up for use of devices in close proximity say within 0.10 – 10 cm range.

24. **(d)**
   • WiFi can be used to create other networks also like WLAN, WPAN etc.
   • WiFi operates in two frequency bands: 2.4 GHz and 5.0 GHz. The 2.4 GHz band offers wider range but is more susceptible to interference from other devices like cordless phones and microwave ovens. The 5.0 GHz band offers faster speeds but has shorter range.

30. **(d)**
   • Moral responsibility of engineers is not merely following the law and their emphasis should go beyond that, especially during the technological development activities.
   • Engineers should keep confidentiality of only those types of information which do not affect safety and morality regarding public in general.

31. **(d)**
   The needs for protection of Intellectual Property Rights (IPR) are:
   • To prevent plagiarism
   • Prevent others from using it
   • Prevent using it for financial gains
   • Fulfill as an obligation to funding agency
   • Support income generation strategy

32. **(d)**
   **Self-direction Virtues:** Self-understanding, humility, moral autonomy, courage, self-discipline, perseverance, self-respect, integrity, honesty
   **Public Spirited Virtues:** Beneficence, generosity, sense of community
   **Team Work Virtues:** Collegiality, cooperation, respect for authority, loyalty
   **Proficiency Virtues:** Competence, diligence, creativity.

36. **(c)**
   • Kohlberg's theory is based on the study of men only, whereas Carol Gilligan's theory is based on the study of men and women both.
   • According to Kohlberg's theory of moral development, men give importance to moral rule.
   • Carol Gilligan's theory says women always want to keep up the personal relationships with all the persons involved in the situation. They give attention to circumstances leading to critical situations rather than rules.

41. **(c)**
   Debenture capital does not become share capital of the company.

42. **(a)**

$$X \; = \; P\left[(1+i)^4 - 1\right] = P \times \frac{i}{SFF}$$

Here,   $\qquad\qquad SFF \; = \; CRF - i$
   $\qquad\qquad\qquad = 0.38 - 0.16 = 0.22$

$$\therefore \qquad X = \frac{11000 \times 0.10}{0.22} = \text{Rs.}8000$$

**44.** **(b)**

Calculation of expected time, $\qquad t_E = \dfrac{t_0 + 4t_m + t_p}{6}$

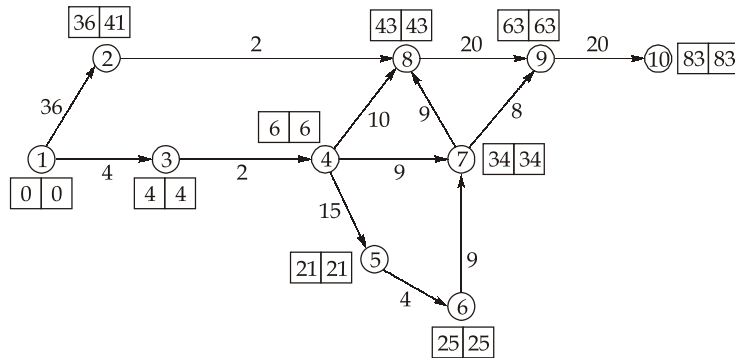| Activity | $t_E$ |
|----------|-------|
| 1 - 2 | 5 |
| 2 - 3 | 8 |
| 3 - 4 | 10 |
| 4 - 5 | 5 |
| 3 - 5 | 7 |
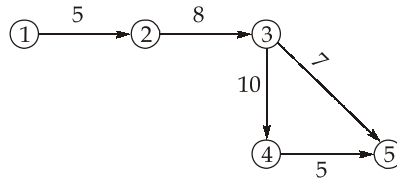


$$T_E = 28 \text{ days}$$

$$Z = \frac{T_S - T_E}{\sigma} = \frac{30 - 28}{2} = 1$$

$$\therefore \qquad P = 85\%$$

**45.** **(a)**

During the process of updating, neither activities are added nor deleted.

**46.** **(b)**



For activity 4 - 7,

$$
\begin{aligned}
\text{Free float} &= \text{Total float} - S_i \\
&= (\text{LFT} - \text{EST} - t_{ij}) - S_i \\
&= 34 - 6 - 9 - 0 \\
&= 19
\end{aligned}
$$

**49.** **(a)**

Resource smoothing is done after resource levelling.

**50.** **(d)**

Most conflict in a project occurs during the execution phase.

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