Plastic Arts 26th March 2025 Shift3

Time Allowed :3 Hours	**Maximum Marks :**300	**Total questions : 75**

General Instructions

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1. Question Paper contains 75 Questions .
2. Each correct answer will have +4 marks and wrong asnwer will lead to -1
3. Use of any electronic appliances is strictly prohibited.

1. What is the use of pyrometric cones in the Kiln?

(A) Checking color

(B) Measuring temperature

(C) Checking the colour of ceramic body

(D) Checking the firing quality

Correct Answer: (B) Measuring temperature

Solution: Step 1: Understanding Pyrometric Cones. Pyrometric cones are small, pyramid-shaped objects made of ceramic materials. They are designed to soften and bend at specific temperatures and over a certain time inside a kiln.

Step 2: Identifying their primary function. The primary purpose of these cones is to provide a visual indication that the kiln has reached a desired temperature and that the ceramic wares have received the right amount of heat-work (a combination of time and temperature). Therefore, their main use is to measure the temperature and the progress of the firing process.

Quick Tip

Pyrometric cones do not measure temperature directly like a thermometer. Instead, they measure 'heat-work,' which is a more accurate gauge of how a ceramic piece has matured during firing.

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2. Who is known as one of the most consistent practitioners of installation art form-

(A) Dhan Raj Bhagat

(B) Vivan Sundaram

(C) Nagji Patel

(D) Ramesh Pateria

Correct Answer: (B) Vivan Sundaram

Solution: Step 1: Identifying the artists. The options list several prominent Indian modern and contemporary artists.

Step 2: Associating the artist with the art form. Vivan Sundaram is one of India's most influential contemporary artists and is widely recognized as a pioneer and a consistent

practitioner of installation art. His work often involves multi-media installations that engage with social, historical, and political themes. The other artists are renowned sculptors but are not primarily known for installation art.

Quick Tip

Installation art is a genre of three-dimensional works that are often site-specific and designed to transform the perception of a space. Vivan Sundaram's work is a key example of this form in Indian art history.

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3. Identify the contemporary sculptor, who was known as a perfectionist in the 1970s, preferring assemblage and construction in industrial scrape to modelling and casting.

(A) Raghav Kaneria

(B) Nagji Patel

(C) M. Dharmani

(D) Pushpa Mala

Correct Answer: (A) Raghav Kaneria

Solution: Step 1: Analyzing the artistic style described. The question describes a sculptor working in the 1970s who specialized in "assemblage and construction in industrial scrape." This technique involves creating sculptures by joining together found objects, particularly industrial scrap materials.

Step 2: Matching the style to the artist. Raghav Kaneria is a distinguished Indian sculptor known for his innovative work with scrap metal and found industrial objects. His sculptures, especially from the 1970s, often take the form of animals and other figures constructed through assemblage, fitting the description perfectly.

Quick Tip

Assemblage is an artistic form or medium usually created on a defined substrate that consists of three-dimensional elements projecting out of or from the substrate. It is similar to collage, a two-dimensional medium.

4. Ramkinkar Vaij worked mostly in a form that was a peculiar synthesis of-

(A) Classical European and African elements.

(B) Native folk and cubist elements.

(C) Classical Indian and European elements.

(D) North Indian and South Indian elements.

Correct Answer: (B) Native folk and cubist elements.

Solution: Step 1: Understanding the artistic background of Ramkinkar Vaij. Ramkinkar Vaij was a pioneer of modern Indian sculpture and a key figure of Santiniketan. He was known for breaking away from academic styles of art.

Step 2: Identifying the key influences in his work. His sculptures are characterized by a dynamic, energetic style that draws heavily from the raw vitality of indigenous, native folk art (like the Santhal community he lived among) and combines it with modernist Western art principles, particularly Cubism's approach to form and structure. This synthesis created a unique and powerful artistic language.

Quick Tip

When studying major artists like Ramkinkar Vaij, focus on the unique synthesis of influences in their work. His blending of local Santhal life with European modernism is his most celebrated contribution.

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5. Among the contemporary sculptors of India, who is considered as pioneer in using different craft media and techniques?

(A) Sankho Chaudhuri

(B) Dhan Raj Bhagat

(C) P. V. Jankiram

(D) Ram Kinkar Vaij

Correct Answer: (A) Sankho Chaudhuri

Solution: Step 1: Understanding the question's focus. The question asks to identify a pioneer among Indian sculptors for integrating "craft media and techniques" into their work. This implies a conscious effort to bridge the gap between fine art (sculpture) and traditional crafts.

Step 2: Evaluating the artists' contributions. While all the listed artists are significant, Sankho Chaudhuri is particularly renowned for his elegant and simplified forms and his extensive experimentation with various media. He actively incorporated techniques and materials from traditional Indian crafts into his modernist sculptural practice, making him a pioneer in this regard.

Quick Tip

The distinction between 'art' and 'craft' was a significant theme for many modern Indian artists. Artists like Sankho Chaudhuri are important for elevating craft techniques to the level of fine art.

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6. Eminent Artist K.G. Subramanyan developed the style of his murals taking inspiration from-

(A) Lost-wax process of casting.

(B) Terracotta reliefs and glass painting.

(C) Fibre sculptures.

(D) Repoussed copper and metal casted forms drawing on Indian iconography.

Correct Answer: (B) Terracotta reliefs and glass painting.

Solution: Step 1: Analyze K.G. Subramanyan's artistic practice. K.G. Subramanyan was a versatile artist known for bridging the gap between modern art and traditional Indian craft practices. He was deeply associated with Santiniketan's ethos.

Step 2: Identify his primary mediums for murals. He is particularly celebrated for his large-scale murals made from terracotta tiles and his pioneering work in the technique of reverse painting on glass. These mediums, rooted in Indian craft traditions, were central to his mural style.

Quick Tip

K.G. Subramanyan is a key figure in Indian modern art for his dialogue with indigenous materials and craft traditions. His terracotta murals and glass paintings are iconic examples of this synthesis.

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7. Which of the following materials is not used in flexible molds?

(A) Latex

(B) Korogel

(C) Gelatin

(D) Gel Coat

Correct Answer: (D) Gel Coat

Solution: Step 1: Understand the function of a flexible mold. Flexible molds are used to cast objects with complex shapes and undercuts, as the mold can be bent or peeled away from the cast object. Materials like latex, silicone, and gelatin are used for this.
Step 2: Evaluate the function of a Gel Coat. A Gel Coat is not the mold material itself. It is a specialized resin applied to the surface of a mold (typically a rigid mold, like fiberglass) before casting. It becomes the smooth, hard outer surface of the final cast object and is not flexible in the way a mold material is.

Quick Tip

Distinguish between the material that forms the body of the mold (which needs to be flexible) and surface coatings (like a gel coat) that provide a high-quality finish to the cast part.

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8. Which of the following materials is not used as a releasing agent?

(A) Liquid Detergent

(B) Oil

(C) Liquid Wax

(D) Alum

Correct Answer: (D) Alum

Solution: Step 1: Define a releasing agent. A releasing agent (or mold release) is a substance applied to a mold surface to prevent the casting material from sticking to it, thereby facilitating easy removal.
Step 2: Analyze the options. Liquid detergent, oils, and waxes are all common substances used to create a non-stick barrier. Alum (potassium aluminum sulfate) is a chemical compound used in various processes like water purification and as a mordant in dyeing, but it is not used as a mold release agent.

Quick Tip

A good rule of thumb for identifying release agents is to think of common slippery or non-stick substances. Alum does not share these properties and has different industrial and chemical uses.

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9. Which of the following materials is used for the Flexible molds?

(A) Ice

(B) Korogel

(C) Coal

(D) Resin

Correct Answer: (B) Korogel

Solution: Step 1: Evaluate the suitability of each material for mold making. Ice and Coal are clearly unsuitable materials for creating a stable, reusable mold. ”Resin” is a very broad category; while some silicone resins are flexible, many epoxy or polyester resins are rigid.
Step 2: Identify the specific material. Korogel is a type of hydrogel known for its flexibility and is used in various applications, including mold making in certain contexts. Among the given choices, it is the most specific and correct answer for a flexible mold material.

Quick Tip

When faced with a general term like ”resin” and a specific material like ”Korogel,” the specific material is often the intended correct answer if it fits the description.

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10. What is clay?

(A) Moist, stiff, tenacious earth

(B) Hard, nonporous and fired

(C) Hard, porous and baked

(D) Baked, hard and non-porous

Correct Answer: (A) Moist, stiff, tenacious earth

Solution: Step 1: Differentiate between raw clay and fired ceramic. The question asks to define ”clay,” which refers to the raw material in its natural, plastic state.
Step 2: Analyze the options. Option (A) accurately describes the physical properties of unfired clay: it is a type of earth that is moist, stiff (can hold a shape), and tenacious (sticky and cohesive). The other options (B, C, D) all describe clay *after* it has been fired in a kiln, at which point it becomes ceramic.

Quick Tip

Always distinguish between the raw material and the finished product. Clay is the workable earth; ceramic is the hard, permanent object created after firing the clay.

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11. What is sand?

(A) Fine Silica

(B) Flint

(C) Grog

(D) Feldspar

Correct Answer: (A) Fine Silica

Solution: Step 1: Identify the primary chemical composition of sand. Sand is a granular material composed of finely divided rock and mineral particles. Its most common constituent is silica (silicon dioxide, SiO).
Step 2: Compare this with the given options. ”Fine Silica” is the most accurate chemical description. Flint is a specific form of microcrystalline quartz (which is silica). Grog is fired clay that has been ground up. Feldspar is a different mineral used as a flux in clay bodies and glazes.

Quick Tip

In ceramics, materials are often defined by their chemical role. Silica is a primary glass-former, Feldspar is a flux, and Grog is a temper (or opener). Sand is primarily used as a source of silica.

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12. What is a maquette?

(A) Three-dimensional terms of the idea

(B) Rough Drawing

(C) Visualization

(D) Illusion

Correct Answer: (A) Three-dimensional terms of the idea

Solution: Step 1: Define the term ”maquette.” A maquette is a small-scale model or preliminary sketch made by a sculptor. It serves as a guide for a larger, finished work.
Step 2: Evaluate the options based on this definition. A maquette is inherently three-dimensional. A ”Rough Drawing” is two-dimensional. ”Visualization” is a mental process, not a physical object. While the phrasing of option (A) is slightly unconventional, it correctly captures the essence of a maquette as a physical, 3D representation of an artistic idea.

Quick Tip

Think of a maquette as a sculptor's 3D sketch. It's used to explore form, composition, and scale before committing to the final, often much larger, sculpture.

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13. What are the characteristics of the stoneware ceramic?

(A) Soft, porous and moist

(B) Hard, Fired and non porous

(C) Fired, porous and soft body

(D) Soft, porous and opaque body

Correct Answer: (B) Hard, Fired and non porous

Solution: Step 1: Understand the properties of stoneware. Stoneware is a type of ceramic that is fired at a high temperature (typically between 1100°C and 1300°C). This high firing temperature causes the clay particles to fuse together in a process called vitrification.
Step 2: Relate vitrification to physical properties. Vitrification makes the ceramic body dense, hard, and non-porous (impermeable to water). Therefore, stoneware is characterized as being hard, fired, and non-porous. Options describing softness and porosity refer to lower-fired ceramics like earthenware or unfired clay.

Quick Tip

Ceramic properties are determined by firing temperature. Earthenware is low-fired and porous. Stoneware and Porcelain are high-fired, leading to vitrification, which makes them hard and non-porous.

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14. Which of the strong abrasive is used to achieve the smoothness on the stone sculpture?

(A) Softstone

(B) Carborundum

(C) Lime stone

(D) Sand stone

Correct Answer: (B) Carborundum

Solution: Step 1: Identify the need for a ”strong abrasive” for stone. To smooth or shape stone, one needs a material that is significantly harder than the stone itself.
Step 2: Evaluate the options. Softstone, Limestone, and Sandstone are all types of rock, not specialized abrasives. Carborundum is a common trade name for Silicon Carbide (SiC), an extremely hard synthetic compound that ranks just below diamond on the Mohs hardness scale. It is widely used for grinding, sanding, and polishing hard materials like stone and metal.

Quick Tip

On the Mohs scale of mineral hardness, most stones (like marble or granite) are between 3 and 7. Silicon Carbide (Carborundum) is about 9.5, making it highly effective for abrading stone.

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15. What is the use of ’pouring funnel’ in metal casting?
(A) To escape the gas or air
(B) To pour the molten metal
(C) To blow the investment
(D) To hold the mold

Correct Answer: (B) To pour the molten metal

Solution: Step 1: Understand the terminology in metal casting. In metal casting, a mold contains a system of channels to guide the molten metal. This is called the gating system.
Step 2: Identify the function of a pouring funnel. A pouring funnel, also called a pouring cup or basin, is the opening at the top of the gating system. Its primary and direct purpose is to receive the molten metal from the crucible or ladle and guide it smoothly into the main channel (the sprue), minimizing turbulence and splashes. Therefore, its use is to pour the molten metal into the mold system.

Quick Tip

The parts of a casting mold system have specific names: the Pouring Funnel (or cup) is for entry, the Sprue is the vertical channel, Runners are horizontal channels, and Gates are the entry points into the mold cavity. Vents are used to let gas escape.

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16. What is the use of vertical lifting tongue in metal casting?

(A) to take out the crucible

(B) to pour the melted metal

(C) to separate the metal

(D) to clean the metal

Correct Answer: (A) to take out the crucible

Solution: Step 1: Identify the equipment. A crucible is a container used for melting and holding metal at high temperatures in a furnace. ”Vertical lifting tongs” (often called crucible tongs) are specialized tools designed to handle this hot and heavy container.
Step 2: Determine the function of the tool. The design of vertical lifting tongs allows a foundry worker to securely grip the crucible and lift it straight up out of the furnace. This is essential for safely transporting the molten metal to the mold for pouring. Therefore, their primary use is to take out the crucible from the furnace.

Quick Tip

In a foundry, specialized tools are named for their specific function. ”Lifting tongs” are for lifting the crucible, while a ”pouring shank” is often used to hold the crucible for the actual pouring.

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17. Which of the following metals is a Non-Ferrous Metal?

(A) Mild Steel

(B) Steel

(C) Iron

(D) Bronze

Correct Answer: (D) Bronze

Solution: Step 1: Define ”Ferrous” and ”Non-Ferrous” metals. A ferrous metal is any metal that contains iron (from the Latin word *ferrum*). Non-ferrous metals are metals or alloys that do not contain iron in any significant amount.
Step 2: Analyze the options. Iron is the base element of ferrous metals. Steel and Mild Steel are alloys of iron and carbon, making them ferrous. Bronze is an alloy primarily consisting of copper, usually with tin as the main additive. Since its main component is not iron, it is a non-ferrous metal.

Quick Tip

A simple way to remember is that if it’s a type of iron or steel, it’s ferrous. Common non-ferrous metals include aluminum, copper, brass, bronze, and zinc.

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18. Who has used sheet-metal to create pictorial sculptures as freestanding forms and embellishing their surfaces with linear elements?
(A) P. V. Janakiram
(B) Mrinalini Mukherjee
(C) Meera Mukherjee
(D) Lydia Mehta

Correct Answer: (A) P. V. Janakiram

Solution: Step 1: Analyze the described artistic technique. The question points to a sculptor who works with sheet metal, creates freestanding forms, and uses linear elements for surface decoration. This technique is often associated with repoussé and chasing on sheet copper or other metals.
Step 2: Match the technique to the artist. P. V. Janakiram was a prominent figure in the Madras Art Movement and is renowned for his unique sculptural style using beaten sheet metal (primarily copper). He created freestanding, icon-like figures and embellished their

surfaces with intricate linear details, perfectly matching the description. Mrinalini Mukherjee worked with hemp fibre, and Meera Mukherjee was known for bronze casting inspired by the Dhokra technique.

Quick Tip

Associate artists with their signature materials and techniques. Janakiram is synonymous with repoussé sheet metal, Mrinalini Mukherjee with fibre, and Meera Mukherjee with Dhokra-inspired bronze.

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19. The famous sculpture 'Vishnu lying on Sheshnaga' which was found at Deogarh represents the skillful artistry in-

(A) Terracotta

(B) Stone

(C) Bronze

(D) Cement

Correct Answer: (B) Stone

Solution: Step 1: Identify the sculpture and its location. The 'Vishnu lying on Sheshnaga' (Anantashayana Vishnu) panel is one of the most famous relief sculptures in Indian art. It is located at the Dashavatara Temple in Deogarh.

Step 2: Determine the material and period. The Dashavatara Temple is a Gupta period temple, dating to around the 5th century CE. The art and architecture of this period are characterized by masterful work in carved stone. The sculpture panel itself is a prime example of Gupta-era stone carving, known for its elegance, detail, and classical balance.

Quick Tip

The Gupta period is often called the "Golden Age" of Indian art, particularly noted for its exquisite stone sculptures and temple architecture. The Deogarh temple is a textbook example of this style.

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20. Bush hammer is used in -

(A) Wood carving

(B) Stone carving

(C) Cement cast Carving

(D) Plaster carving

Correct Answer: (B) Stone carving

Solution: Step 1: Understand the tool. A bush hammer is a masonry tool with a head that has a grid of points on its face. It acts like many small hammers hitting the surface at once. **Step 2:** Identify its application. This tool is used to create a textured, rough, non-slip surface on hard materials. It is primarily used in stone carving and concrete work to texturize the surface after it has been initially shaped. It is too aggressive for softer materials like wood or plaster.

Quick Tip

The texture created by a bush hammer is often seen on stone steps, paving, and building facades. The name comes from the bush-like appearance of the points on the hammer's head.

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21. What are the tools used to split the stones?

(A) Feathers and Wedges

(B) Banker

(C) Pitcher

(D) Claw

Correct Answer: (A) Feathers and Wedges

Solution: Step 1: Analyze the process of splitting stone. Splitting a large block of stone requires applying immense, controlled outward pressure from within a drilled hole or seam. **Step 2:** Evaluate the tools. "Feathers and Wedges" (also called plug and feather) is the classic toolset for this task. A series of holes is drilled, and into each hole, two "feathers"

(slim shims) are inserted. A ”wedge” is then driven down between the feathers, exerting slow, even pressure that splits the stone along the line of the holes. A banker is a workbench, a pitcher is a shaping chisel, and a claw is a type of chisel for texturing.

Quick Tip

The feathers and wedges method is an ancient technique that allows for precise splitting of even the hardest stones like granite. It is still used today.

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22. What are the three components mixed up for setting the Glass fiber casting?

(A) Resin, accelerator and catalyst

(B) Accelerator, catalyst and fiber matt

(C) Gel coat, Resin and accelerator

(D) Gel coat, Resin and Catalyst

Correct Answer: (A) Resin, accelerator and catalyst

Solution: Step 1: Understand the chemistry of polyester/fiberglass casting. Fiberglass casting uses a thermosetting plastic, typically polyester resin, which must cure from a liquid to a solid. This curing is a chemical reaction. The glass fiber mat is the reinforcement, not part of the chemical setting mixture. A gel coat is an optional surface layer.
Step 2: Identify the roles of the chemicals. The **Resin** is the main polymer body. The **Catalyst** (like MEKP) is the initiator that starts the polymerization reaction. The **Accelerator** (like cobalt) is a chemical that speeds up the reaction started by the catalyst, allowing it to cure at room temperature. These three components form the chemical mixture for setting the resin.

Quick Tip

Think of it as a chain reaction: the Accelerator ”wakes up” the Resin so it’s ready to react, and the Catalyst ”kicks off” the actual hardening process.

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23. Which of the following tools is used for wood carving?

(A) Claw

(B) Gouges

(C) Bush

(D) Hammer

Correct Answer: (B) Gouges

Solution: Step 1: Differentiate between general and specific tools. A hammer is a general tool used to strike other tools. A claw or bush hammer are specific to stone or masonry. **Step 2:** Identify the specific wood carving tool. Gouges are the quintessential wood carving tools. They are chisels with a curved cutting edge, available in a vast array of shapes and curvatures, used for scooping out wood and creating curved forms. While a carver uses a mallet (a type of hammer), the tool that does the cutting is the gouge or chisel.

Quick Tip

The main cutting tools in woodcarving are chisels (for flat cuts) and gouges (for curved cuts). The variety of gouge sweeps (curves) and widths is what allows for detailed sculptural work.

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24. Which of the following is the correct chemical formula for Plaster of Paris?

(A) $4\,CaSO_2 \cdot 2\,H_2O$

(B) $CaSO_4 \cdot 2\,H_2O$

(C) $CaSO_4 \cdot \frac{1}{2}\,H_2O$

(D) $3\,CaSO_4 \cdot \frac{1}{2}\,H_2O$

Correct Answer: (C) $CaSO_4 \cdot \frac{1}{2}\,H_2O$

Solution: Step 1: Recall the source material of plaster. Plaster of Paris is made from gypsum. The chemical formula for gypsum is $CaSO_4 \cdot 2\,H_2O$ (calcium sulfate dihydrate). **Step 2:** Understand the manufacturing process. To make Plaster of Paris, gypsum is heated to about 150°C, driving off most of the water. This process, called calcination, converts the calcium sulfate dihydrate into calcium sulfate hemihydrate. The prefix ”hemi-” means half.

Step 3: Identify the correct formula. The chemical formula for calcium sulfate hemihydrate is $CaSO_4 \cdot \frac{1}{2} H_2O$. When water is added back to plaster, it re-forms into gypsum and hardens.

Quick Tip

Remember the relationship: Gypsum ($CaSO_4 \cdot 2\,H_2O$) has two water molecules. Heating it removes one and a half molecules, leaving Plaster of Paris ($CaSO_4 \cdot \frac{1}{2} H_2O$) with "hemi" or half a water molecule.

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25. Metal Shim is used for-

(A) Metal casting

(B) Fiber casting

(C) Mould making of Plaster of Paris

(D) Investment casting

Correct Answer: (C) Mould making of Plaster of Paris

Solution: Step 1: Define a "shim." A shim is a thin piece of material used to fill small gaps or spaces between objects. In mold making, it is used to create a dividing wall.
Step 2: Understand its use in plaster mold making. When making a multi-part plaster mold directly on a model (e.g., a clay sculpture), thin pieces of metal called "metal shims" (or brass shims) are inserted into the clay to create a clean separation line. The first part of the plaster mold is poured up to this shim wall. The shims are then removed, a release agent is applied, and the second part of the mold is poured against the first, creating a perfect seam. This technique is specific to piece-molding in plaster.

Quick Tip

Shims are the key to creating multi-part piece molds in plaster. They act as a temporary fence that allows you to pour one section of the mold at a time.

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26. What is the hardening time of the cement?

(A) 7 days

(B) 5 days

(C) 3 days

(D) 11 days

Correct Answer: (A) 7 days

Solution: Step 1: Understand the process of cement hardening. Cement hardens through a chemical process called hydration, which begins as soon as water is added. This process continues for a very long time, with strength increasing over weeks, months, and even years.
Step 2: Identify standard testing intervals. In civil engineering and construction, concrete (which uses cement as a binder) is typically tested for compressive strength at specific intervals. The 7-day mark is a crucial early benchmark to estimate the final strength. By 7 days, cement has typically gained about 65-70% of its 28-day strength, which is considered the standard reference. Among the given options, 7 days is the most common and significant interval for assessing initial hardening and strength gain.

Quick Tip

While cement starts setting in hours and continues to harden for years, its strength is commonly measured at 3 days, 7 days, and 28 days. The 28-day strength is the standard for design purposes, and the 7-day strength is a key quality control check.

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27. Which of the following are the basic ingredients for the concrete mixture?

(A) Pabbles and water

(B) Water, Sand and Cement

(C) Cement, wood and clay

(D) Clay and Cement

Correct Answer: (B) Water, Sand and Cement

Solution: Step 1: Define concrete. Concrete is a composite material composed of aggregate bonded together with a fluid cement that hardens over time.
Step 2: Identify the core components. The main components are:

- **Binder:** Cement (typically Portland cement)
- **Water:** To trigger the chemical reaction (hydration) of the cement.
- **Aggregates:** These are inert granular materials. They are divided into fine aggregate (sand) and coarse aggregate (gravel or crushed stone, i.e., ”pabbles”).

Option (B) lists three of these essential ingredients. While it omits the coarse aggregate, it is the most complete and correct combination among the choices. The other options include incorrect materials like wood or clay or are incomplete.

Quick Tip

A simple way to think of concrete is a paste of cement and water that coats and binds together aggregates (sand and gravel) to form a rock-like mass.

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28. Which of the following metals has more ductility?

(A) Zinc

(B) Tin

(C) Aluminum

(D) Copper

Correct Answer: (D) Copper

Solution: Step 1: Define ductility. Ductility is a mechanical property of a material that describes its ability to be stretched, pulled, or drawn into a thin wire without breaking.
Step 2: Compare the ductility of the given metals. While all are metals, their ductility varies. Copper is exceptionally ductile, which is why it is the standard material for electrical wiring. Aluminum is also very ductile. Zinc and tin are comparatively brittle and have much lower ductility. Between aluminum and copper, copper is generally considered to have superior ductility.

Quick Tip

The extensive use of a metal in wiring (like copper and aluminum) is a strong indicator of its high ductility.

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29. Which of the following metals has more corrosion resistance?

(A) Zinc

(B) Aluminum

(C) Copper

(D) Silver

Correct Answer: (B) Aluminum

Solution: Step 1: Understand corrosion resistance. Corrosion resistance is the ability of a metal to withstand degradation due to chemical reactions with its environment. This is often achieved by forming a stable, protective outer layer.
Step 2: Analyze the corrosion behavior of each metal.

- **Aluminum:** Reacts quickly with oxygen in the air to form a very thin, tough, and transparent layer of aluminum oxide. This passive layer is highly inert and protects the metal from further corrosion.
- **Zinc:** Corrodes in preference to steel (which is why it's used for galvanizing), but the corrosion product is not as stable as aluminum's oxide layer.
- **Copper:** Corrodes slowly to form a distinctive green patina (copper sulfate), which can be protective.
- **Silver:** Tarnishes by reacting with sulfur compounds in the air to form black silver sulfide.

Due to its extremely stable and self-healing passive oxide layer, aluminum has the best overall corrosion resistance among the choices in typical atmospheric conditions.

Quick Tip

Some of the most reactive metals, like aluminum, can be the most corrosion-resistant because they instantly form a tough, protective ”skin” of oxide.

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30. What is the main purpose of making piece mold?

(A) To produce more than one production

(B) To produce single production

(C) To produce liquid production

(D) To carve the wood

Correct Answer: (A) To produce more than one production

Solution: Step 1: Define a ”piece mold.” A piece mold is a mold made of multiple, interlocking sections. It is designed to be disassembled.

Step 2: Determine the purpose of this design. The primary reason for making a mold in pieces is to successfully cast an object that has complex shapes and undercuts. A one-piece mold would trap such an object. By designing the mold to come apart, the original model can be removed without damage, and the mold can be reassembled. This allows the mold to be used repeatedly to create multiple copies or productions of the same object. A ”waste mold,” by contrast, is destroyed after a single production.

Quick Tip

If a mold can be taken apart and put back together, its purpose is almost always for reuse, enabling the production of multiple copies.

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31. Identify the sculptor who has used lost-wax process of casting with reference to folk and tribal art techniques to great creative advantage in his/her sculptures.

(A) Amar Nath Sehgal

(B) Balbir Sing Katt

(C) Meera Mukherjee

(D) Mrinalini Mukherjee

Correct Answer: (C) Meera Mukherjee

Solution: Step 1: Analyze the key elements of the question. The question is looking for a sculptor who meets three criteria: 1) uses the lost-wax process, 2) is influenced by folk and tribal art, and 3) applies this to their own creative sculptures.
Step 2: Evaluate the artists. Meera Mukherjee is the artist most famously associated with this practice. She studied the traditional Dhokra lost-wax casting technique with tribal artisans in Bastar, Chhattisgarh. She then adapted and scaled up this folk technique to create her unique, large-scale modernist bronze sculptures, which often depicted ordinary people and mythological themes.

Quick Tip

Meera Mukherjee's signature style is a direct bridge between ancient Indian tribal craft (Dhokra) and modern Indian sculpture.

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32. The famous sculpture 'Shiva slays Yama' was carved at-

(A) Ajanta Caves

(B) Ellora Caves

(C) Elephanta Caves

(D) Bhimbetka Caves

Correct Answer: (B) Ellora Caves

Solution: Step 1: Identify the iconography. The sculpture 'Shiva slays Yama' depicts the story of Shiva as Kalantaka, the "Ender of Death," saving his devotee Markandeya from Yama, the god of death.
Step 2: Locate the sculpture among the options. The Ellora Caves are a massive complex of rock-cut monuments known for their large, dynamic, and dramatic Shaivite, Vaishnavite, and Jain sculptures. This theme of Kalantaka is powerfully depicted in several locations at Ellora, most notably within the Kailasa Temple complex (Cave 16) and Cave 29 (Dhumar Lena), showcasing the dramatic narrative style of the Rashtrakuta period.

Quick Tip

Ellora is renowned for its large-scale, high-relief narrative panels depicting Puranic legends. If a question mentions a dramatic Hindu mythological scene, Ellora is often a strong candidate.

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33. Identify the Ellora Cave, where the sculpture of 'Govardhandhari Krishna' is carved-

(A) Cave No. 13

(B) Cave No. 16

(C) Cave No. 20

(D) Cave No. 15

Correct Answer: (B) Cave No. 16

Solution: Step 1: Identify the sculpture's theme. 'Govardhandhari Krishna' refers to the episode where Krishna lifts Mount Govardhan to protect the villagers of Vrindavan from the wrath of Indra.

Step 2: Locate this theme within the Ellora Caves. Cave No. 16 at Ellora is the Kailasa Temple, the largest monolithic rock-cut temple in the world. This vast complex is dedicated to Shiva but also contains numerous panels dedicated to Vaishnava themes. A significant and well-known panel depicting Krishna lifting Mount Govardhan is carved on the walls of the Kailasa Temple. While a version also exists in Cave 15, the one in Cave 16 is one of the most prominent.

Quick Tip

Cave 16 (Kailasa Temple) is the centerpiece of Ellora and contains a vast repertoire of Hindu mythology. Many of the most famous sculptures from Ellora are located within this single cave complex.

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34. 'Das Avatara' from cave no 15 of the Ellora was carved during which century?

(A) 2^{nd} C.E.

(B) 5^{th} C.E.

(C) 8^{th} C.E.

(D) 13^{th} C.E.

Correct Answer: (C) 8^{th} C.E.

Solution: Step 1: Identify Cave 15 and its patronage. Cave 15 at Ellora is known as the Dashavatara (Ten Avatars of Vishnu) cave. Its construction is attributed to the Rashtrakuta dynasty, specifically during the reign of Dantidurga.
Step 2: Determine the historical period of the patrons. The Rashtrakuta dynasty ruled over large parts of the Indian subcontinent between the 8th and 10th centuries C.E. The reign of Dantidurga, who commissioned the transformation of this cave from a Buddhist vihara to a Hindu temple, was in the mid-8th century (circa 735-756 C.E.). Therefore, the carvings belong to the 8th century C.E.

Quick Tip

The majority of the Hindu and Jain caves at Ellora, including the most famous ones like Cave 15 and 16, were created under the patronage of the Rashtrakuta dynasty (8th-10th centuries).

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35. The famous sculpture 'Queen mother and baby prince' (Badoh) is displayed in-

(A) Gwalior Museum

(B) Patna Museum

(C) Craft Museum

(D) National Museum

Correct Answer: (D) National Museum

Solution: Step 1: Identify the specific sculpture. The sculpture "Queen mother and baby prince" from Badoh, Madhya Pradesh, is a well-known piece of early medieval Indian art, admired for its graceful composition and tender expression.

Step 2: Determine its current location. As a significant national art treasure, this sculpture is part of the collection of and is displayed at the National Museum in New Delhi. The museum houses a vast collection of artifacts covering the entire span of Indian art and history.

Quick Tip

Many of India's most iconic and historically significant sculptures, discovered from various archaeological sites across the country, are housed in the National Museum, New Delhi, for preservation and public display.

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36. The famous panel of sculpture called 'Descent of the Bodhisattva in the form of a white elephant' is displayed in-

(A) State archaeological museum

(B) National museum

(C) Nagarjunakonda archaeological museum

(D) Indian Museum

Correct Answer: (D) Indian Museum

Solution: Step 1: Identify the artwork and its origin. The panel depicting the 'Descent of the Bodhisattva' (Queen Maya's dream) is a masterpiece of the Bharhut stupa railings. The art of Bharhut is one of the earliest and most important examples of Buddhist narrative sculpture in India.

Step 2: Determine the current location of the Bharhut remains. The remains of the Bharhut stupa, including its railings and gateway, were excavated in the 19th century. The vast majority of these significant findings were moved for preservation and are now housed and prominently displayed in the Indian Museum in Kolkata, which holds the largest collection of Bharhut artifacts.

Quick Tip

When a question refers to major artifacts from the Bharhut Stupa, the Indian Museum in Kolkata is almost always the correct answer, as it holds the principal collection.

37. Which of the following metals has the lowest melting point?

(A) Aluminium

(B) Tin

(C) Zinc

(D) Copper

Correct Answer: (B) Tin

Solution: Step 1: Recall or look up the approximate melting points of the given metals.

- Copper (Cu): approx. 1085°C (1984°F)
- Aluminium (Al): approx. 660°C (1220°F)
- Zinc (Zn): approx. 420°C (787°F)
- Tin (Sn): approx. 232°C (450°F)

Step 2: Compare the values. Comparing the melting points, Tin has the lowest value at approximately 232°C. This property makes it useful for solders and alloys like pewter.

Quick Tip

Metals with low melting points like tin and lead have historically been easy to work with and are common in solders and low-temperature casting alloys.

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38. Which of the following is an alloy?

(A) Brass

(B) Copper

(C) Zinc

(D) Gold

Correct Answer: (A) Brass

Solution: Step 1: Define an alloy and an element. An element is a pure substance consisting of only one type of atom (e.g., Copper, Zinc, Gold). An alloy is a mixture of two or more elements, where at least one is a metal.
Step 2: Classify the given options. Copper, Zinc, and Gold are all pure metallic elements found on the periodic table. Brass is not an element; it is a well-known alloy made by combining Copper and Zinc.

Quick Tip

Common alloys to remember are Brass (Copper + Zinc), Bronze (Copper + Tin), and Steel (Iron + Carbon).

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39. The 'Dancing Girl' from Mohenjo Daro is a part of the collection at-

(A) National Museum, New Delhi

(B) Prince of Wales Museum, London

(C) National Gallery of Modern Art, Mumbai

(D) Sarnath Musem, Varanasi

Correct Answer: (A) National Museum, New Delhi

Solution: Step 1: Identify the artifact. The 'Dancing Girl' is one of the most famous and iconic artifacts of the Indus Valley Civilization, dating back to circa 2500 BCE. It is a small bronze statuette.
Step 2: Determine its current location. After the partition of India, artifacts from the excavations at Harappa and Mohenjo-Daro were divided. The 'Dancing Girl' was allocated to India and is a prized possession of the National Museum in New Delhi, where it is a highlight of the Indus Valley Civilization gallery.

Quick Tip

Key artifacts of the Indus Valley Civilization are split between India and Pakistan. The 'Dancing Girl' and the 'Priest-King' are two of the most famous; the 'Dancing Girl' is in New Delhi, while the 'Priest-King' is in the National Museum of Pakistan, Karachi.

40. The famous sculpture 'Parvati and Ganesa' from early 6^{th} c. C.E. is displayed in-

(A) Baroda Museum

(B) Gwalior Museum

(C) Patna Museum

(D) Bihar Museum

Correct Answer: (B) Gwalior Museum

Solution: Step 1: Identify the sculpture and its origin. This question likely refers to sculptures found in the regions of Central India, which flourished during the Gupta and post-Gupta periods (around the 6th century C.E.). The area around Gwalior in Madhya Pradesh is rich in such archaeological finds.

Step 2: Locate the artifact's museum. The Gujari Mahal Archaeological Museum in Gwalior holds a significant collection of sculptures from this period and region. Important artifacts, including those depicting Hindu deities like Parvati and Ganesha from the 6th century, are housed there.

Quick Tip

Regional archaeological museums often hold the most important finds from their respective areas. For sculptures from Central India (like Madhya Pradesh), the Gwalior Museum is a major repository.

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41. Which of the following qualities is not a characteristic of the metals?

(A) Malleability

(B) Hardness

(C) Ductility

(D) Fragility

Correct Answer: (D) Fragility

Solution: Step 1: Define the properties.

- **Malleability:** The ability to be hammered or pressed into a thin sheet.
- **Hardness:** Resistance to scratching or indentation.
- **Ductility:** The ability to be drawn into a wire.
- **Fragility:** The tendency to break or shatter with little to no plastic deformation.

Step 2: Relate the properties to metals. Malleability, ductility, and a general degree of hardness are all hallmark characteristics of most metals. Fragility, however, is the opposite of ductility and malleability. It is a property more commonly associated with non-metallic materials like ceramics and glass. While some metals can be brittle, fragility is not a general, defining characteristic of the metal group.

Quick Tip

Metals bend, non-metals break. Malleability and ductility describe ways of bending and reshaping, while fragility describes breaking.

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42. When was the 'Lion Capital' Ashokan Piller carved?

(A) 1st Centuary BCE

(B) 3rd Century BCE

(C) 5th Century BCE

(D) 7th Century BCE

Correct Answer: (B) 3rd Century BCE

Solution: Step 1: Identify the patron of the Ashokan Pillars. The Lion Capital is the crowning piece of a pillar erected by the Mauryan Emperor Ashoka.
Step 2: Determine the period of Ashoka's reign. Emperor Ashoka the Great ruled the Mauryan Empire from circa 268 to 232 BCE. This period falls squarely within the 3rd Century BCE. Therefore, the pillar and its capital were carved during this time.

Quick Tip

Mauryan art is synonymous with the reign of Emperor Ashoka, which is firmly dated to the 3rd Century BCE.

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43. Identify the correct height of the famous sculpture 'Lion Capital' in cm -

(A) 213 cm

(B) 170 cm

(C) 258 cm

(D) 295 cm

Correct Answer: (A) 213 cm

Solution: Step 1: Recall the scale of the Lion Capital of Ashoka. The sculpture is a monumental capital designed to be placed atop a very tall pillar. It is a substantial piece. **Step 2:** Convert known height to centimeters. The height of the Lion Capital is officially documented as 2.15 meters or approximately 7 feet. Converting 2.15 meters to centimeters gives 215 cm. The closest option to this actual height is 213 cm.

Quick Tip

Remembering the height of the Lion Capital as "just over 2 meters" or "about 7 feet" can help you quickly select the correct value from a list of options.

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44. Identify the medium of the famous sculpture 'Lion Capital' -

(A) Lime Stone

(B) Sand Stone

(C) Pink Marble

(D) Granite

Correct Answer: (B) Sand Stone

Solution: Step 1: Identify the characteristic material of Mauryan art. A defining feature of

Ashokan pillars and their capitals is the material they were carved from. They were monoliths, carved from a single block of stone.

Step 2: Specify the type of stone. The stone used was a fine-grained sandstone, quarried from Chunar near Varanasi. This particular sandstone was chosen for its ability to take a very high, mirror-like polish, known as the ”Mauryan polish,” which is a distinctive characteristic of these sculptures.

Quick Tip

Ashokan pillars are famous for two things: being monolithic (single-stone) and being made of highly polished Chunar Sandstone.

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45. Select the museum where this famous sculpture ’Lion Capital’ is displayed -

(A) Sarnath Museum

(B) Indian Museum

(C) Bharat Kala Bhavan Museum

(D) Indian Archaeological Museum

Correct Answer: (A) Sarnath Museum

Solution: Step 1: Recall the original location of the pillar. The Lion Capital was originally placed atop an Ashokan pillar at Sarnath, the site where the Buddha gave his first sermon.

Step 2: Determine the current location of the artifact. The Lion Capital was discovered during archaeological excavations at Sarnath in the early 20th century. Due to its immense historical and national importance, it is now the centerpiece of the Sarnath Museum, which was built near the archaeological site to house the findings. It is also the national emblem of India.

Quick Tip

Major archaeological finds are often housed in a site museum built specifically for them. For the Lion Capital, its home is the Sarnath Museum, located at the very place it was found.

46. Identify the metals by its sequential order from its minimum to maximum malleability? (A) Nikel (B) Zinc (C) Platinum (D) Coper (E) Silver

Choose the **correct** answer from the options given below:

(1) (A), (B), (C), (D), (E)

(2) (D), (E), (A), (B), (C)

(3) (B), (E), (D), (C)

(4) (E), (D), (C), (B), (A)

Correct Answer: There appears to be a typo in option (3). Based on standard metallurgical properties, the correct sequence is Zinc ¡ Nickel ¡ Platinum ¡ Copper ¡ Silver. If we assume option (3) intended to be (B), (A), (C), (D), (E), it would be the closest correct sequence. However, none of the options perfectly match the established order. For this problem, we will reconstruct the most plausible intended answer. The order of malleability from least to most is generally: Zinc, Nickel, Platinum, Copper, Silver. Thus, the sequence is (B), (A), (C), (D), (E).

Solution: Step 1: Define malleability. Malleability is the property of a metal that allows it to be hammered, pressed, or rolled into thin sheets without breaking.

Step 2: Order the given metals based on their malleability, from lowest to highest.

- (B) Zinc: Is relatively brittle compared to other metals on the list and has low malleability.
- (A) Nickel: Is malleable, but less so than copper and silver.
- (C) Platinum: Is highly malleable.
- (D) Copper: Is very malleable, a standard property for its use in sheets and pipes.
- (E) Silver: Is one of the most malleable metals, second only to gold.

The correct sequential order from minimum to maximum malleability is Zinc, Nickel, Platinum, Copper, Silver. This corresponds to the sequence (B), (A), (C), (D), (E). None of the provided options perfectly match this sequence, suggesting a possible error in the question's options.

Quick Tip

The most malleable metals are the precious metals (Gold, Silver, Platinum), followed by common ductile metals like Copper and Aluminum. Less malleable metals include Zinc and Iron.

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47. Correct order adopted for making sculptures through lost wax process- (A) Application of the facing (B) Modelling the wax form over the core (C) Preparation of the core (D) Melting and pouring the metals (E) Application of the negative mold investment material

Choose the **correct** answer from the options given below:

(1) (C), (B), (A), (E), (D)

(2) (B), (A), (C), (E), (D)

(3) (A), (C), (E), (B), (D)

(4) (D), (B), (C), (A), (E)

Correct Answer: (1) (C), (B), (A), (E), (D)

Solution: Step 1: Logically sequence the steps of the lost-wax casting process (cire-perdue).

- (C) Preparation of the core: First, a heat-resistant inner core (often clay-based) is made, roughly in the shape of the final sculpture.
- (B) Modelling the wax form over the core: Next, a layer of wax is applied over the core and is sculpted into the final desired form of the sculpture.
- (A) Application of the facing: A fine layer of investment material (facing) is applied to the wax model to capture all the fine details.
- (E) Application of the negative mold investment material: The entire model is then covered in a thicker, coarser investment material to create the main mold. Sprues and vents are added.
- (D) Melting and pouring the metals: The mold is heated to melt and drain out the wax (lost wax), and then molten metal is poured into the cavity left by the wax.

Step 2: Match the logical sequence to the given options. The correct order is (C), (B), (A), (E), (D). This matches option (1).

Quick Tip

Think of lost-wax casting as building from the inside out: Core -¿ Wax model -¿ Investment Mold. Then, the wax is replaced by metal.

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48. Identify the metals by its sequential order from its maximum to minimum ductility?

(A) Lead (B) Tin (C) Zinc (D) Aluminum (E) Copper

Choose the **correct** answer from the options given below:

(1) (E), (D), (C), (B), (A)

(2) (A), (B), (E), (D), (C)

(3) (D), (E), (A), (B), (C)

(4) (A), (B), (C), (D), (E)

Correct Answer: (1) (E), (D), (C), (B), (A)

Solution: Step 1: Define ductility. Ductility is the ability of a material to be drawn into a thin wire. **Step 2:** Order the given metals based on their ductility, from highest to lowest.

- (E) Copper: Is highly ductile, a key reason for its use in electrical wiring.
- (D) Aluminum: Also very ductile and used for wiring. Generally considered slightly less ductile than copper.
- (C) Zinc: Has moderate ductility.
- (B) Tin: Has low ductility.
- (A) Lead: Is very soft but has very poor ductility; it cannot be easily drawn into a wire.

Step 3: Form the sequence. The correct order from maximum to minimum ductility is Copper, Aluminum, Zinc, Tin, Lead. This corresponds to the sequence (E), (D), (C), (B), (A), which matches option (1).

Quick Tip

High ductility is often associated with good electrical conductivity. Metals used for wires (like copper and aluminum) are at the top of the ductility list, while soft, heavy metals (like lead) are at the bottom.

---

49. Metals having maximum to minimum resistance to corrosion (A) Zinc (B) Aluminum (C) Copper (D) Tin (E) Gold

Choose the **correct** answer from the options given below:

(1) (E), (D), (C), (B), (A)

(2) (E), (B), (C), (D), (A)

(3) (A), (B), (C), (D), (E)

(4) (A), (C), (D), (E), (B)

Correct Answer: (2) (E), (B), (C), (D), (A)

Solution: Step 1: Order the metals based on their corrosion resistance in a typical environment, from highest to lowest.

- (E) Gold: As a noble metal, it is extremely inert and has the highest resistance to corrosion and oxidation.
- (B) Aluminum: Forms a very tough, stable, and self-healing passive layer of aluminum oxide, giving it excellent corrosion resistance.
- (C) Copper: Corrodes slowly to form a stable green patina that protects the underlying metal.
- (D) Tin: Is quite resistant to corrosion from water but is less resistant than copper or aluminum to other elements.
- (A) Zinc: Is the most reactive of the group and corrodes readily. This property is why it is used as a sacrificial coating for steel (galvanization).

Step 2: Form the sequence. The correct order from maximum to minimum resistance is Gold, Aluminum, Copper, Tin, Zinc. This corresponds to the sequence (E), (B), (C), (D), (A), which matches option (2).

Quick Tip

Noble metals like gold and platinum are most resistant to corrosion. Metals that form a strong passive oxide layer (like aluminum and titanium) are next. Metals used for sacrificial coatings (like zinc) are the least resistant.

---

50. Identify the metals by their sequential order from minimum to maximum malleability. (A) Tin (B) Platinum (C) Zinc (D) Iron (E) Nickel

Choose the **correct** answer from the options given below:

(1) (A), (B), (C), (D), (E)

(2) (E), (D), (C), (B), (A)

(3) (D), (E), (A), (B), (C)

(4) (C), (D), (E), (A), (B)

Correct Answer: (4) (C), (D), (E), (A), (B)

Solution: Step 1: Order the metals based on their malleability from lowest to highest.

- (C) Zinc: Is one of the least malleable metals on the list; it can be brittle at room temperature.
- (D) Iron: Is malleable, especially when hot, but less so than many other common metals.
- (E) Nickel: Has good malleability, superior to iron.
- (A) Tin: Is very soft and quite malleable.
- (B) Platinum: Is a highly malleable precious metal.

Step 2: Form the sequence. The correct order from minimum to maximum malleability is Zinc, Iron, Nickel, Tin, Platinum. This corresponds to the sequence (C), (D), (E), (A), (B), which matches option (4).

Quick Tip

When ordering malleability, start by identifying the most and least malleable metals. Precious metals like Platinum are typically near the top, while harder or more brittle metals like Zinc and Iron are at the bottom.

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51. Identify the process of making earthenware body- (A) Baking or firing (B) Building forms by coiling, slabs or pressing clay (C) Drying (D) Mixing of different additives like sand, grog etc. (E) Preparing clay

Choose the **correct** answer from the options given below:

(1) (E), (D), (B), (C), (A)

(2) (A), (D), (C), (B), (E)

(3) (A), (B), (C), (D), (E)

(4) (E), (D), (C), (A), (B)

Correct Answer: (1) (E), (D), (B), (C), (A)

Solution: Step 1: Arrange the steps of pottery making in a logical chronological order.

- (E) Preparing clay: The process begins with preparing the raw clay, which includes cleaning, sieving, and wedging (kneading) to remove air bubbles and ensure uniform consistency.
- (D) Mixing of different additives: To achieve desired properties (like reduced shrinkage or added texture), additives like sand or grog (fired clay) are mixed into the prepared clay body.
- (B) Building forms: Once the clay body is ready, the potter shapes it into the desired object using techniques like coiling, slab building, or wheel throwing.
- (C) Drying: The formed piece must dry slowly and completely. It goes from a soft state to leather-hard, and finally to bone-dry.
- (A) Baking or firing: The bone-dry piece (greenware) is fired in a kiln. This vitrifies the clay, making it hard and permanent.

Step 2: Match the sequence to the options. The correct sequence is (E), (D), (B), (C), (A). This matches option (1).

Quick Tip

The ceramic process always follows the same basic path: Prepare Clay -¿ Form Object -¿ Dry Object -¿ Fire Object.

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52. Aluminum sculpture can be given a black patina by immersing the sculpture in a bath of solution made from the following chemicals: (A) Copper Sulphate (B) Caustic Soda (C) Acetic Acid (D) Calcium Chloride (E) Water

(1) (A), (B), (C), (D), (E)

(2) (A), (B), (E) and (D)

(3) (B), (C), (E) and (A)

(4) (B), (D) and (E) only

Correct Answer: (4) (B), (D) and (E) only

Solution: Step 1: Understand the chemical process of patination. Patination involves creating a chemical reaction on the metal's surface to alter its color and texture. For aluminum, a strong alkali or a specific salt solution is often used. **Step 2:** Analyze the chemicals. Caustic Soda (Sodium Hydroxide) is a strong alkali that etches the surface of aluminum, which is a key step in many blackening processes. Water is the universal solvent for the bath. Other chemicals act as modifiers. **Step 3:** Evaluate the combinations. A common chemical bath for producing a black smut on aluminum involves a hot solution containing caustic soda and other salts. The combination of (B) Caustic Soda, (D) Calcium Chloride, and (E) Water creates a viable chemical solution for etching and coloring the aluminum surface. Other combinations are less chemically conventional for producing a black patina on aluminum.

Quick Tip

Patination of aluminum often involves strong alkalis like caustic soda to break down the passive oxide layer and allow the surface to react.

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53. Select the right order of dynasties starting from the oldest to newer one with reference to history of Indians sculptures (A) Maurya (B) Sunga (C) Nanda (D) Gupta (E) Pallava

Choose the **correct** answer from the options given below:

(1) (E), (C), (D), (A), (B)

(2) (C), (A), (B), (D), (E)

(3) (A), (B), (C), (D), (E)

(4) (B), (D), (A), (E), (C)

Correct Answer: (2) (C), (A), (B), (D), (E)

Solution: Step 1: Establish the chronology of the given ancient and early medieval Indian dynasties.

- (C) Nanda Dynasty: c. 345–322 BCE. Preceded the Mauryas.
- (A) Maurya Dynasty: c. 322–185 BCE. Founded by Chandragupta Maurya after the Nandas. Famous for Ashokan pillars.
- (B) Sunga Dynasty: c. 185–73 BCE. Succeeded the Mauryas in Magadha. Known for the art of Bharhut and Sanchi.
- (D) Gupta Dynasty: c. 320–550 CE. The ”Classical Age” of Indian art.
- (E) Pallava Dynasty: c. 275–897 CE. Rose to prominence in the South, contemporaneous with and outlasting the late Guptas. Known for rock-cut temples at Mahabalipuram.

Step 2: Arrange the dynasties in order from oldest to newest. The correct order is Nanda, Maurya, Sunga, Gupta, Pallava. This corresponds to the sequence (C), (A), (B), (D), (E), which matches option (2).

Quick Tip

A helpful mnemonic for early Magadhan empires is ”Ha-Shi-Na-M-S-K”: Haryanka, Shishunaga, Nanda, Maurya, Sunga, Kanva. This places Nanda before Maurya and Sunga correctly. The Guptas mark a later classical era.

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54. Correct sequence of ’Ramayana scenes’ depicted at the ’Kailasha temple’ of Ellora - (A) Battle of Ravana and Jatayu (B) Rama leaving from Ayodhya (C) Conversation between Rama and Sugreeva (D) Victory of Rama (E) Burning of Lanka

Choose the **correct** answer from the options given below:

(1) (B), (A), (C), (E), (D)

(2) (A), (C), (D), (B), (E)

(3) (C), (B), (A), (E), (D)

(4) (E), (D), (B), (A), (C)

Correct Answer: (1) (B), (A), (C), (E), (D)

Solution: Step 1: Place the given scenes in their correct narrative order according to the Ramayana epic.

- (B) Rama leaving from Ayodhya: This is the start of the exile and the main story arc.
- (A) Battle of Ravana and Jatayu: This occurs during Sita’s abduction by Ravana, shortly after the exile begins.
- (C) Conversation between Rama and Sugreeva: After Sita’s abduction, Rama and Lakshmana search for her and form an alliance with the vanara king Sugreeva.
- (E) Burning of Lanka: After the alliance, Hanuman travels to Lanka, finds Sita, and sets fire to the city.
- (D) Victory of Rama: This is the climax of the story, where Rama defeats Ravana in the final battle.

Step 2: Form the sequence and match it. The correct chronological sequence is (B) -¿ (A) -¿ (C) -¿ (E) -¿ (D). This matches option (1).

Quick Tip

When sequencing narrative art, follow the plot of the story. The Kailasha temple reliefs follow the epic's timeline: Exile -¿ Abduction -¿ Alliance -¿ Search -¿ Climax.

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55. Identify the correct chronological order of the artists. (A) Somnath Hore (B) Satish Gujral (C) P. V. Jankiram (D) Ved Nayar (E) Mrinalini Mukherjee

Choose the **correct** answer from the options given below:

(1) (D), (E), (B), (C), (A)

(2) (A), (B), (C), (D), (E)

(3) (E), (D), (C), (B), (A)

(4) (B), (A), (D), (C), (E)

Correct Answer: (2) (A), (B), (C), (D), (E)

Solution: Step 1: Determine the birth years of the artists to establish their chronological order (from earliest to latest).

- (A) Somnath Hore: Born 1921
- (B) Satish Gujral: Born 1925
- (C) P. V. Janakiram: Born 1930
- (D) Ved Nayar: Born 1933
- (E) Mrinalini Mukherjee: Born 1949

Step 2: Arrange the artists by birth year. The correct order from oldest to youngest is Somnath Hore, Satish Gujral, P. V. Janakiram, Ved Nayar, Mrinalini Mukherjee. This corresponds to the sequence (A), (B), (C), (D), (E), which matches option (2).

Quick Tip

Knowing the approximate generation of major artists is key. Hore and Gujral were part of the post-independence generation, followed by Janakiram and Nayar, with Mukherjee belonging to the next generation of modernists.

56. What are the terms used during the Cire-perdue process? (A) Slip (B) Core vents (C) Sprue (D) Ducts (E) Claw

Choose the **correct** answer from the options given below:

(1) (A), (B) and (E) only

(2) (D) and (E) only

(3) (A) and (D) only

(4) (B), (C) and (D) only

Correct Answer: (4) (B), (C) and (D) only

Solution: Step 1: Define the terms in the context of Cire-perdue (lost-wax casting).

- (A) Slip: This is a term for liquid clay used in ceramics, not typically in metal casting.
- (B) Core vents: These are channels made through the core to allow gases to escape during the pouring of molten metal, preventing bubbles and defects.
- (C) Sprue: This is the main channel through which molten metal is poured into the mold.
- (D) Ducts: These are smaller channels that guide the metal from the sprue to various parts of the mold cavity.
- (E) Claw: This is a type of chisel or sculpting tool, not a term for a part of the casting process itself.

Step 2: Identify the relevant terms. Core vents, sprues, and ducts are all essential components of the investment mold used in the lost-wax process. Therefore, (B), (C), and (D) are the correct terms.

Quick Tip

Think of the lost-wax mold as a plumbing system for molten metal. Sprues are the main pipes, ducts are the smaller pipes, and vents are the exhaust system for gases.

57. What are the components of Bronze? (A) Copper (B) Silver (C) Zinc (D) Tin (E) Iron

Choose the **correct** answer from the options given below:

(1) (D), (B) and (C) only

(2) (A), (B) and (C) only

(3) (A), (C) and (D) only

(4) (C), (D) and (E) only

Correct Answer: (3) (A), (C) and (D) only

Solution: Step 1: Define Bronze. Bronze is an alloy, meaning it is a mixture of metals. Its primary component is copper. **Step 2:** Identify the other alloying elements. The most common and traditional definition of bronze is an alloy of (A) Copper and (D) Tin. However, the term ”bronze” is also used more broadly for copper alloys. Modern bronzes can also contain other elements, including (C) Zinc, to alter their properties. For instance, commercial bronze is 90% copper and 10% zinc. Given the options, the combination that includes the primary components (Copper, Tin) and a common secondary component (Zinc) is the most comprehensive answer.

Quick Tip

The fundamental recipe for classic bronze is Copper + Tin. Brass is Copper + Zinc. Remember these two key copper alloys.

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58. Identify the cubist sculptors- (A) Auguste Rodin (B) Alexander Archiponko (C) Pablo Picasso (D) Umberto Boccioni (E) Henri Laurens

Choose the **correct** answer from the options given below:

(1) (A), (D) and (E) only

(2) (B), (C) and (E) only

(3) (A) and (D) only

(4) (C) and (D) only

Correct Answer: (2) (B), (C) and (E) only

Solution: Step 1: Analyze each artist’s primary artistic movement.

- (A) Auguste Rodin: A forerunner of modern sculpture, associated with Realism and Impressionism, not Cubism.
- (B) Alexander Archipenko: A pioneer of modern sculpture, he applied Cubist principles like geometric forms and negative space to his work.
- (C) Pablo Picasso: A co-founder of Cubism, he created groundbreaking Cubist sculptures like ”Head of a Woman (Fernande)”.
- (D) Umberto Boccioni: A leading figure of the Futurist movement, which was influenced by Cubism but distinct from it.
- (E) Henri Laurens: A prominent French sculptor who was an important member of the Cubist movement.

Step 2: Group the Cubist artists. The artists who are correctly identified as Cubist sculptors are Archipenko, Picasso, and Laurens. Therefore, the correct combination is (B), (C), and (E).

Quick Tip

Cubism in sculpture, like in painting, involves breaking down objects into geometric forms and showing multiple viewpoints. Picasso, Archipenko, Lipchitz, and Laurens are key figures to remember.

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59. What are the releasing agents of moldcast (A) Polyester resin (B) Liquid detergent (C) Oil (D) Slip (E) Resin

Choose the **correct** answer from the options given below:

(1) (A) and (B) only

(2) (B) and (E) only

(3) (A), (E) and (C) only

(4) (B), (C) and (D) only

Correct Answer: Based on common practices, (B) Liquid detergent and (C) Oil are used as releasing agents. The options provided seem to have an error, as none correctly isolate just

(B) and (C). However, if we must choose, option (4) is the least incorrect, although it wrongly includes (D) Slip.

Solution: Step 1: Define a ”releasing agent.” A releasing agent (or mold release) is a substance applied to the inside of a mold to prevent the casting material from sticking to it, thus facilitating easy removal. **Step 2:** Evaluate the options as releasing agents.

- (A) Polyester resin (E) Resin: These are casting materials, not releasing agents. They are what you pour into the mold.
- (B) Liquid detergent: A dilute solution of liquid soap is a common, simple releasing agent for plaster casting.
- (C) Oil: Various oils (like petroleum jelly, mineral oil, or specialized mold release oils) are widely used as releasing agents.
- (D) Slip: This is liquid clay used in ceramics, primarily for joining pieces or for decoration, not as a general mold release for other materials.

Step 3: Identify the correct agents. The true releasing agents on this list are (B) Liquid detergent and (C) Oil. Since no option contains only (B) and (C), there is an error in the question’s choices.

Quick Tip

A releasing agent is anything that creates a barrier between the mold and the casting. Think of it like greasing a cake pan: common household items like soap or oil often work.

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60. What are the retarding agents of Plaster of Paris? (A) Cold water (B) Warm water (C) Acetic acid (D) Alcohol (E) Salt

Choose the **correct** answer from the options given below:

(1) (A), (C) and (D) only

(2) (A), (D) and (E) only

(3) (A) and (E) only

(4) (B) and (D) only

Correct Answer: (1) (A), (C) and (D) only

Solution: Step 1: Define retarding agents and accelerators for plaster. A retarding agent slows down the chemical reaction that causes plaster to set (harden). An accelerator speeds it up. **Step 2:** Classify each substance.

- (A) Cold water: Lowers the temperature of the reaction, slowing down the setting time. It is a retarder.
- (B) Warm water: Increases the temperature of the reaction, speeding up the setting time. It is an accelerator.
- (C) Acetic acid (like vinegar): Acids interfere with the crystal formation of the gypsum, slowing the setting time. It is a retarder.
- (D) Alcohol: Acts as a retarder by disrupting the hydration process.
- (E) Salt (Sodium Chloride): Acts as an accelerator, speeding up the setting time.

Step 3: Identify the group of retarders. The retarding agents are Cold water, Acetic acid, and Alcohol. This corresponds to (A), (C), and (D).

Quick Tip

To remember plaster chemistry: ”Heat and salt make it fast, cold and acid make it last.”

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61. Iconography defining Shiva as a ’Musician’ (A) Holding ’veena’ in right hand while sitting (B) Holding ’Damaru’ in the left hand in sitting posture (C) Holding ’veena’ with both the front hands in standing posture (D) Playing ’Sitar’ in sitting position

Choose the **correct** answer from the options given below:

(1) (A) and (B) only

(2) (A) and (C) only

(3) (B) and (C) only

(4) (C) and (D) only

Correct Answer: (2) (A) and (C) only

Solution: Step 1: Identify the specific form of Shiva as a musician. This form is known as Vinadhara Dakshinamurti, or "the carrier of the Veena." **Step 2:** Analyze the options based on this iconography.

- (A) and (C): Both describe Shiva holding the 'veena', the traditional stringed instrument associated with this form. He can be depicted either sitting or standing. These are correct descriptions.
- (B) The 'Damaru' (drum) is iconographically associated with Shiva as Nataraja (Lord of the Dance), not Vinadhara.
- (D) The 'Sitar' is a much later musical instrument and is not part of traditional Hindu iconography for Shiva.

Step 3: Combine the correct descriptions. The iconography of Shiva as a musician is correctly defined by him holding a veena, in various postures. Therefore, (A) and (C) are the correct choices.

Quick Tip

Shiva as Musician = Vinadhara = Veena. Shiva as Dancer = Nataraja = Damaru. Associating the specific attribute (instrument) with the form is key.

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62. Testimonies to adopting Persian stone carving techniques in India during the Mauryan period- (A) Large three-dimensional figurative supports for the roof. (B) Independent edict pillars with bell-shaped capitals, surmounted by the animal figure. (C) Replica of wooden structures. (D) Cylindrical shapes in architectural structures.
Choose the **correct** answer from the options given below:
(1) (A) and (C) only
(2) (D) and (A) only
(3) (A) and (B) only
(4) (B) and (C) only

Correct Answer: (4) (B) and (C) only

Solution: Step 1: Identify the key features of Mauryan stone art and architecture. The period is noted for its monumental stone pillars and the beginnings of rock-cut architecture.
Step 2: Connect these features to Achaemenid (Persian) influence.

- (B) The concept of monolithic, highly polished pillars with distinct bell-shaped (or inverted lotus) capitals and animal finials is the most direct and widely accepted evidence of Persian influence, drawing parallels with the pillars at Persepolis.
- (C) The practice of translating wooden architectural forms into stone is a characteristic of early Indian stone architecture. While a native development, the technological leap to monumental stone carving during this period is often linked to the influx of skills and ideas following Alexander the Great's campaigns and contact with the Persian empire.

Step 3: Evaluate other options. (A) and (D) are too generic and not specifically linked to Persian influence in the Mauryan context. The combination of the distinctive pillars and the general shift from wood to stone represents the strongest testimony.

Quick Tip

The "Mauryan Polish" and the bell-shaped capital on Ashokan pillars are the classic textbook examples of Persian Achaemenid influence on Indian art.

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63. Identify the sculptures of Kanayi Kunhiraman from the following- (A) The chariot of Sun (B) Yakshi, 1969 (C) Aattam, 1987 (D) Santhal Family
Choose the **correct** answer from the options given below:
(1) (A) and (B) only
(2) (B) and (C) only
(3) (C) and (D) only
(4) (D) and (A) only

Correct Answer: (2) (B) and (C) only

Solution: Step 1: Identify the known works of the artist Kanayi Kunhiraman, a prominent modern sculptor from Kerala.

- (B) Yakshi (1969): This monumental nude figure in the Malampuzha Dam gardens is arguably Kunhiraman's most famous and controversial work.
- (C) Aattam (1987): Another significant work by the artist.

Step 2: Identify the artists of the other works.

- (A) The Chariot of Sun: This refers to the Sun Temple at Konark, an ancient monument, not a modern sculpture.
- (D) Santhal Family (1938): This is a seminal, iconic work of modern Indian sculpture by Ramkinkar Vaij.

Step 3: Combine the correct works. The sculptures by Kanayi Kunhiraman are (B) and (C).

Quick Tip

Kanayi Kunhiraman is synonymous with large-scale, outdoor sculptures in Kerala, with "Yakshi" at Malampuzha being his most recognized masterpiece.

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64. Famous sculptures created in concrete by kanayi kunhiraman (A) A river carries its past (B) Lust (C) The conch (D) Sagarakanyaka

Choose the **correct** answer from the options given below:

(1) (B) and (C) only

(2) (A) and (B) only

(3) (C) and (D) only

(4) (D) and (A) only

Correct Answer: (3) (C) and (D) only

Solution: Step 1: Identify Kanayi Kunhiraman's major works and their material. He is well-known for his large-scale outdoor sculptures, often made of concrete. **Step 2:** Analyze the given options.

- (C) The Conch (Shankum): A massive concrete sculpture located at Veli Tourist Village in Thiruvananthapuram.
- (D) Sagarakanyaka (The Mermaid): A gigantic, 35m long concrete sculpture located at Shankumugham Beach in Thiruvananthapuram.

Both (C) and (D) are famous, monumental concrete works by the artist. (A) and (B) are not his widely recognized major concrete sculptures. **Step 3:** Conclude the correct combination. The correct answer is (C) and (D).

Quick Tip

When you think of Kanayi Kunhiraman and concrete, think of the beaches of Thiruvananthapuram (Kerala's capital), where his famous "Mermaid" and "Conch" sculptures are major landmarks.

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65. Group of the sculptures form the Neo-Classical era- (A) Antonio Canova (B) John Flaxman (C) Bertel Thorvaldsen (D) Gianlorenzo Bernini (E) Francois Duquesnoy
Choose the **correct** answer from the options given below:
(1) (D) and (E) only
(2) (A), (B) and (C) only
(3) (B), (D) and (E) only
(4) (A) and (E) only

Correct Answer: (2) (A), (B) and (C) only

Solution: Step 1: Define the Neo-Classical era in sculpture. It was a movement in the late 18th and early 19th centuries that drew inspiration from the "classical" art of ancient Greece and Rome, emphasizing order, clarity, and idealism. **Step 2:** Classify the artists by their period.

- (A) Antonio Canova (1757-1822): The most famous and quintessential sculptor of the Neo-Classical period.

- (B) John Flaxman (1755-1826): A leading English sculptor and draughtsman of the Neo-Classical movement.
- (C) Bertel Thorvaldsen (1770-1844): A Danish sculptor who was, along with Canova, a leader of the Neo-Classical style in Rome.
- (D) Gianlorenzo Bernini (1598-1680): The dominant figure of the Italian Baroque period, known for dramatic and emotive works.
- (E) Francois Duquesnoy (1597-1643): A Flemish sculptor active in Rome, associated with the Baroque style, though with more classicizing tendencies than Bernini.

Step 3: Group the Neo-Classical sculptors. The artists who belong to the Neo-Classical era are Canova, Flaxman, and Thorvaldsen. This corresponds to (A), (B), and (C).

Quick Tip

Neo-Classicism is a ”return to the classics.” Remember Canova and Thorvaldsen as the two giants of this movement. Bernini is the master of the earlier, much more dramatic and emotional Baroque style.

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66. Match List-I with List-II

List-I	**List-II**
(A) Slip casting	(I) Silicon Carbide
(B) Pitcher	(II) Metal casting
(C) De-waxing	(III) Stone
(D) Crucible	(IV) Clay

Choose the **correct** answer from the options given below:

(1) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

(2) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(3) (A)-(I), (B)-(III), (C)-(IV), (D)-(II)

(4) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

Correct Answer: (4) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

Solution: Step 1: Match each term in List-I with its most appropriate association in List-II.

- (A) Slip casting is a method in ceramics that uses liquid clay, known as slip. Thus, (A) matches (IV) Clay.
- (B) A pitcher is a heavy, pointed hammer used for the initial rough shaping of blocks in stone masonry. Thus, (B) matches (III) Stone.
- (C) De-waxing is the process of melting wax out of a mold, a critical step in investment casting. The investment mold material is often a refractory ceramic, which can be made with materials like (I) Silicon Carbide to withstand high temperatures. This is a plausible technical match.
- (D) A Crucible is a pot used to melt metals for casting. Thus, (D) matches (II) Metal casting.

Step 2: Form the complete matched sequence. The correct sequence of matches is (A)-(IV), (B)-(III), (C)-(I), (D)-(II). This corresponds to option (4).

Quick Tip

Associate core terms with their fields: Slip -¿ Ceramics/Clay; Crucible -¿ Metal Casting; Pitcher -¿ Stone Masonry. De-waxing is part of casting, and the mold material must be heat-resistant.

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67. Match List-I with List-II

List-I	List-II
(A) Plaster of Paris	(I) Calcium aluminum silicate
(B) Non-ferrous metal	(II) Bronze
(C) Cement	(III) Gold
(D) Alloy	(IV) Gypsum

Choose the **correct** answer from the options given below:

(1) (A)-(IV), (B)-(II), (C)-(I), (D)-(III)

(2) (A)-(II), (B)-(I), (C)-(III), (D)-(IV)

(3) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

(4) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Correct Answer: (3) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

Solution: Step 1: Match each term in List-I with its correct example or chemical basis in List-II.

- (A) Plaster of Paris is made from heating (IV) Gypsum (calcium sulfate dihydrate).
- (D) An Alloy is a mixture of metals. (II) Bronze (copper and tin) is a classic example of an alloy.
- (B) A Non-ferrous metal is one that does not contain iron. With Bronze identified as the alloy, (III) Gold is the best example of a non-ferrous elemental metal.
- (C) Cement is a binder, and its primary chemical constituents are silicates and aluminates of calcium, i.e., (I) Calcium aluminum silicate.

Step 2: Assemble the correct pairings. The correct matches are (A)-(IV), (B)-(III), (C)-(I), (D)-(II). This matches option (3).

Quick Tip

Break down material definitions: Plaster comes from Gypsum. Bronze is an Alloy. Gold is a non-ferrous element. Cement is a complex silicate.

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68. Match List-I with List-II

List-I	List-II
(A) Gouge	(I) Metal Casting
(B) Claw chisel	(II) Stone carving
(C) Bush chisel	(III) Wood carving
(D) Core vent	(IV) Stone carving

Choose the **correct** answer from the options given below:

(1) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)

(2) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(3) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

(4) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

Correct Answer: (1) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)

Solution: Step 1: Match each tool or term from List-I to its associated artistic process in List-II.

- (A) A Gouge is a type of chisel with a curved cutting edge, primarily used for (III) Wood carving.
- (B) A Claw chisel is a toothed chisel used for shaping and texturing in (II) Stone carving.
- (C) A Bush chisel, used with a bush hammer, is a tool for texturing the surface of stone, hence it belongs to (IV) Stone carving.
- (D) A Core vent is a channel included in a mold for (I) Metal Casting to allow trapped gases to escape.

Step 2: Compile the correct sequence of matches. The correct sequence is (A)-(III), (B)-(II), (C)-(IV), (D)-(I). This matches option (1).

Quick Tip

Categorize tools by material: Gouges are for wood; Claw and Bush chisels are for stone. Terms like ”core vent” and ”sprue” are specific to casting processes.

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69. Match List-I with List-II

List-I	List-II
(A) Gouge	(I) Stone carving
(B) Bush chisel	(II) Glass fiber casting
(C) Sprue	(III) Wood carving
(D) Gel Coat	(IV) Metal casting

Choose the **correct** answer from the options given below:

(1) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(2) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(3) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(4) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

Correct Answer: (3) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Solution: Step 1: Match each term in List-I with its corresponding process in List-II.

- (A) A Gouge is a chisel used for (III) Wood carving.
- (B) A Bush chisel is a tool used for (I) Stone carving.
- (C) A Sprue is the channel through which molten material is poured into a mold, a term used in (IV) Metal casting.
- (D) A Gel Coat is the high-quality surface finish layer of resin applied to a mold in (II) Glass fiber casting.

Step 2: Form the complete matched sequence. The correct sequence is (A)-(III), (B)-(I), (C)-(IV), (D)-(II). This matches option (3).

Quick Tip

Associate specific technical terms with their unique process: Gel Coat -¿ Fiberglass; Sprue -¿ Casting (Metal/Investment); Bush Chisel -¿ Stone; Gouge -¿ Wood.

---

70. Match List-I with List-II

List-I	**List-II**
(A) Softwood	(I) Cutting large timber
(B) Hardwood	(II) Pine
(C) Bow saw	(III) Oak
(D) Chisels and gouges	(IV) Carve the wood

Choose the **correct** answer from the options given below:

(1) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)

(2) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)

(3) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(4) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

Correct Answer: (1) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)

Solution: Step 1: Match the categories and tools in List-I with their examples and functions in List-II.

- (A) Softwood is a category of wood; (II) Pine is a classic example of a softwood.
- (B) Hardwood is a category of wood; (III) Oak is a classic example of a hardwood.
- (C) A Bow saw is a type of saw designed for (I) Cutting large timber, logs, and branches.
- (D) Chisels and gouges are the primary tools used to (IV) Carve the wood.

Step 2: Assemble the sequence of correct matches. The correct sequence is (A)-(II), (B)-(III), (C)-(I), (D)-(IV). This matches option (1).

Quick Tip

Separate the items into pairs of ”category-example” (Softwood-Pine, Hardwood-Oak) and ”tool-function” (Bow saw-Cutting, Chisels-Carving).

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71. Match List-I with List-II

List-I	**List-II**
(A) D. P. Roy Chaudhury	(I) Copper
(B) P. V. Janakirama	(II) Hemp
(C) Meera Mukherjee	(III) Bronze
(D) Mrinalini Mukherjee	(IV) Dokra

Choose the **correct** answer from the options given below:

(1) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(2) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(3) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(4) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

Correct Answer: (1) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Solution: Step 1: Match each modern Indian sculptor with their signature medium or technique.

- (A) D. P. Roy Chaudhury is famous for monumental, expressive sculptures like ”Triumph of Labour,” which were cast in (III) Bronze.
- (B) P. V. Janakiram was a pioneer in using repoussé and welding techniques on sheet metal, particularly (I) Copper.
- (C) Meera Mukherjee adapted the traditional folk craft of (IV) Dokra (lost-wax casting) for her unique modernist sculptures.
- (D) Mrinalini Mukherjee is renowned for her large, organic forms created by knotting and weaving dyed (II) Hemp ropes.

Step 2: Form the sequence of correct matches. The correct sequence is (A)-(III), (B)-(I), (C)-(IV), (D)-(II). This matches option (1).

Quick Tip

Associate each artist with their iconic material: Mrinalini -¿ Hemp; Meera -¿ Dokra; Janakiram -¿ Sheet Copper; D.P. Roy Chaudhury -¿ Bronze.

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72. Match List-I with List-II

List-I	**List-II**
(A) Auger	(I) Cutting of waste material wood
(B) Fish tail gouge	(II) Drawing on the wood block
(C) Rip Saw	(III) Wood carving chisel
(D) Chalk	(IV) Drilling holes into wood

Choose the **correct** answer from the options given below:

(1) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

(2) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

(3) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(4) (A)-(IV), (B)-(I), (C)-(III), (D)-(II)

Correct Answer: (2) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

Solution: Step 1: Match each tool or material in List-I to its function in List-II.

- (A) An Auger is a tool with a helical screw blade used for (IV) Drilling holes into wood.
- (B) A Fish tail gouge is a specific type of (III) Wood carving chisel with a flared end.
- (C) A Rip Saw is designed to cut wood parallel to the grain, a process often used for dimensioning lumber or (I) Cutting of waste material wood.
- (D) Chalk is used for marking surfaces, such as (II) Drawing on the wood block before cutting or carving.

Step 2: Assemble the sequence of correct matches. The correct sequence is (A)-(IV), (B)-(III), (C)-(I), (D)-(II). This matches option (2).

Quick Tip

Remember the main purpose of tools: Augers drill, Saws cut, Chisels carve, and Chalk marks.

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73. Match List-I with List-II

List-I	List-II
(A) Brass	(I) Tin, Copper
(B) Bronze	(II) Silver
(C) Rubber molds	(III) Zinc, Copper
(D) Welding	(IV) Latex

Choose the **correct** answer from the options given below:

(1) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(2) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(3) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(4) (A)-(IV), (B)-(II), (C)-(III), (D)-(I)

Correct Answer: (1) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Solution: Step 1: Match each item in List-I with its components or related material in List-II.

- (A) Brass is an alloy primarily made of (III) Zinc, Copper.
- (B) Bronze is an alloy primarily made of (I) Tin, Copper.
- (C) Rubber molds, especially flexible ones, are commonly made from (IV) Latex.
- (D) Welding is a process of joining metals. While it uses various materials, a common high-end application is brazing or soldering, which can use (II) Silver alloys. This is the most logical remaining connection.

Step 2: Compile the correct sequence of matches. The correct sequence is (A)-(III), (B)-(I), (C)-(IV), (D)-(II). This matches option (1).

Quick Tip

Memorize the basic alloys: Brass = Copper + Zinc. Bronze = Copper + Tin. Then match the remaining specialized terms.

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74. Match List-I with List-II

List-I	**List-II**
(A) Lydia Mehta	(I) Dancer
(B) Ved Nayar	(II) Despair and hope of Kalpavriksha
(C) Mrinalini Mukherjee	(III) Vanshri
(D) Ratnabali Kant	(IV) Global Agony

Choose the **correct** answer from the options given below:

(1) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)

(2) (A)-(I), (B)-(IV), (C)-(III), (D)-(II)

(3) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

(4) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

Correct Answer: (4) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

Solution: Step 1: Match each artist in List-I with their well-known sculpture in List-II.

- (A) Lydia Mehta is known for her sculpture titled (I) Dancer.
- (B) Ved Nayar created the significant installation work (II) Despair and hope of Kalpavriksha.
- (C) Mrinalini Mukherjee named many of her hemp sculptures after nature deities; (III) Vanshri (Forest Deity) is a prime example.
- (D) Ratnabali Kant is the creator of the work titled (IV) Global Agony.

Step 2: Assemble the sequence. The pairings are a direct match: (A)-(I), (B)-(II), (C)-(III), (D)-(IV). This matches option (4).

Quick Tip

Linking artists to one of their most famous works is a key part of art history. Vanshri (Mrinalini Mukherjee) and Despair and hope... (Ved Nayar) are particularly important works to remember.

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75. Match List-I with List-II

List-I	**List-II**
(A) Somnath Hore	(I) Woman
(B) Amar Nath Sehgal	(II) Sujata
(C) Ramkinkar Vaij	(III) Anguished Cries
(D) Dhan Raj Bhagat	(IV) Monarch

Choose the **correct** answer from the options given below:

(1) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(2) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

(3) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(4) (A)-(IV), (B)-(II), (C)-(III), (D)-(I)

Correct Answer: (1) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

Solution: Step 1: Match each sculptor from List-I with one of their famous works from List-II.

- (A) Somnath Hore's work often depicted suffering and humanity; his sculptures like 'Mother and Child' or the abstract 'Wounds' series are iconic. (I) Woman is a representative title for his figural work.
- (B) Amar Nath Sehgal created the well-known bronze sculpture (III) Anguished Cries, which responded to the trauma of Partition.
- (C) Ramkinkar Vaij is celebrated for his pioneering outdoor sculptures, including the serene and powerful (II) Sujata.
- (D) Dhan Raj Bhagat's works often incorporated geometric and folk motifs, as seen in his sculpture (IV) Monarch.

Step 2: Form the complete matched sequence. The correct sequence is (A)-(I), (B)-(III), (C)-(II), (D)-(IV). This matches option (1).

Quick Tip

Remember the masterpieces: Ramkinkar Vaij's "Sujata" and "Santhal Family," and Amar Nath Sehgal's "Anguished Cries" are cornerstone works of modern Indian sculpture.
