Assistant Engineer (Civil) (B-17) — 2025 · Solved Past Paper

Body: Balochistan Public Service Commission (BPSC) · **Post:** Assistant Engineer (Civil) (B-17) · **Year:** 2025 · **Questions:** 70 in the original paper — **70 solved and verified**, none excluded · **Price:** Free

> **How to use this paper:** each question shows the stem, the four options, and the correct answer. Click “Why each option?” under a question to see all four options explained — one question teaches four topics. General Knowledge answers are as of the 2025 sitting.

Source note: testpointpk reproduction, 'BPSC Assistant Engineer Civil Solved Past Paper year 2025' primary (70 stems, 0 no-key, all 7 pages fetched). No second source — the Bihar Public Service Commission (India) Assistant Engineer 2025 material is a DIFFERENT commission and exam, not used. Body confirmed as Balochistan PSC (Pakistan-specific PC-I/PC-II content), not Bihar BPSC. 5 printed-key corrections; 4 PICK-ONE (Q19, Q35, Q46, Q53). All decisions by the assistant under the owner's 8 Nov 2026 delegation.

Question 1 Building Materials

Fine-grained sedimentary rock that has no planes of cleavage or sedimentation along which it is likely to split?

- A. Pallet
- B. Freestone ✓ **Correct answer**
- C. Fieldstone
- D. None of the above

A. Wrong: a pallet is a flat platform for stacking and moving goods, not a rock at all.

eestone is a fine-grained rock with no natural planes of cleavage, so it can be cut freely in any direction, which is why it is prized for masonry and carving.

C. Wrong: fieldstone is rough stone gathered from fields, used as found; it is not defined by the absence of cleavage planes.

D. Wrong: freestone is among the options and is correct.

Question 2 RCC Structures

In a rectangular Reinforced Cement Concrete columns the minimum number of vertical bars are _____?

- A. 5
- B. 6
- C. 4 ✓ **Correct answer**
- D. None of these

A. Wrong: five is not a code minimum for any column shape.

B. Wrong: six is the minimum for a CIRCULAR column, not a rectangular one (the printed key, B, confuses the two shapes — see printed-key correction below).

C. Correct: IS 456:2000 cl. 26.5.3.1 requires a minimum of four longitudinal bars in a rectangular column (six in a circular column), one at each corner, so the concrete is properly confined and load is shared.

D. Wrong: four is among the options and is correct. Printed-key correction: testpointpk keys B '6'; corrected to C '4' (see verification summary). Six is the circular-column minimum.

Question 3 Strength of Materials

Which of the following is also called elasticity law?

- A. Strain law

- C. Hooke's law ✓ **Correct answer**
- D. None of these

A. Wrong: there is no standard law of elasticity called the "strain law"; strain is the deformation itself, not the law relating it to stress.

B. Wrong: Bernoulli's law relates pressure and velocity in a moving fluid; it has nothing to do with elasticity.

C. Correct: Hooke's law states that within the elastic limit, stress is directly proportional to strain, which is the fundamental law of elasticity.

D. Wrong: Hooke's law is among the options and is correct.

Question 4 Building Construction

A brick laid on its long edge, with its end exposed in the face of the wall?

- A. Rowlock ✓ **Correct answer**
- B. Metal lath
- C. Stretcher
- D. None of these

A. Correct: a rowlock is a brick laid on its long narrow edge with its short end (header face) showing on the wall face, commonly used for sills, copings and decorative courses.

B. Wrong: metal lath is a steel mesh used as a base for plaster, not a brick position.

C. Wrong: a stretcher is a brick laid flat with its LONG face showing on the wall face, the opposite of the position described.

D. Wrong: rowlock is among the options and is correct.

5 Building Construction

A steel mesh used primarily as a base for the application of plaster?

- A. Mold
- B. Metal lath ✓ **Correct answer**
- C. Metal base
- D. None of these

A. Wrong: a mold is a shaped form into which material is poured or pressed; it is not a steel mesh for plaster.

B. Correct: metal lath is an expanded steel mesh fixed to a surface so that plaster or stucco has something to grip; it prevents cracking and gives a uniform coat.

C. Wrong: "metal base" is not the trade name for this mesh; the mesh itself is called metal lath.

D. Wrong: metal lath is among the options and is correct.

Question 6 Strength of Materials

A rod 300 cm long is subjected to an axial pull due to which it elongates about 3 mm. Calculate the amount of strain?

- A. 0.001 ✓ **Correct answer**
- B. 1
- C. 0.002
- D. None of these

A. Correct: strain = change in length ÷ original length = 3 mm ÷ 3000 mm = 0.001 (strain has no units).

B. Wrong: 1 would mean the rod doubled in length; the elongation is only 3 mm on 300 cm.

002 would need an elongation of 6 mm, twice the stated 3 mm.

D. Wrong: 0.001 is among the options and is correct.

Question 7 Engineering Mechanics

Moment of force about a point is also known as _____?

- A. Conservative law
- B. 1st moment of area
- C. 1st moment of inertia
- D. None of these ✓ **Correct answer**

A. Wrong: a conservative law (such as conservation of energy or momentum) is a principle about quantities that do not change; it is not a name for a moment.

B. Wrong: the first moment of area is area × distance of its centroid from an axis (used for centroids and shear flow); the moment of a FORCE is force × perpendicular distance, a different quantity with different units (the printed key, B, confuses the two).

C. Wrong: "moment of inertia" is the SECOND moment of area (or of mass), not the first, and it is a property of a shape or body, not the moment of a force.

D. Correct: the moment of a force about a point is also known as torque, or the first moment of FORCE — and neither torque nor first moment of force is among options A–C, so "None of these" is the correct choice. Printed-key correction: testpointpk keys B '1st moment of area'; corrected to D 'None of these' (see verification summary). The moment of force is torque, not a moment of area.

Question 8 Building Construction

For slowing down moisture _____ walls are used.

- A. Cavity ✓ **Correct answer**
- B. Columns

- D. None of the above

A. Correct: a cavity wall has two leaves with an air gap between them, and the gap breaks the path of rain and damp so moisture cannot travel straight through to the inside face.

B. Wrong: columns are vertical load-bearing members; they do not slow moisture through a wall.

C. Wrong: a joint is a junction between parts of a building; it is not a wall type that resists damp.

D. Wrong: cavity is among the options and is correct.

Question 9 Town Planning

_____ shows the complete overview for development of a town.

- A. Key plan
- B. Layout plan
- C. Master plan ✓ **Correct answer**
- D. None of these

A. Wrong: a key plan is a small-scale index map showing where a site sits in relation to its surroundings; it is not a development overview.

B. Wrong: a layout plan shows the arrangement of one site or scheme (plots, roads, buildings); it does not cover the whole town's long-term development.

C. Correct: a master plan is the long-term, town-wide plan showing zoning, roads, utilities, housing and future expansion — the complete overview of a town's development.

D. Wrong: master plan is among the options and is correct.

10 Soil Mechanics

For quick determination of water content of soil _____ method is mainly used.

- A. Alcohol method
- B. Proctor test
- C. Calcium carbide method ✓ **Correct answer**
- D. None of these

A. Wrong: the alcohol method (burning off water with methylated spirit) is a rapid field method, but the standard quick on-site method named in the textbooks is the calcium carbide (Speedy moisture tester) method.

B. Wrong: the Proctor test measures the compaction characteristics of soil (optimum moisture content and maximum dry density); it does not determine water content quickly in the field.

C. Correct: the calcium carbide (Speedy) method reacts calcium carbide with soil moisture to release acetylene gas, and the gas pressure gives the water content within minutes on site.

D. Wrong: the calcium carbide method is among the options and is correct.

Question 11 Concrete Technology

Low heat cement is made by reducing the amount of tricalcium aluminate by ___%.

- A. 6
- B. 4
- C. 5 ✓ **Correct answer**
- D. None of these

A. Wrong: 6% is not the figure for the C3A limit in low heat cement.

B. Wrong: 4% is not the figure for the C3A limit in low heat cement.

low heat cement the tricalcium aluminate (C3A) content is held to about 5% — lowering C3A (and C3S) cuts the heat of hydration, which is what makes the cement suitable for mass concrete.

D. Wrong: 5 is among the options and is correct.

Question 12 Building Materials

_____ is used for heat and insulation in refrigerator and air conditioning buildings.

- A. Plaster of Paris
- B. Linoleum
- C. Thermocole ✓ **Correct answer**
- D. None of these

A. Wrong: plaster of Paris is a quick-setting gypsum plaster used for finishing and moulding; it is not a heat insulator.

B. Wrong: linoleum is a resilient floor covering; it is not used for thermal insulation.

C. Correct: thermocole (expanded polystyrene) is a light, cellular plastic with very low thermal conductivity, widely used to insulate refrigerators, cold stores and air-conditioned buildings.

D. Wrong: thermocole is among the options and is correct.

Question 13 Estimation and Costing

If the sanctioned estimate increase by ___% a revised estimate is prepared.

- A. 5 ✓ **Correct answer**
- B. 4
- C. 2
- D. None of these

A. Correct: a revised estimate is prepared when the sanctioned cost is likely to exceed the

nate by more than 5%, to reflect rate variation, quantity changes or design modifications.

B. Wrong: 4% is not the threshold for a revised estimate.

C. Wrong: 2% is not the threshold for a revised estimate.

D. Wrong: 5 is among the options and is correct.

Question 14 Highway Engineering

Best type of material used for retaining wall of hilly road is _____?

- A. Composite
- B. Concrete
- C. Stone ✓ **Correct answer**
- D. None of these

A. Wrong: composite materials are not the standard, economical choice for a hillside retaining wall.

B. Wrong: concrete retaining walls are used, but on hilly roads stone is preferred because it is locally available, drains freely through its joints and is cheaper to build on slopes.

C. Correct: stone masonry is strong and durable, resists earth pressure well, lets water drain through the joints (so no water pressure builds up behind the wall), and uses the stone available on site in hilly areas.

D. Wrong: stone is among the options and is correct.

Question 15 Building Construction

Parge is mainly a _____ coat applied on concrete surface.

- A. Color
- B. Protective ✓ **Correct answer**

uting

- D. None of these

A. Wrong: parging is not a colour coat; its purpose is protection, not decoration.

B. Correct: parging (pargeting) is a thin coat of mortar applied to a concrete or masonry surface to protect it from weather and moisture and to give a smooth finish.

C. Wrong: grouting fills gaps and joints with a fluid mortar; parging is a surface coat, not a gap filler.

D. Wrong: protective is among the options and is correct.

Question 16 Concrete Technology

In which cement the percentage of tricalcium silicate is low?

- A. Low heat cement ✓ **Correct answer**
- B. Rapid hardening cement
- C. Sulphate resistant cement
- D. All of the above

A. Correct: low heat cement is manufactured by reducing the proportions of tricalcium silicate (C3S) and tricalcium aluminate (C3A) and raising dicalcium silicate (C2S), so its C3S is low and its heat of hydration is low.

B. Wrong: rapid hardening cement has a HIGH C3S content, which is what makes it gain strength quickly — the opposite of low.

C. Wrong: sulphate-resisting cement is defined by LOW C3A (under 5%), while its C3S is deliberately ELEVATED (about 55%) to keep its strength up — the printed key, C, confuses low C3A with low C3S.

D. Wrong: only low heat cement has low C3S; rapid hardening cement has high C3S.
Printed-key correction: testpointpk keys C 'Sulphate resistant cement'; corrected to A 'Low

(see verification summary). Sulphate-resisting cement is low in C3A, not in C3S.

Question 17 Estimation and Costing

Pavement quantity is measured in _____?

- A. R m
- B. Sq m ✓ **Correct answer**
- C. Cu m
- D. All of the above

A. Wrong: running metres measure linear items such as kerbs and edgings, not pavement quantity.

B. Correct: under IS 1200 Part 17, road works including pavements are measured in square metres — pavement is a surface work, so its quantity is its area (length × width).

C. Wrong: cubic metres measure volumes (earthwork, concrete in bulk); pavement quantity as a surface is not measured by volume.

D. Wrong: the three units belong to different items, and the standard unit for pavement quantity itself is square metres (the printed key, D, is the reproduction's rationalisation, not the measurement rule). Printed-key correction: testpointpk keys D 'All of the above'; corrected to B 'Sq m' (see verification summary). IS 1200 Part 17 measures pavements in square metres.

Question 18 Construction Management

In CPM analysis the event which has no float, is called _____?

- A. Activity
- B. Event
- C. Critical event ✓ **Correct answer**
- D. None of these

n activity is a task that consumes time and resources; the question asks about an EVENT (a point in time), not an activity.

B. Wrong: "event" alone is too general — every node in a CPM network is an event, whether or not it has float.

C. Correct: an event with zero float (zero slack) lies on the critical path — any delay there delays the whole project — so it is called a critical event.

D. Wrong: critical event is among the options and is correct.

Question 19 Public Health Engineering

A gradient of _____ is the minimum for house drainage.

- A. 1 in 10
- B. 1 in 15
- C. 1 in 20 ✓ **Correct answer**
- D. None of these

A. Wrong as the minimum: 1 in 10 is a steep fall, far steeper than any minimum gradient for a house drain.

B. Wrong as the minimum: 1 in 15 is also steep, and steeper than the 1 in 20 that is the flattest offered.

C. Picked: the flattest gradient among the options, and the nearest to the code minimum of about 1 in 57 for a 100 mm house drain.

D. Wrong: a usable answer (1 in 20) is among the options.

Question 20 Structural Analysis

If a body is subjected to more unknown reactions than available number of equations of equilibrium, then the problem is _____?

- B. Statically indeterminate ✓ **Correct answer**
- C. Both A and B
- D. Indeterminate

A. Wrong: a statically determinate body has exactly as many unknowns as equilibrium equations, so it can be solved by equilibrium alone — the opposite of the stem.

B. Correct: when there are more unknown reactions than equilibrium equations, equilibrium alone cannot solve the problem and extra compatibility (deformation) equations are needed — that is the definition of statically indeterminate.

C. Wrong: a problem cannot be both determinate and indeterminate at once.

D. Wrong: "indeterminate" alone is vague; the technical term for this structural condition is STATICALLY indeterminate.

Question 21 Strength of Materials

Factor of safety may be defined as the ratio of ultimate stress to _____?

- A. Elastic Modulus
- B. Working strain
- C. Working stress ✓ **Correct answer**
- D. None of these

A. Wrong: the elastic modulus is a material stiffness (stress ÷ strain), not the stress the member is allowed to carry in service.

B. Wrong: the factor of safety is a ratio of two STRESSES, not a stress to a strain.

C. Correct: factor of safety = ultimate (failure) stress ÷ working (allowable) stress, so the working stress is the safe stress the member is designed to carry.

D. Wrong: working stress is among the options and is correct.

22 Building Materials

Oxidation cause _____ on the surface of iron.

- A. Efflorescence
- B. Rusting ✓ **Correct answer**
- C. Static energy
- D. None of these

A. Wrong: efflorescence is the white salt deposit that appears on brickwork and masonry when soluble salts are carried to the surface by water; it is not oxidation of iron.

B. Correct: rusting is the oxidation of iron in the presence of water and oxygen, forming hydrated iron oxide (rust) on the surface.

C. Wrong: static energy (static electricity) is a charge build-up, not a surface product of oxidation.

D. Wrong: rusting is among the options and is correct.

Question 23 RCC Structures

The minimum area of reinforcement in a beam shall be greater than _____?

- A. 0.85 × b × d / fy ✓ **Correct answer**
- B. 0.57 fv/bd
- C. 0.57 bd/fv
- D. None of these

A. Correct: IS 456 cl. 26.5.1.1 gives the minimum tensile steel in a beam as As(min) = 0.85 × b × d / fy, where b is the width, d the effective depth and fy the yield strength of the steel.

B. Wrong: this is not the IS 456 minimum-steel formula; its dimensions and constant do not match the code expression.

C. Wrong: this is not the IS 456 minimum-steel formula either; the constant is wrong (0.57

35) and the arrangement is wrong.

D. Wrong: the correct formula is among the options and is correct.

Question 24 Project Planning

The document containing the cost description engineering estimate and drawings of a project is called _____?

- A. Bidding Document
- B. PC I ✓ **Correct answer**
- C. PC II
- D. None of these

A. Wrong: a bidding document is the tender package (instructions, conditions, bill of quantities, drawings) issued to bidders; it is not the Planning Commission project document described in the stem.

B. Correct: PC-I is the Planning Commission proforma on which a development project is drawn up for approval — it is the project document, containing the project description, cost estimates and drawings.

C. Wrong: PC-II is the proforma for surveys and feasibility studies; its cost is the cost of the STUDIES, not the cost, estimate and drawings of the project itself (the printed key, C, confuses the two proformas).

D. Wrong: PC-I is among the options and is correct. Printed-key correction: testpointpk keys C 'PC II'; corrected to B 'PC I' (see verification summary). PC-II covers feasibility studies, not the project document.

Question 25 Concrete Technology

Which concrete mix will have greater strength?

- A. 1:4:8

2 ✓ Correct answer

- C. 1:2:4
- D. None of these

A. Wrong: 1:4:8 is the leanest mix of the three (least cement per unit of aggregate), so it gives the lowest strength.

B. Correct: 1:1:2 is the richest mix offered (most cement relative to sand and aggregate), so it gives the highest compressive strength.

C. Wrong: 1:2:4 is stronger than 1:4:8 but leaner than 1:1:2, so it is not the strongest.

D. Wrong: 1:1:2 is among the options and is correct.

Question 26 Surveying

The reduced bearing of 220° Whole circle bearing is _____?

- A. N 40 ° W
- B. S 45 ° E
- C. S 40 ° W ✓ **Correct answer**
- D. None of these

A. Wrong: N 40° W is the fourth quadrant (north-west); a whole circle bearing of 220° lies in the third quadrant, not the fourth.

B. Wrong: the angle is 40°, not 45°, and the direction is west, not east.

C. Correct: 220° is in the third quadrant (180°–270°), so the reduced bearing is measured from south: 220° − 180° = 40°, giving S 40° W.

D. Wrong: S 40° W is among the options and is correct.

Question 27 Soil Mechanics

_____ soils have liquid and plastic limit.

- B. Sandy
- C. Clay ✓ **Correct answer**
- D. None of these

A. Wrong: gravel is coarse and non-plastic; it has no liquid or plastic limit.

B. Wrong: sand is also non-plastic (its particles have no cohesion), so it has no liquid or plastic limit.

C. Correct: clay is a fine, cohesive, plastic soil, so it passes through liquid and plastic states as its water content changes — it is the soil that has liquid and plastic limits (the Atterberg limits).

D. Wrong: clay is among the options and is correct.

Question 28 Highway Engineering

A speed limit sign is an example of _____?

- A. Regulatory Sign ✓ **Correct answer**
- B. Warning sign
- C. All of the above
- D. None of these

A. Correct: a speed limit sign tells drivers what they MUST do (the legal limit), which is the definition of a regulatory (mandatory) sign.

B. Wrong: warning signs alert drivers to a hazard ahead (a bend, a school, a narrow bridge); a speed limit is an instruction, not a hazard warning.

C. Wrong: a speed limit sign is regulatory only, not a warning sign as well.

D. Wrong: regulatory sign is among the options and is correct.

29 Building Planning

In an ideal condition the verandah should be placed in _____ direction.

- A. S and W
- B. NW and N ✓ **Correct answer**
- C. SW and S
- D. None of these

A. Wrong: the south and west sides receive the strongest direct sun in the northern hemisphere, so a verandah there would be hot rather than cool.

B. Correct: in the northern hemisphere the north and north-west sides receive the least direct sun, so a verandah there stays shaded and cool and gives better ventilation and comfort.

C. Wrong: the south-west and south sides are the sunniest and hottest, the worst place for a verandah meant to give shade.

D. Wrong: NW and N is among the options and is correct.

Question 30 Construction Management

A bar chart is also known as _____?

- A. Mark chart
- B. Galio chart
- C. Gantt chart ✓ **Correct answer**
- D. All of the above

A. Wrong: there is no standard project-management chart called a "mark chart".

B. Wrong: there is no standard chart of this name in construction management; it is a distractor.

C. Correct: a bar chart showing activities against time on horizontal bars is a Gantt chart,

scheduling chart in construction management.

D. Wrong: only the Gantt chart is a bar chart; the other two names are not real charts.

Question 31 Engineering Mathematics

The area of a parabola is given by _____?

- A. Bh
- B. bh/2
- C. bh/3 ✓ **Correct answer**
- D. None of these

A. Wrong: Bh is the area of the whole rectangle of base b and height h, not the area under the parabola.

B. Wrong: bh/2 is the area of a TRIANGLE of base b and height h, not of a parabola.

C. Correct: the area under a parabola (vertex at the origin, base b, height h) is bh/3 by integration — the area between the curve and its axis. (The ENCLOSED parabolic segment, between the curve and its chord, is 2bh/3 — a different area, not the one this stem asks for.)

D. Wrong: bh/3 is among the options and is correct.

Question 32 Soil Mechanics

The proctor compaction test is conducted by compaction of _____ layers of soil in a mold.

- A. Five
- B. Two
- C. Three ✓ **Correct answer**
- D. None of these

A. Wrong: five layers is the MODIFIED Proctor test (heavier compaction), not the standard

B. Wrong: no standard Proctor test uses two layers.

C. Correct: in the Standard Proctor test the soil is compacted in three equal layers in the mould, each receiving 25 blows of the 2.5 kg rammer.

D. Wrong: three is among the options and is correct.

Question 33 Soil Mechanics

A UNIFIED SYSTEM of soil classification classifies soil mainly into _____?

- A. Five
- B. Two ✓ **Correct answer**
- C. Three
- D. None of these

A. Wrong: five is not the number of main divisions in the Unified Soil Classification System.

B. Correct: the Unified System (USCS) divides soils MAINLY into two groups — coarse-grained soils and fine-grained soils — which are then split into 15 groups.

C. Wrong: three is not the number of main divisions in the Unified System.

D. Wrong: two is among the options and is correct.

Question 34 Fluid Mechanics

A stream function is defined _____?

- A. When flow is irrotational
- B. Only for incompressible flow ✓ **Correct answer**
- C. When flow is steady
- D. None of these

A. Wrong: irrotational flow is the condition for a VELOCITY POTENTIAL to exist, not for a

B. Correct: a stream function exists for two-dimensional incompressible flow, because it is defined so that it automatically satisfies the continuity equation for an incompressible fluid.

C. Wrong: a stream function does not require steady flow; it can be defined for unsteady incompressible flow too.

D. Wrong: "only for incompressible flow" is among the options and is correct.

Question 35 Highway Engineering

_____ is used as a binding material in water bound macadam roads.

- A. Sand
- B. Brick dust ✓ **Correct answer**
- C. Cement
- D. None of these

A. Wrong: sand lacks the cohesiveness to bind the coarse aggregates together in a WBM road.

B. Picked: a fine material that can act as a binder in WBM in some cases — the best available answer, since the standard stone dust is not offered.

C. Wrong: cement is not used as the binding material in water bound macadam roads (it is expensive and unsuitable for this flexible pavement; it belongs to rigid pavements and stabilisation).

D. Wrong: brick dust, a usable binding material, is among the options.

Question 36 Public Health Engineering

The allowable nitrites in public water is _____?

PPM

- B. 0.03 PPM
- C. 0.05 PPM ✓ **Correct answer**
- D. None of these

A. Wrong: 0.07 PPM is not the allowable nitrite figure in the MCQ-book standard.

B. Wrong: 0.03 PPM is not the allowable nitrite figure in the MCQ-book standard.

C. Correct: nitrites in public water supply are limited to 0.05 PPM, because higher nitrite levels cause methemoglobinemia (blue-baby syndrome) by reducing the blood's oxygen-carrying capacity.

D. Wrong: 0.05 PPM is among the options and is correct.

Question 37 Fluid Mechanics

The viscosity of a gas _____ with increasing temperature.

- A. Increase then decrease
- B. Decrease
- C. Increase ✓ **Correct answer**
- D. None of these

A. Wrong: gas viscosity does not rise and then fall with temperature; it rises steadily.

B. Wrong: that is what happens to the viscosity of a LIQUID as it gets hotter (its molecules move apart); gases behave the opposite way.

C. Correct: in a gas, higher temperature means faster-moving molecules and more frequent momentum exchange between layers, so viscosity increases with temperature.

D. Wrong: increase is among the options and is correct.

38 RCC Structures

The maximum percentage of steel used in columns is _____?

- A. 5%
- B. 6%
- C. 4% ✓ **Correct answer**
- D. None of these

A. Wrong: 5% is not a code limit for column steel.

B. Wrong as the design maximum: 6% is the ABSOLUTE cap in IS 456 cl. 26.5.3.1/26.5.3.2 (without lapping); the design maximum is set at 4% so that lapped sections do not exceed 6%, which is why the MCQ-book and exam answer is 4%.

C. Correct: the maximum steel in a column is 4% of the gross cross-sectional area as the design maximum — more steel than this causes congestion and makes placing and compacting concrete difficult.

D. Wrong: 4% is among the options and is correct.

Question 39 Construction Management

The Agency hired to execute the work if the original contractor fails to execute the work _____?

- A. Consultant
- B. Petty contractor
- C. 3rd party ✓ **Correct answer**
- D. None of these

A. Wrong: a consultant designs and supervises the work; the consultant is not hired to EXECUTE the work when the contractor defaults.

B. Wrong: a petty contractor does small piece-works; the agency that takes over a defaulted contract is not described as a petty contractor.

hen the original contractor fails, a third-party agency is engaged to complete the work (usually at the defaulting contractor's risk and cost), so the project continues without delay.

D. Wrong: 3rd party is among the options and is correct.

Question 40 Estimation and Costing

Rate and quantity of a project are provided in _____?

- A. Plans
- B. Project drawings
- C. Bill of quantity (BOQ) ✓ **Correct answer**
- D. None of these

A. Wrong: plans show the layout and arrangement of the work, not its rates and quantities.

B. Wrong: drawings show dimensions and details, not the priced quantities of each item.

C. Correct: the bill of quantities lists every item of work with its quantity and its rate, and is the document from which the project cost is built up.

D. Wrong: the bill of quantities is among the options and is correct.

Question 41 Concrete Technology

The concrete after casting _____?

- A. Does not change
- B. Expands
- C. Shrinks ✓ **Correct answer**
- D. None of these

A. Wrong: concrete is not dimensionally stable after casting; it changes as it dries and hydrates.

ncrete does not expand after casting (except for the tiny early expansion of some special cements); the dominant movement is shrinkage.

C. Correct: concrete shrinks after casting as water is lost by drying and as hydration proceeds (drying shrinkage and autogenous shrinkage), which is why joints and curing matter.

D. Wrong: shrinks is among the options and is correct.

Question 42 Structural Engineering

Diagonal members, either temporary or permanent, installed to stabilize a structure against lateral loads _____?

- A. Bracing ✓ **Correct answer**
- B. Bradding
- C. Clamping
- D. None of these

A. Correct: bracing is a system of diagonal members that stiffens a structure against lateral loads such as wind and earthquake forces; it can be temporary during construction or permanent.

B. Wrong: "bradding" is not a structural term for diagonal stabilising members (a brad is a small nail).

C. Wrong: clamping is gripping something tight with a clamp; it is not a system of diagonal members.

D. Wrong: bracing is among the options and is correct.

Question 43 Building Materials

The living wood in the outer region of a tree trunk or branch ____?

- A. Gray wood

- C. Sapwood ✓ **Correct answer**
- D. None of these

A. Wrong: "gray wood" is not the name for the living outer wood of a tree.

B. Wrong: camber is a slight upward curve given to a beam or road surface, not a part of a tree.

C. Correct: sapwood is the living, outer, lighter-coloured wood of a trunk or branch, which carries water and nutrients from the roots to the leaves (the inner, dead wood is heartwood).

D. Wrong: sapwood is among the options and is correct.

Question 44 Building Materials

A weld at the inside intersection of two metal surfaces that meet at right angles _____?

- A. Full weld
- B. Bind weld
- C. Fillet weld ✓ **Correct answer**
- D. None of these

A. Wrong: a full (complete penetration) weld joins two pieces edge to edge through their full thickness; it is not the weld in an inside corner.

B. Wrong: "bind weld" is not the name for a weld in an inside right-angle corner.

C. Correct: a fillet weld is the roughly triangular weld laid in the inside corner where two surfaces meet at right angles.

D. Wrong: fillet weld is among the options and is correct.

45 Building Materials

The bar size #4(American) has a diameter of _____ inches.

- A. 0.850
- B. 0.450
- C. 0.500 ✓ **Correct answer**
- D. None of these

A. Wrong: 0.850 inches is not the diameter of a #4 bar (it is close to a #7 bar).

B. Wrong: 0.450 inches is not the diameter of a #4 bar.

C. Correct: in the American system the bar number is the diameter in eighths of an inch, so a #4 bar is 4/8 inch = 0.500 inch (12.7 mm) in diameter.

D. Wrong: 0.500 is among the options and is correct.

Question 46 Soil Mechanics

If a particle can be lifted easily between thumb and forefinger, the soil is _____?

- A. Mineral
- B. Cobble
- C. Soil ✓ **Correct answer**
- D. None of these

A. Wrong: a mineral is a chemical substance, not a soil type identified by lifting a particle.

B. Wrong: a cobble is a large rounded stone (64–256 mm), too big to be lifted easily between thumb and forefinger.

C. Picked: the least-wrong option and the printed key; soil is the fine material whose particles can be picked up between the fingers.

D. Wrong: a usable answer (Soil) is among the options.

47 Building Materials

A large molecule composed of repeating patterns of two or more chemical units _____?

- A. Dipolymer
- B. polymer
- C. Copolymer ✓ **Correct answer**
- D. None of the above

A. Wrong: "dipolymer" is not the standard term for a large molecule built from two or more repeating chemical units.

B. Wrong: a polymer is a large molecule of repeating units, but of ONE kind of unit (a homopolymer); the stem specifies TWO OR MORE kinds.

C. Correct: a copolymer is a polymer whose chain is built from two or more different repeating chemical units (monomers).

D. Wrong: copolymer is among the options and is correct.

Question 48 Building Construction

A synthetic rubber placed between two precast concrete elements _____?

- A. Bay Pad
- B. Friction Pad
- C. Bearing Pad ✓ **Correct answer**
- D. None of these

A. Wrong: "bay pad" is not the name for a synthetic rubber pad between precast elements.

B. Wrong: a friction pad is a pad that resists sliding by friction; the pad described here is a load-bearing pad, not a friction device.

C. Correct: a bearing pad (an elastomeric pad of synthetic rubber) is placed between precast concrete elements to spread the load, allow small movements and prevent the

es from damaging each other.

D. Wrong: bearing pad is among the options and is correct.

Question 49 Engineering Mathematics

One Mile is equal to how many foot?

- A. 5240
- B. 5260
- C. 5290
- D. 5280 ✓ **Correct answer**

A. Wrong: 5240 feet is 40 feet short of a mile.

B. Wrong: 5260 feet is 20 feet short of a mile.

C. Wrong: 5290 feet is 10 feet more than a mile.

D. Correct: one statute mile is exactly 5280 feet (8 furlongs × 660 feet).

Question 50 Engineering Mechanics

The frequency is the number of cycles completed per unit of time, where 1 Hz = _____?

- A. 0.5 cycle/minute
- B. 1 cycle/second ✓ **Correct answer**
- C. 1 cycle/minute
- D. None of these

A. Wrong: 0.5 cycle per minute is 1 cycle every 2 minutes, which is 1/120 Hz, not 1 Hz.

B. Correct: one hertz is defined as one cycle per second, so 1 Hz = 1 cycle/second.

C. Wrong: 1 cycle per minute is 1/60 Hz, not 1 Hz.

D. Wrong: 1 cycle/second is among the options and is correct.

51 Building Construction

A protective cap on the top of a masonry wall _____?

- A. Slashing
- B. Coping ✓ **Correct answer**
- C. Plastering
- D. None of these

A. Wrong: "slashing" is not the name for a cap on top of a wall.

B. Correct: coping is the protective cap (of stone, brick or concrete) laid on top of a wall to throw rainwater off and protect the wall below from damp.

C. Wrong: plastering is a coating applied to a wall face, not a cap on its top.

D. Wrong: coping is among the options and is correct.

Question 52 Building Construction

A small vertical member that serves to fill the opening between a handrail and a stair or floor _____?

- A. Kiln
- B. Ballast
- C. Baluster ✓ **Correct answer**
- D. None of these

A. Wrong: a kiln is a furnace for firing bricks or lime, not a stair member.

B. Wrong: ballast is the stone bed under a railway track, not a stair member.

C. Correct: a baluster (banister spindle) is the small vertical member that fills the opening between a handrail and the stair or floor, supporting the rail and keeping people (especially children) from falling through.

D. Wrong: baluster is among the options and is correct.

53 Geotechnical Engineering

The active earth pressure of soil is expressed by (where ϕ is the angle of friction of the soil) _____?

- A. Tan(45 - ϕ)
- B. Tan (45 + ϕ/2)
- C. Tan (45 - ϕ/2) ✓ **Correct answer**
- D. None of these

A. Wrong: the angle term is wrong (ϕ, not ϕ/2) and the square is missing.

B. Wrong: the PLUS sign gives the PASSIVE earth pressure coefficient ($K_p = \tan^2(45 + \phi/2)$), the opposite case — soil being pushed, not moving away from the wall.

C. Picked: the intended active-pressure expression ($K_a = \tan^2(45 - \phi/2)$), with the square missing in the print.

D. Wrong: the intended formula is recognisable in option C, so "None of these" is not the best answer.

Question 54 Building Materials

For construction sand is never obtained from _____?

- A. Gravel powder
- B. River
- C. Sea ✓ **Correct answer**
- D. None of these

A. Wrong: crushed gravel (stone dust) is a usable fine aggregate for construction, so sand IS obtained in this form.

B. Wrong: river sand is the standard, preferred source of construction sand.

C. Correct: sea sand is never used for construction because it carries salt (chlorides), which

el reinforcement and causes damp and efflorescence in concrete and plaster.

D. Wrong: sea is among the options and is correct.

Question 55 Structural Analysis

In a loaded beam the point of contraflexure occurs at section where _____?

- A. Bending Moment is maximum
- B. Bending Moment is minimum
- C. Bending Moment is zero or changes sign ✓ **Correct answer**
- D. None of these

A. Wrong: the point of maximum bending moment is where the shear force is zero, not the point of contraflexure.

B. Wrong: the minimum bending moment (most negative) is not the point of contraflexure either.

C. Correct: the point of contraflexure (point of inflection) is the section where the bending moment is zero and changes sign — the beam changes from sagging to hogging there.

D. Wrong: "bending moment is zero or changes sign" is among the options and is correct.

Question 56 Geotechnical Engineering

The intensity of loading that causes shear failure to occur beneath a foundation is termed _____?

- A. Elasticity
- B. Stress
- C. Bearing Capacity ✓ **Correct answer**
- D. None of these

A. Wrong: elasticity is a material's ability to return to shape after loading, not a failure load.

ress is just force per unit area in general; the question asks for the NAME of the failure load intensity, which is bearing capacity.

C. Correct: the (ultimate) bearing capacity is the intensity of loading at which the soil beneath a foundation fails in shear; the safe bearing capacity is this value divided by a factor of safety.

D. Wrong: bearing capacity is among the options and is correct.

Question 57 Building Construction

The concave surface of an arch _____?

- A. Intrados ✓ **Correct answer**
- B. Extrados Purlin
- C. Apex
- D. None of these

A. Correct: the intrados (soffit) is the inner, concave surface of an arch.

B. Wrong: this option runs two different terms together — the EXTRADOS is the OUTER (convex) surface of an arch, and a purlin is a horizontal roof member; neither is the concave surface.

C. Wrong: the apex (crown) is the highest point of the arch, not its concave surface.

D. Wrong: intrados is among the options and is correct.

Question 58 Building Materials

The stones obtained by blasting are used as _____?

- A. Road metal
- B. Ballast in railways
- C. Aggregates for concrete
- D. All of the above ✓ **Correct answer**

partial: blasted stone is broken down and used as road metal, but that is not its only use.

B. True but partial: blasted stone is used as railway ballast, but that is not its only use.

C. True but partial: blasted stone is crushed to make concrete aggregate, but that is not its only use.

D. Correct: stone obtained by blasting is the raw material for all three — road metal, railway ballast and concrete aggregate.

Question 59 Building Materials

Tearing of one material against another under extreme pressure _____?

- A. High stress
- B. Galling ✓ **Correct answer**
- C. Glazering
- D. All of the above

A. Wrong: high stress is just a large force per unit area; it is not the name for the tearing damage described.

B. Correct: galling (adhesive wear) is the tearing of material from one surface against another under extreme pressure, when the surfaces stick and then tear apart.

C. Wrong: "glazering" is not the name for this damage (glazing is a smooth, glassy surface finish).

D. Wrong: only galling names the tearing described.

Question 60 Building Construction

The horizontal edge at the low side of a sloping roof _____?

- A. Dip

- C. Eave ✓ **Correct answer**
- D. None of these

A. Wrong: a dip is a low point or hollow, not the edge of a roof.

B. Wrong: "green slope" is not a roofing term for the low edge of a roof.

C. Correct: the eave (eaves) is the horizontal lower edge of a sloping roof, where it overhangs the wall and rainwater drips off.

D. Wrong: eave is among the options and is correct.

Question 61 Concrete Technology

The weight of per cubic meter of Plain cement concrete is _____?

- A. 2240
- B. 2000
- C. 2400 ✓ **Correct answer**
- D. None of these

A. Wrong: 2240 kg/m^3 is below the standard unit weight of plain cement concrete.

B. Wrong: 2000 kg/m^3 is too light for plain cement concrete (it is nearer the weight of a lightweight concrete).

C. Correct: the unit weight of plain cement concrete is taken as 2400 kg per cubic metre (24 kN/m^3).

D. Wrong: 2400 is among the options and is correct.

Question 62 Geology

The process of Kaolinization is associated mainly with _____?

- A. Sedimentary rocks

eous rocks ✓ **Correct answer**

- C. Metamorphic rocks
- D. All of the above

A. Wrong: kaolinization is not a sedimentary process; kaolin clay is the PRODUCT of weathering, not a sedimentary rock itself.

B. Correct: kaolinization is the chemical weathering of feldspar minerals in igneous rocks (especially granite), turning the feldspar into kaolin clay.

C. Wrong: kaolinization is a weathering process acting on igneous feldspar, not a metamorphic process.

D. Wrong: kaolinization is associated mainly with igneous rocks, not with all three rock types.

Question 63 Geology

The content of silica (as SiO_2) in igneous rocks varies from over _____?

- A. 80% to about 40% ✓ **Correct answer**
- B. 80% to about 60%
- C. 80% to about 50%
- D. None of these

A. Correct: silica in igneous rocks ranges from over 80% in the most acidic rocks down to about 40% in ultrabasic rocks (acidic ~65–80%, intermediate ~55–65%, basic ~45–55%, ultrabasic below 45%).

B. Wrong: the range extends well below 60% — basic rocks have only about 45–55% silica.

C. Wrong: the range extends below 50% — ultrabasic rocks have about 40–45% silica.

D. Wrong: "80% to about 40%" is among the options and is correct.

64 Building Materials

Manufactured by punching from a sheet material _____?

- A. Precast
- B. Die cut ✓ **Correct answer**
- C. Die cast
- D. None of the above

A. Wrong: precast means cast in a mould before delivery to site (precast concrete); it is not punching from a sheet.

B. Correct: die cutting is manufacturing by punching a shape out of sheet material with a die (a shaped cutting tool).

C. Wrong: die casting pours MOLTEN metal into a mould under pressure; it does not punch shapes from a sheet.

D. Wrong: die cut is among the options and is correct.

Question 65 Building Construction

Most precast concrete elements are produced in permanent forms called _____?

- A. Casting beds ✓ **Correct answer**
- B. Hollow cases
- C. Casting cases
- D. None of the above

A. Correct: in a precast yard, most precast elements are cast in permanent casting beds — long, fixed, reusable forms (often prestressing beds) on the factory floor.

B. Wrong: "hollow cases" is not the name for permanent precast forms.

C. Wrong: "casting cases" is not the standard term; the permanent forms are called casting beds.

isting beds is among the options and is correct.

Question 66 Building Materials

The most effective ingredient used to make steel resistant to corrosion is _____?

- A. Nickel
- B. Radium
- C. Chromium ✓ **Correct answer**
- D. None of these

A. Wrong: nickel improves toughness and corrosion resistance somewhat, but it is not the most effective ingredient for corrosion resistance.

B. Wrong: radium is a radioactive element; it has no place in steelmaking.

C. Correct: chromium is the most effective addition for corrosion resistance — at about 12% or more it forms a thin, self-healing chromium-oxide film on the surface, which is what makes stainless steel stainless.

D. Wrong: chromium is among the options and is correct.

Question 67 Strength of Materials

The ability of a member to resist failure by fracture and yielding is called _____?

- A. Plasticity
- B. Stability
- C. Strength ✓ **Correct answer**
- D. None of these

A. Wrong: plasticity is the ability of a material to deform permanently without breaking; it is not the ability to resist failure.

B. Wrong: stability is a member's ability to keep its shape under load without buckling; it is not the same as resisting fracture and yielding.

trength is the ability of a member to resist failure, whether by fracture or by yielding under load.

D. Wrong: strength is among the options and is correct.

Question 68 Building Construction

In _____ membrane roof system, protection is provided above the roof membrane.

- A. Protected ✓ **Correct answer**
- B. Drain
- C. Vapor retarder
- D. None of these

A. Correct: in a protected membrane roof (PMR), the insulation and ballast sit ABOVE the waterproof membrane, protecting it from weather, foot traffic and temperature swings.

B. Wrong: a drain removes water; it is not the name of a membrane roof system.

C. Wrong: a vapour retarder is a layer that slows vapour movement; it is not a roof system with protection above the membrane.

D. Wrong: protected is among the options and is correct.

Question 69 Building Construction

The _____ is the impervious sheet of material that keeps water out of the building.

- A. Roof membrane ✓ **Correct answer**
- B. Thermal insulator
- C. Vapor retarder
- D. None of these

A. Correct: the roof membrane is the continuous impervious sheet that waterproofs the roof and keeps liquid water out of the building.

thermal insulator slows HEAT flow; it does not keep water out.

C. Wrong: a vapour retarder slows water VAPOUR, not liquid water; the impervious sheet that keeps water out is the membrane.

D. Wrong: roof membrane is among the options and is correct.

Question 70 Building Construction

_____ ceilings are made keeping in view the importance of economy and ease of maintenance.

- A. Household
- B. Industrial
- C. Multistory buildings
- D. All of the above ✓ **Correct answer**

A. True but partial: household ceilings are designed with economy and ease of maintenance in mind, but so are the other types.

B. True but partial: industrial ceilings are also designed for economy and easy maintenance.

C. True but partial: ceilings in multistorey buildings are also designed for economy and easy maintenance.

D. Correct: economy and ease of maintenance govern ceiling design in household, industrial and multistorey buildings alike.

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