Q:) As per the Indian Standard (IS) 456 : 2000, if fck is the characteristic strength of concrete, the tensile strength of the concrete is

A : 0.7√fck

B : 0.5√fck

C : 0.87√fck

D : 0.46√fck

Q:) Maximum depth of neutral axis for singly reinforced beam with Fe500 is (here, depth of the beam = d)

A : 0.44 d

B : 0.46 d

C : 0.48 d

D : 0.53 d

Q:) The minimum area of steel required per meter length of a slab with overall depth of 100 mm consisting of steel grade Fe500 is

A : 96 mm^2

B : 150 mm^2

C : 120 mm^2

D : Insufficient data

Q:) For a square reinforced concrete (RC) column with cross-section of 300 mm × 300 mm having an effective length of 2500 mm, determine the minimum eccentricity

A : 15 mm

B : 30 mm

C : 20 mm

D : None of these

Q:) Determinate the plan area of a footing carrying load of 1500 kN from 300 mm square column containing 20 mm diameter bars as longitudinal steel. The safe bearing capacity of the soil is 120 kN/m^2.

A : 12.5 mm^2

B : 8.33 mm^2

C : 12.63 mm^2

D : 14.38 mm^2

Q:) Determine the volume of a 5 m diameter bunker to stone 50 tones of coal having density of 10 kN/m^3

A : 5 m^3

B : 20 m^3

C : 50 m^3

D : 500 m^3

Q:) In which one of the following post-tensioning anchorage system, the high-tension bars are threaded at their ends?

A : Gifford-Udall

B : Freyssinet

C : Lec-McCall

D : Magnel-Blaton

Q:) As per the Indian Standard (IS) 800 : 2007, a maximum effective slenderness ratio for member carrying compressive loads resulting from dead loads and imposed loads

A : 250

B : 300

C : 180

D : 350

Q:) A solid steel plate having ultimate strength of 410 MPa, the design strength in rupture (N/mm^2) is

A : 250

B : 295.2

C : 335.45

D : 410

Q:) A steel plate of size 250 mm × 150 mm × 10 mm with holes for two number of 16 mm diameter bolts having ultimate strength of 410 MPa, the design strength of plate in rupture of critical section is

A : 336 kN

B : 382 kN

C : 365 kN

D : 280 kN

Q:) A uniform beam of length 6 m carries ultimate load of 20 kN/m inclusive of self-weight, the design shear force is

A : 120 kN

B : 90 kN

C : 60 kN

D : 30 kN

Q:) Wind load on steel roof truss for an industrial building will depend on

A : Location of the structure

B : Height of the structure

C : Shape of the structure

D : All of these

Q:) A fixed beam of length L is subjected to concentrated load W at mid-span, the collapse load is (plastic moment = M_P; length of beam = L)

A : $6M_P/L$

B : $8M_P/L$

C : $16M_P/L$

D : $4M_P/L$

Q:) The values of displacements in {D} necessary to ensure the equilibrium of the joints are determined using the relation (displacement vector = {D}; stiffness matrix = [K]; and load vector = {P})

A : {P}+[K]{D}=0

B : {D}+[K]{P}=0

C : {P}+[D]{K}=0

D : [K]{P}=0

Q:) The strain energy due to torsion is (torsion = T; modulus of elasticity = E; moment of inertia = I; shear modulus = G; polar moment of area = J)

A : $\int \frac{T^2 dx}{2EI}$

B : $\int \frac{T^2 dx}{2GJ}$

C : $\int \frac{T dx}{2EI}$

D : $\int \frac{T dx}{2GJ}$

Q:) In two-hinged arch, how many unknown forces exist?

A : One unknown

B : Two unknown

C : Three unknown

D : Four unknown

Q:) The area under β - distribution curve is divided into two equal parts by

A : Most likely time

B : Expected time

C : Optimistic time

D : Pessimistic time

Q:) Among the following excavators the most suitable excavator for hard digging above track level will be

A : Back hoe

B : Front shovel

C : Scraper

D : Dragline

Q:) Liquidated damage refers to

A : Damages of walls, plasters and paints due to gushing of liquid or rain

B : Penalty cost to rectify dampness in the buildings arising out of gushing of liquid or rain

C : Penalty cost to rectify sub-standard quality of work

D : Penalty for delaying the work beyond agreed date

Q:) A stream having wetted area (A) of 500 m^2 and wetted perimeter (P) of 150 m, the hydraulic mean radius in meter is

A : 650

B : 3.33

C : 0.3

D : 350

Q:) The number of sleepers used for rails varies from, where 'η' length of rat in 'm'

A : (η+1) to (η+4)

B : (η+3) to (η+6)

C : (η+2) to (η+7)

D : (η+4) to (η+8)

Q:) Small hydroelectric project generates power

A : < 25MW

B : < 100MW

C : < 550 MW

D : < 1000 MV

Q:) The ratio of the peak load to the installed capcity of the plant is known as

A : Load factor

B : Plant factor

C : Utilization factor

D : All the options are correct

Q:) For nine number rain gauge stations with an error of 10% in the estimation of mean of the rainfall, the coefficient of variation of rainfall Cv obtained as:

A : 10

B : 20

C : 30

D : 40

Q:) The shape of recession limb of a hydrograph depends upon

A : Basin characteristics only

B : Storm characteristics only

C : Both basin characteristics and storm

D : None of these

Q:) W-index will be always

A : Equal to ϕ-index

B : More than ϕ-index

C : Less than ϕ-index

D : A constant fraction of ϕ-index

Q:) If f_{ck} is the characteristic strength of concrete then as per the Indian Standard (IS) 456:2000, the modulus of elasticity of the concrete is

A : 5700√fck

B : 5200√fck

C : 5000√fck

D : None of these are correct

Q:) The minimum tension reinforcement required in the concrete beam should not be less than (here, width of the beam = b; depth of the beam = d; and yield strength of steel = f_y)

A : 0.04 b.d

B : 0.12 b.d/100

C : 0.85 b.d/f_y

D : 0.87 b.d/f_y

Q:) The one-way simply-supported slab for a room of plan dimensions 9 m × 4 m carries ultimate working load of 9 kN/m. The design moment for the slab should be

A : 12.00 kN.m

B : 18.00 kN.m

C : 9.00 kN.m

D : 27.00 kN.m

Q:) A reinforced concrete (RC) column with slenderness ratio greater than 12 is classified as

A : Short column

B : Long column

C : Axially loaded column

D : Stub column

Q:) The critical section for computing maximum bending moment for the design of isolated footing supporting a concrete column is (considering D as distance between the column face and the footing edge)

A : At the face of the column

B : At a distance d from the column face

C : At the center of the column

D : At a distance d/2 from the column face

Q:) As per the Indian Standard (IS) 3370:2009, the minimum grade of concrete to be used in liquid retaining structures should be

A : M20

B : M25

C : M30

D : M15

Q:) In a 10 m long simply-supported restressed concrete beam. if restressing force = P; eccentricity = e; area of cross-section = A; section modulus = Z; bending moment due to dead load = M_g; bending moment due to live load = M_q, the resultant stress due to dead load and live load at top fiber at mid-span is given by

A : $\left(\frac{P}{A} - \frac{P.e}{Z}\right) + \left(\frac{M_g}{Z}\right) + \left(\frac{M_q}{Z}\right)$

B : $\left(\frac{P}{A} + \frac{P.e}{Z}\right) + \left(\frac{M_g}{Z}\right) + \left(\frac{M_q}{Z}\right)$

C : $\left(\frac{P}{A} - \frac{P.e}{Z}\right) - \left(\frac{M_g}{Z}\right) - \left(\frac{M_q}{Z}\right)$

D : $\left(\frac{P}{A} + \frac{P.e}{Z}\right) - \left(\frac{M_g}{Z}\right) - \left(\frac{M_q}{Z}\right)$

Q:) The Indian Standard (IS) 800:2007 divides various compression member cross-sections into how many buckling class-sections into how many buckling classes?

A : 1

B : 2

C : 3

D : 4

Q:) In the design of a base plate, the bearing strength of concrete as per the Indian Standard (IS) 800:2007, is taken as (f_{ck} is characteristic strength of concrete)

A : 0.4 f_{ck}

B : 0.45 f_{ck}

C : 0.5 f_{ck}

D : 0.60 f_{ck}

Q:) The Indian Standard (IS) 800:2007 recommends, in taking advantage of reduced design forces, that the purlins be designed as

A : Continuous beams

B : Simply-supported beams

C : Cantilever beams

D : Tension members

Q:) The principal rafter of roof truss is inclined at an angle of 15_o. No access is provided except maintenance. The roof is subjected to imposed load of 0.75 kN/m^2, the design imposed load is

A : 1.50 kN/m^2

B : 0.75 kN/m^2

C : 0.65 kN/m^2

D : 0.40 kN/m^2

Q:) The plastic modulus of rectangular beam of width 200 mm and depth 400 mm is

A : $2\times10^{6}mm^{3}$

B : $5.33\times10^{6}mm^{3}$

C : $8\times10^{6}mm^{3}$

D : $1.07\times10^{9}mm^{3}$

Q:) If m is number of members; is reactions; and j is number of joints then in case of a planer structure, $3m+r<3j$ leads to

A : Stable structure

B : Determinate structure

C : Unstable structure

D : Indeterminate structure

Q:) The Reeve's formula to determine the design discharge from catchment is given by (constant depending on nature of the catchment and location = C; catchment area in square kilometers = A)

A : $CA^{3/2}$

B : $CA^{2/3}$

C : $AC^{3/2}$

D : $AC^{2/3}$

Q:) Maximum shear stress for rectangular section is (total transverse shear at the section = V; entire cross-sectional area = A)

A : 3V/A

B : 2V/3A

C : 3V/2A

D : V/2A

Q:) Maximum deflection at the mid-span of a simply-supported beam of span l, with uniformly distributed load (w) all over the beam span, and flexural rigidity EI, is (modulus of elasticity = E; moment of inertia of beam = I)

A : $5wl^4 \over 48EI$

B : $5wl^4 \over 384EI$

C : $wl^3 \over 48EI$

D : $wl^3 \over 3EI$

Q:) In PERT analysis of a project having large number of activities in its critical path, which of the following assumption is correct?

A : Both activity durations and project completion time follow β - distribution

B : Both activity durations and project completion time follow normal distribution

C : Activity durations follow normal distribution, but project completion time follows β - distribution

D : Activity durations follow β - distribution, but project completion time follows normal distribution

Q:) Among the following excavators, the most suitable excavator for dredging purposes will be

A : Back hoe

B : Front shovel

C : Scraper

D : Dragline

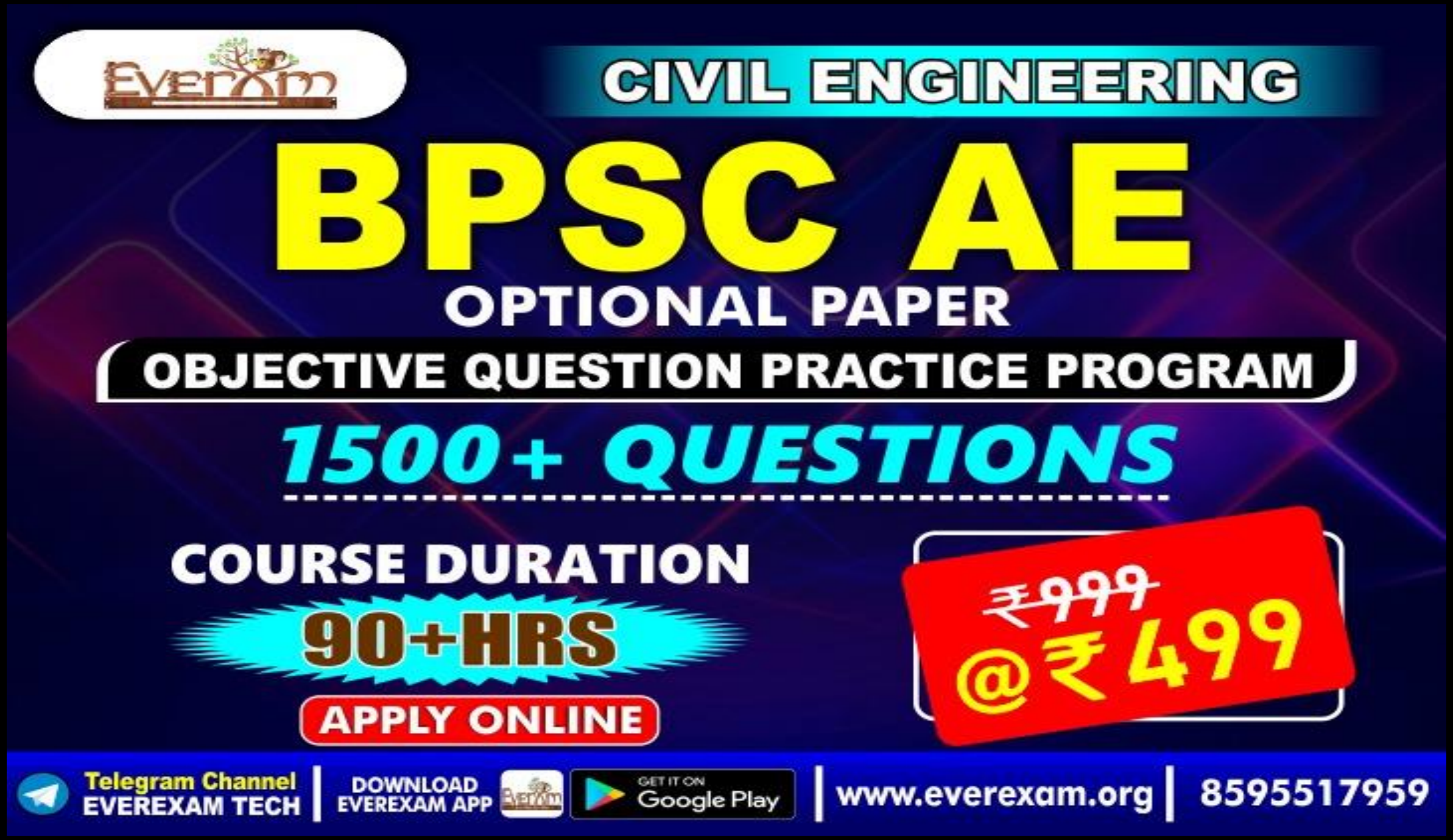
Q:) Physical life of an equipment is defined as

A : age at which the equipment is worm out and it can no Longer reliably produce

B : The life over which the equipment can earn a profit

C : Time period that maximizes the profit over the equipment life

D : Age at which depreciation cost exceeds the purchase cost


EVEREXAM
CIVIL ENGINEERING
BPSC AE
OPTIONAL PAPER
OBJECTIVE QUESTION PRACTICE PROGRAM
1500+ QUESTIONS
COURSE DURATION
90+HRS
APPLY ONLINE
₹999
@₹499
Telegram Channel
EVEREXAM TECH
DOWNLOAD
EVEREXAM APP
GET IT ON
Google Play
www.everexam.org
8595517959