Assignment 2

EE24Btech11024 - G. Abhimanyu Koushik

1) Direct step method of gradually varied flow is

(CE 2009)

a) applicable to non-prismatic channels
b) applicable to prismatic channels
c) applicable to both prismatic and non-prismatic channels
d) not applicable to both prismatic and non-prismatic channels

2) The relationship among specific yield $\left(S_y\right)$, specific retention (S_r) and porosity (η) of an aquifer is

(CE 2009)

a) $S_y = S_r + \eta$ b) $S_y = S_r - \eta$ c) $S_y = \eta - S_r$ d) $S_y = S_r + 2\eta$

3) The depth of flow in an alluvial channel is 1.5 m. If the critical velocity ratio is 1.1 and Manning's n is 0.018, the critical velocity of the channel as per Kennedy's method is

(CE 2009)

a) 0.713 m/s b) 0.784 m/s c) 0.879 m/s d) 1.108 m/s

4) The reference pressure used in the determination of sound pressure level is

(CE 2009)

a) 20 μPa b) 20 db c) 10 μPa d) 10 db

5) Particulate matter (fly ash) carried in effluent gases from the furnaces burning fossil fuels are better removed by

(CE 2009)

a) Cotton bag house filter
b) Electrostatic precipitator (ESP)
c) Cyclone
d) Wet scrubber

6) The value of lateral friction used in the side design of horizontal curve as per Indian Roads Congress guidelines is

(CE 2009)

a) 0.40 b) 0.35 c) 0.24 d) 0.15

7) During a CBR test, the load sustained by a remolded soil specimen at 5.0 mm penetration is 50 kg. The CBR value of the soil will be

(CE 2009)

a) 10.0% b) 5.0% c) 3.6% d) 2.4%

8) In quandrantal bearing system, bearing of a line varies from

(CE 2009)

a) $0°$ to $360°$ b) $0°$ to $180°$ c) $0°$ to $90°$ d) $0°N$ to $90°S$

9) For a scalar function $f(x, y, z) = x^2 + 3y^2 + 2z^2$, the directional derivative at the point $\mathbf{P}(1, 2, -1)$ in the direction of a vector $\hat{i} - \hat{j} + 2\hat{k}$ is

(CE 2009)

a) -18 b) $-3\sqrt{6}$ c) $3\sqrt{6}$ d) 18

10) The value of the integral $\int_C \frac{\cos 2\pi z}{(2z-1)(z-3)} dz$ (where C is a closed curve given by $|z| = 1$) is

(CE 2009)

a) $-\pi i$ b) $\frac{\pi i}{5}$ c) $\frac{2\pi i}{5}$ d) πi

11) Solution of the differential equation $3y\frac{dy}{dx} + 2x = 0$ represents a family of

(CE 2009)

a) ellipses b) circles c) parabolas d) hyperbolas

12) Laplace transform for the function $f(x) = \cosh ax$ is

(CE 2009)

a) $\frac{a}{s^2-a^2}$ b) $\frac{s}{s^2-a^2}$ c) $\frac{a}{s^2+a^2}$ d) $\frac{s}{s^2+a^2}$