గత పరీక్షల్లో వచ్చిన ప్రశ్నలు

Common for Civil & Mechanical Engineering Paper-II (AEE-2012)

1. The turbine to be used for 450 m head of water is
(1) Pelton wheel (2) Francis turbine
(3) Kaplan turbine (4) None of these

2. The cavitation in a hydraulic machine
(1) causes noise and vibration of various parts
(2) makes the surface rough
(3) reduces the discharge of a turbine
(4) causes sudden drop in power output and efficiency

3. The specific speed of a turbine is speed of an imaginary turbine, identical with the given turbine, which
(1) delivers unit discharge under unit load
(2) delivers unit discharge under unit speed
(3) develops unit H.P. under unit head
(4) develops unit H.P. under unit speed

4. In a centrifugal pump the liquid enters the pump
(1) at the centre (2) at the top
(3) at the bottom (4) from sides

5. Multistage centrifugal pumps are used to
(1) give high discharge
(2) pump viscous fluids
(3) produce high heads
(4) None of these

6. Theoretical power required to drive a reciprocal pump is
(1) $\frac{WQH_s}{60}$ (2) $\frac{WQH_s}{75}$
(3) $\frac{WQH_d}{60}$ (4) $\frac{270}{\pi}$

7. The specific speed of a centrifugal pump is given by
(1) $\frac{N\sqrt{Q}}{H^{2/3}}$ (2) $\frac{N\sqrt{Q}}{H}$
(3) $\frac{N\sqrt{Q}}{H^{3/4}}$ (4) $\frac{N\sqrt{Q}}{H^{5/4}}$

8. For centrifugal pump impeller, the maximum value of the vane exit angle is
(1) 10° to 15° (2) 15° to 20°
(3) 20° to 25° (4) 25° to 30°

9. Which of the following pumps is preferred for flood control and irrigation applications?
(1) Centrifugal pump
(2) Mixed flow pump
(3) Axial flow pump
(4) Reciprocating pump

10. In order to avoid cavitation in centrifugal pumps
(1) the suction pressure should be high
(2) the delivery pressure should be high
(3) the suction pressure should be low
(4) the delivery pressure should be low

11. In a propped cantilever beam, the number of points of contraflexure is
(1) 1 (2) 2
(3) 3 (4) 4

12. A fixed beam 'AB' 6 m long carries a vertical load 90kN at 2 m from 'A'. The fixed end moments at 'A' and 'B' are
(1) 40 kN-m, 80 kN-m (2) 40 kN-m, 120 kN-m
(3) 80 kN-m, 40 kN-m (4) 120 kN-m, 80 kN-m

13. In a fixed beam, at the fixed ends
(1) slope is zero and deflection is maximum
(2) slope is maximum and deflection is zero
(3) both slope and deflection are maximum
(4) slope and deflection are zero

14. If a fixed beam is subjected to a point load at mid span, total number of points of contraflexure are
(1) 1 (2) 2 (3) 3 (4) zero

15. A beam of length *l*, fixed at both ends carries a uniformly distributed load of w per unit length. If EI is the flexural rigidity, then the maximum deflection in the beam is
(1) $\frac{wl^4}{192EI}$ (2) $\frac{wl^4}{24EI}$
(3) $\frac{wl^4}{384EI}$ (4) $\frac{wl^4}{12EI}$

16. Slenderness ratio of a column may be defined as the ratio of its effective length to the
(1) radius of column
(2) minimum radius of gyration
(3) maximum radius of gyration
(4) area of the cross-section

17. The crippling load of a column with one end fixed and other end hinged is
(1) $\sqrt{2}$ times that of a both ends hinged column
(2) Two times that of a both ends hinged column
(3) Four times that of a both ends hinged column
(4) Eight times that of a both ends hinged column

18. The formula given by I.S. code in calculating allowable stress for the design of eccentrically loaded columns is based on
(1) Johnson's parabolic formula
(2) Straight line formula
(3) Perry's formula
(4) Secant formula

19. The Rankine constant (a) in Rankine's formula is equal to
(1) $\frac{\pi^2 E}{\sigma_c}$ (2) $\frac{\sigma_c}{\pi^2 E}$
(3) $\frac{\pi^2}{\sigma_c E}$ (4) $\frac{E\sigma_c}{\pi^2}$

20. When both ends of the column are pinned, then the formula for crippling load (P) is equal to
(1) $P = \frac{\pi^2 EI}{l^2}$ (2) $P = \frac{4\pi^2 EI}{l^2}$
(3) $P = \frac{2\pi^2 EI}{l^2}$ (4) $P = \frac{\pi^2 EI}{l^2}$

Answers

1-1; 2-1; 3-3; 4-1; 5-3; 6-4; 7-3; 8-4; 9-3; 10-3; 11-1; 12-3; 13-4; 14-2; 15- 3; 16-2; 17-2; 18-3; 19-2; 20-1.