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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fifth Semester, B.E. - Civil Engineering

Semester End Examination; February / March - 2023

Proficiency in Civil Engineering (Technical Skills - I)

Time: 2 hrs *Max. Marks: 50*

Course Outcomes

The Students will be able to:

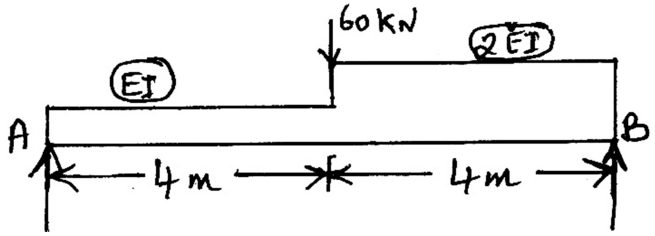
CO1: Understand the principles and analysis of elements in structural engineering.

CO2: Understand the principles and application of Water Resources Engineering.

CO3: Understand the principles and usage of Geomatics engineering and Transportation Engineering.

CO4: Understand the principles and perceive Construction Management.

***Note: All** questions are **compulsory** and each question carries **TWO** marks.*

Q. No.	Questions	BLs	COs	POs
1.	Two forces of 6 N and 8 N, which are acting at right angles to each other. Find the resultant force a) 18 N b) 12 N c) 10 N d) 52 N	L1	CO1	PO2,3
2.	A particle starts from rest and moves in a straight line, whose equation of motion is given by $S = 2t^3 - t^2 - 1$ determine the acceleration of the particle. a) 8 m/s^2 b) 18 m/s^2 c) 3 m/s^2 d) 10 m/s^2	L3	CO1	PO2,3
3.	Determine the deflection under 60 kN load in the beam as shown in figure  a) $\frac{480}{EI}$ b) $\frac{530}{EI}$ c) $\frac{237}{EI}$ d) $\frac{608}{EI}$	L3	CO1	PO2,3
4.	The number of members in a perfect frame having J no of joint is equal to a) 2J – 1 b) 3J – 2 c) 2J – 3 d) 2J – 2	L2	CO1	PO2,3
5.	The basic purpose of a retarder in concrete is a) To increase the initial setting time b) To disease the initial setting time c) To render the concrete more water tight d) To improve the workability of concerts mix	L1	CO1	PO2,3

6. A slump test for concrete is carried out to determine
   a) Strength b) Durability L1 CO1 PO2,3
   c) Workability d) Water content
7. The maximum deflection in a steel beam is limit to
   a) L/360 b) L/325 L1 CO1 PO2,3
   c) L/350 d) L/150
8. The minimum grade of concrete that can be used for pre-tensioned beam system is
   a) M20 b) M25 L1 CO1 PO2,3
   c) M30 d) M40
9. Two horizontal plats are placed 12.5 mm apart, the space between them being filled with oil of viscosity 14 poises. Calculate the shear stress in oil, if upper plate is moved with a velocity of 2.5 m/s. L2 CO1 PO2,3
   a) 197 N/m^2 b) 200 N/m^2
   c) 280 N/m^2 d) 300 N/m^2
10. Find the head lost done to fruition in a pipe of diameter 300 mm and length 50 m, through which water is flowing at a velocity of 3 m/s using Chezzy's formula for which C = 60 L2 CO2 PO2,3
    a) 1.665 m b) 1.775 m
    c) 1.525 m d) 1.675 m
11. A rectangular plane surface is 2 m wide and 3 m deep. It lies in vertical plane in water. Determine the total pressure. When its upper edge is coincides with water surface L2 CO2 PO2,3
    a) 93.29 kN b) 61.48 kN
    c) 88.29 kN d) 51.63 kN
12. If at the inlet of the turbine, the energy available is only Kinetic energy the turbine is known as
    a) Reaction turbine b) Impulse turbine L1 CO2 PO2,3
    c) Radial flow turbine d) Mixed flow turbine
13. Area of the basin is 300 km^2 with a run off volume of 21.6 x 10^6 m^3. Find the depth of runoff.
    a) 65 mm b) 78 mm L2 CO2 PO2,3
    c) 72 mm d) 96 mm
14. What should be the diameter of an open well to give a safe yield of 4.8 Lt/s. Assume working head as 3.75 m
    a) 6.12 m b) 4.50 m L3 CO2 PO2,3
    c) 3.43 m d) 2.18 m

Contd… 3

15. A crop requires a total depth of 920 mm of water for a base periods of 120 days. Find the duty of water — L3 CO2 PO2,3
    a) 1260 ha/mee b) 1069 ha/mee
    c) 1430 ha/mee d) 1127 ha/umee
16. The best pH level of drinking water — L1 CO2 PO2,3
    a) 6.5 b) 7.0
    c) 8.5 d) 9.5
17. A Man Standing at a certain distance from a building observes the angle of elevation of into top to be 60. The works 27.43 m away from the building, now the angle of elevation of the building is 30º. What is the height of the building? — L2 CO3 PO2,3
    a) 24.53 m b) 23.77 m
    c) 18.53 m d) 30.12 m
18. Determine the stopping sight distance of a vehicle moving with a speed of 50 kmph in a two lane load. If the section time of driver is 2.3 sec and coefficient of longitudinal friction is 0.38. — L2 CO3 PO2,3
    a) 57.87 s b) 35.65 s
    c) 48.3 s d) 12.43 s
19. The minimum distance between the running inner faces of two rails is called — L1 CO3 PO2,3
    a) Gradient b) Super election
    c) Rail gauge d) Broad gauge
20. Radius of relative stiffness of cement concrete pavement is not dependent upon — L1 CO3 PO2,3
    a) Wheel load b) Concrete
    c) Thickness d) Poisson's ratio
21. What is the advantage of using EDM? — L1 CO4 PO2,3
    a) Precise measurement of distance
    b) Electronic batteries
    c) Expensive instrument
    d) Accuracy of instrument
22. In GIS, interpolation is made possible by a principle called — L1 CO4 PO2,3
    a) Spatial auto correlation
    b) Thermatic auto correlation
    c) Spatial auto correction
    d) Thematic auto correction

Contd… 4

23. Sinking fund is

    a) The find for rebuilding a structure when its economic life is over

    b) Raised to meet maintenance fund L1 CO4 PO2,3

    c) The total sum to be paid to the municipal authorities

    d) Providing additional structures

24. For a given activity, the optimistic time, pessimistic time end the most probable estimates are 5, 17 and 8 days respectively. The expected time is

    a) 8

    b) 9 L2 CO4 PO2,3

    c) 10

    d) 15 days

25. The time with which direct cost does not reduce with the increase in time is known as

    a) Crash time

    b) Normal time L1 CO4 PO2,3

    c) Optimistic

    d) Standard time

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