

KATHMANDU UNIVERSITY
End Semester Examination [C]
June/July 2024

Marks Scored:

Level : B.Sc.

Year : I

Exam Roll No. :

Time: 30 mins.

Registration No.:

Course : ENGG 111

Semester : I

F. M. : 20

Date : 02 JUL 2024

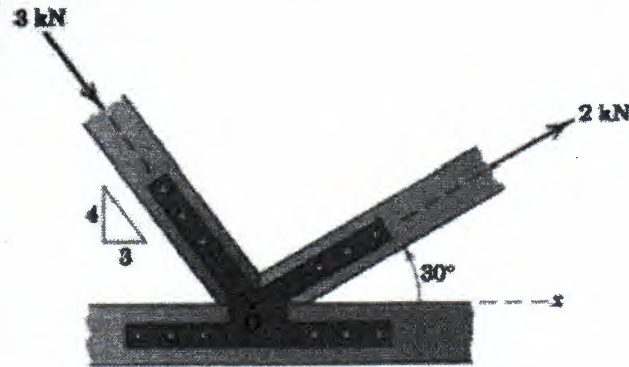
SECTION "A"

[20Q. × 1 = 20 marks]

Choose and encircle the most appropriate option from each set of choices.

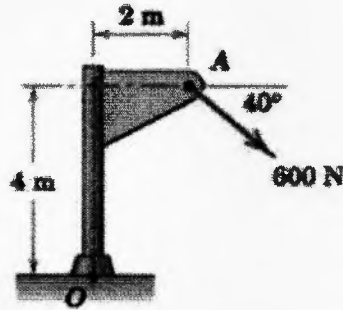
1. Two isolated foundations connected with beam are known as
 - a. Combined foundation
 - b. Strap foundation
 - c. Raft foundation
 - d. Pile foundation
2. Function of C_2S (**Belite**) in the Cement is
 - a. Providing late strength
 - b. Providing early strength
 - c. Providing color to the cement
 - d. Making economical volume
3. Brick masonry bond having alternative header and stretcher in a course is known as
 - a. Stretcher bond
 - b. Header bond
 - c. English bond
 - d. Flemish bond
4. Correct Statement about OPC cement is
 - a. Final setting time is about 6 hours
 - b. Initial setting time is about 6 hours
 - c. Initial setting time is about one hour
 - d. Final setting time is about one hour
5. The fluid velocity $U = U(x, y, t)$ where x and y represents x -coordinate, and y -coordinate, and t is time. For the mentioned equations, the following conditions are defined.
 - I) The fluid flows in one direction.
 - II) The flow represents the unsteady state.
 - III) The fluid flows in 2 directions.
 - IV) The flow is in a steady state.Choose which of these options correctly represents the flow
 - a. I and II only
 - b. I and IV only
 - c. II and III only
 - d. The information is not sufficient
6. Consider an octagon is made up of 8 individual parts where the density of all parts is ρ_1 . Now all of the parts of the octagon are removed and new material with density ρ_2 is inserted. Which of the following conditions hold?
 - a. The center of mass and centroid both changes
 - b. The centroid changes and the center of mass remains the same
 - c. The centroid remains the same and the center of mass changes
 - d. Both the center of mass and the centroid remain the same
7. The water meter in your home is an example of
 - a. A Pump
 - b. A Turbine
 - c. The water meter can sometimes act as a turbine and sometimes as a pump.
 - d. It is neither a pump nor a turbine

8. The magnitude and direction of the resultant force with positive x-axis



- a. 3.80 kN, 338° b. 3.80 kN, 68° c. 2.80 kN, 65.9° d. 2.80 kN, 75.9°
9. The definition of temperature comes from
 a. Zeroth law of thermodynamics b. First law of Thermodynamics
 c. Second law of Thermodynamics d. Third law of Thermodynamics
10. Water is flowing in a 3 cm diameter garden hose at a rate of 30 L/min. A 20-cm nozzle is attached to the hose which decreases the diameter to 1.2 cm. The magnitude of the acceleration of a fluid particle moving down the centerline of the nozzle is
 a. 14.5 m/s^2 b. 25.4 m/s^2 c. 39.1 m/s^2 d. 47.6 m/s^2
11. The rotating part of a turbine is called
 a. Propeller b. Runner c. Impeller d. Scroll
12. A curve that is everywhere tangent to the instantaneous to the local velocity vector is called
 a
 a. Pathline b. Streamline c. Streakline d. Tangentline
13. A square steel rod $20\text{mm} \times 20\text{mm}$ in section is to carry an axial load (compressive) of 100kN. Calculate the shortening in a length of 10 mm. $E = 2.14 \times 10^8 \text{ kN/m}^2$.
 a. 0.0584 b. 0.0116 c. 0.0226 d. 0.0466
14. Heat addition in diesel cycle takes place at.....process.
 a. Isobaric b. Isochoric c. Isentropic d. None of them
15. Which of the turbine is generally not used for power generation?
 a. Positive displacement b. Reaction
 c. Impulse d. Kaplan

16. Determine the magnitude of the moment M for the 5 kN force about point O . CW = clockwise and CCW = counter-clockwise.



- a. 2610 N-m CCW
b. 2610 N-m CW
c. 3610 N-m CCW
d. 3610 N-m CW
17. Which of the following is **NOT** the principle of surveying?
a. Working from part to whole
b. Economy of accuracy
c. Independent check
d. Consistency in work
18. If the WCB and RB of a survey line is same, then in which quadrant does it fall?
a. First
b. Second
c. Third
d. Fourth
19. Which of the following is considered as the height of datum surface? 179°
a. Zero
b. Always positive
c. Always negative
d. Any arbitrary value
20. For a bearing measured in a reduced bearing system as $N87^\circ W$, what will be the corresponding value in a Whole Circle Bearing (WCB) system?
a. 3°
b. 87°
c. 93°
d. 273°

