Chettinad
College of Engineering & Technology
Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

Department of Mechanical Engineering

CE8403 APPLIED HYDRAULIC ENGINEERING

Unit I - UNIFORM FLOW MCQ Bank

1. The flow characteristics of a channel does not change with time at any point. What type of flow is it?

a) Steady flow

b) Uniform flow

c) Laminar flow

d) Turbulent flow

Answer: a

2. The Reynolds number for a flow in a channel is 1000. What type of flow is it?

a) Laminar

b) Turbulent

c) Transition

d) Steady

Answer: c

3. The ratio of inertia force and gravitational force is called as _____

a) Reynolds number

b) Stokes number

c) Froude's number

d) Euler's number

Answer: c

4. The Froude's number for a flow in a channel section is 1. What type of flow is it?

a) Sub Critical

b) Critical

c) Super critical

d) Tranquil

Answer: b

5. What is the Froude's number for a channel having mean velocity 4.34 m/s and mean hydraulic depth of 3m?

a) 0.4m

b) 0.6m

c) 0.7m

d) 0.8m

Answer: d

6. Calculate the mean hydraulic radius for a channel having 20m^2 cross sectional area and 50m of wetted perimeter.

a) 0.4m
b) 0.5m
c) 0.6m
d) 0.7m
Answer: a

7. Calculate the mean hydraulic depth of a channel having top width of 7m and cross sectional area of $35m^2$.
a) 4m
b) 5m
c) 6m
d) 7m
Answer: b

8. Estimate the section factor for a channel section having cross sectional area of $40m^2$ and hydraulic depth of 6m.
a) 94.3
b) 95.6
c) 97.9
d) 100

Answer: c

9. Calculate the Froude's number for a channel having discharge of $261.03m^3/s$, cross sectional area of $42m^2$ and the top width being 6m.
a) 0.65
b) 0.72
c) 0.38
d) 0.75

Answer: d.

10. Calculate the aspect ratio having channel width of 6m and depth of 8m.
a) 0.75m
b) 1.33m
c) 1.50m
d) 1.68m

Answer: b

11. Estimate the type of flow in a channel having cross sectional area of $50m^2$ and top of the channel is 5m. The mean velocity of flow is 0.1m/s and the absolute viscosity of water is $0.625 N-s/m^2$.
a) Laminar

b) Turbulent

c) Transition

d) Steady

Answer: c

12.. The discharge and velocity of water in a rectangular channel are 75m^3/s and 5m/ s respectively. The hydraulic depth being 3m calculate the hydraulic radius.

a) 1.36m

b) 1.87m

c) 1.98m

d) 2.0m

Answer: a

13.Calculate the hydraulic diameter for a rectangular duct having 10m width and 6m depth.

a) 5.5m

b) 6.5m

c) 7.5m

d) 8.5m

Answer: c

14. The ratio of Hydraulic radius and Hydraulic depth is ½ and the top width of the channel is 6m, calculate the hydraulic depth of the channel.

a) 1m

b) 2m

c) 3m

d) 4m

Answer: c

15. The section factor of a rectangular channel is 111.80m. The discharge and velocity of water are 250 m3∕s and 5 m∕s respectively. Calculate the hydraulic depth of the channel.

a) 2m

b) 3m

c) 4m

d) 5m

Answer: d

16. The ratio between depth and width of a rectangular channel is ¼ and the area of the rectangular section is 16m^2. Calculate the top width of the channel.

a) 5m

b) 6m

c) 7m

d) 8m

Answer: d

17.Which geometric parameter determines the efficiency of the channel?

a) Hydraulic depth

b) Hydraulic radius

c) Section factor

d) Normal depth

Answer: b

18. A rectangular channel has depth y and top with B. Determine its section factor.

a) By3⁄2

b) By1⁄2

c) By

d) By2

Answer: a

19. Calculate the wetted area for a rectangular channel which is 5.2m in width and 3m in depth.

a) 15.6m2

b) 16.6m2

c) 17.6m2

d) 18.6m2

Answer: d

20. Calculate the wetted perimeter for a rectangular channel having top width of 4.5m and depth of 3m.

a) 12m

b) 10.5m

c) 7.5m

d) 15m

Answer: b

21. A rectangular channel has a depth of 5m and width of 12m. Calculate the hydraulic depth of the channel.

a) 5m

b) 6m

c) 7m

d) 8m

Answer: a

22. The depth and widths of a rectangular channel are 4m and 5m respectively. Determine the hydraulic radius of the channel.

a) 4.22m

b) 3.54m

c) 2.22m

d) 1.54m

Answer: d

23. Determine the section factor for the channel section having area 20m2.

a) 20m

b) 30m

c) 40m

d) 50m

Answer: b

24. The section factor and hydraulic depth for a rectangular channel are 40m and 4m respectively. Determine the top width of the channel.

a) 3m

b) 4m

c) 5m

d) 6m

Answer: c

25. The hydraulic depth of a rectangular channel is 2m and its wetted area is 12m2. Estimate its hydraulic radius.

a) 1.2m

b) 1.3m

c) 1.4m

d) 1.5m

Answer: a

26. Let the top width of a rectangular channel be B and the depth be y, determine the hydraulic radius of the channel.

a) By/ B+2y

b) By/ B+ y

c) y

d) B

Answer: a