Marks Scored:

KATHMANDU UNIVERSITY
End Semester Examination[C]
July, 2017

Level : B. E.
Year : IV

Course : EPEG410
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date JUL 10 2017

SECTION "A"
[20Q × 0.5 =10 marks]

Choose the most appropriate answer for the following questions.

1. Bernoulli equation deals with law of conservation of .....
a. mass b. force c. momentum d. energy

2. Bulb turbine is .....
a. A high head mixed flow turbine
b. A low axial flow turbine
c. An outward flow reaction turbine
d. An impulse inward flow turbine

3. In hydraulic power-generation systems, desilting basin are provided to prevent .....
a. high pressure b. high velocity c. high discharge d. high silt

4. For pipes turbulent flow occurs when Reynolds number is.....
a. less than 2000
b. greater than 4000
c. less than 4000
d. between 2000 and 4000

5. Cavitation in turbines are caused by
a. weak material b. low pressure c. high velocity d. low viscosity

6. The most common type of wind turbine used globally is.....
a. one bladed b. two bladed c. three bladed d. d. multi-bladed

7. Water at 25°C is flowing through a 1.0 km long G.I. pipe of 200 mm diameter at the rate of 0.07 m^3/s. If value of Darcy friction factor for this pipe is 0.02 and density of water is 1000 kg/m^3, the pumping power (in kW) required to maintain the flow is .....
a. 1.8 b. 17.4 c. 20.5 d. 41.0

8. A liquid flows downward through at tapped vertical portion of a pipe. At the entrance and exit of the pipe, the static pressures are equal. If for a vertical height 'h' the velocity becomes four times, then the ratio of 'h' to the velocity head at entrance will be .....
a. 3 b. 8 c. 15 d. 24

9. A 12 cm diameter straight pipe is laid at a uniform downgrade and flow rate is maintained such that velocity head in the pipe is 0.5 m. If the pressure in the pipe is observed to be uniform along the length when the down slope of the pipe is 1 in 10, the friction factor for the pipe will be .....
a. 0.012 b. 0.024 c. 0.042 d. 0.050

10. A Francis turbine is coupled to an alternator to generate electricity with a frequency of 50 Hz. If the alternator has 12 poles, then the turbine should be regulated to run at aconstant speed of .....
a. 250 rpm b. 500 rpm c. 600 rpm d. 1000 rpm

11. The speed ratio of a Pelton wheel operating under a head of 900 m is 0.45. The peripheral velocity of the turbine wheel is .....
a. 28 m/s b. 96 m/s c. 42 m/s d. 60 m/s

12. Two pumps can operate independently at heads H1, H2 and discharge Q1, Q2, respectively. If the pumps are connected in cascade, then the resulting discharge (Q) and head (H) are .....
a. Q = Q1 + Q2, H = H1 + H2
b. Q = Q1 – Q2, H = H1 – H2
c. Q = Q1 = Q2, H = H1 + H2
d. Q = Q1 + Q2, H = H1 = H2

13. STC for a solar photovoltaic module is .....
a. 1368kW/m^2, AM 1, 25°C
b. 1368kW/m^2, AM 1.5, 25°C
c. 1000kW/m^2, AM 1, 25°C
d. 1000kW/m^2, AM 1.5, 25°C

14. The rating of a lead acid battery is specified as 150Ah @C10, 2V. The battery discharging current will be .....
a. 15A b.7.5A c. 30A d. 10A

15. The tilt angle preferred for a solar photovoltaic module in Nepal is .....degrees.
a. 60 b. 90 c. 30 d. 0

16. The discharge of water to be pumped by a solar photovoltaic system can be measured using a .....
a. pyranometer b. compass c. abney level d. conductivity meter

17. The quantity of fresh cow dung required for a 10m^3 biogas plant on hill is .....
a. 24 b. 36 c. 48 d. 60

18. The direct solar radiation is measured using an instrument called .....
a. Pyranometer b. Manometer c. Anemometer d. pyrheliometer

19. .....incorporates an electricity generating system based on pendulum connected to the generator.
a. TAPCHAN
b. Oscillating water column
c. Binary cycle
d. Salter duck

20. Bhang cane has been a source of alternative of .....
a. diesel b. petrol c. kerosene d. lantern light