NCES Participant Test 2 July_Dec 2022

Wind Energy Class Participant Test 2

* Indicates required question

1. Branch of Student *

Mark only one oval.

- CSE
- Auto
- Metallurgy
- Civil

2. Full Enrolment Number * 0 points

3. First Middle Last Name *

4. The amount of energy available in the wind at any instant is proportional to ___ of the wind speed. * 1 point

Mark only one oval.

- Square power
- Square root power of two
- Square root power of three
- Cube power

5. Which of these is NOT a part of a modern wind turbine? * 1 point

Mark only one oval.

- Nacelle
- Yaw drive
- Compressor
- Gear Box

6. Winds having following speed are suitable to operate wind turbines. * 1 point

Mark only one oval.

- ◯ 5 – 25 m/s
- ◯ 10 – 35 m/s
- ◯ 20 – 45 m/s
- ◯ 30 – 55 m/s

7. The following factor(s) affects the distribution of wind energy * 1 point

Mark only one oval.

- ◯ Mountain chains
- ◯ The hills, trees and buildings
- ◯ Frictional effect of the surface
- ◯ All of the above

8. Which part of the wind turbines senses wind speed, wind direction, shaft speed and torque? * 1 point

Mark only one oval.

- ◯ Turbine blade
- ◯ Controller
- ◯ Rotor
- ◯ Shaft

9. What are used to turn wind energy into electrical energy * 1 point

Mark only one oval.

- ◯ Turbine
- ◯ Generator
- ◯ Yaw motor
- ◯ Blades

10. A rotor installed in a fixed orientation with the swept area perpendicular to the pre-dominate wind direction is called _____ * 1 point

Mark only one oval.

- Yaw fixed machines
- Nacelle
- Blades
- Anemometer

11. The wind speed is measured using an instrument called * 1 point

Mark only one oval.

- Pyranometer
- Manometer
- Anemometer
- Wind Vane

12. Low solidity rotors use which of the following force for rotation * 1 point

Mark only one oval.

- Drag
- Lift
- Centrifugal
- Centripetal

13. The following is the tangential velocity of the blade due to the rotation of blade. * 1 point

Mark only one oval.

- Wind velocity
- Incident wind velocity
- Blade linear velocity
- Relative velocity

14. Turbines blades have ____ type cross section to extract energy from wind. * 1 point

Mark only one oval.

- Elliptical
- Aerofoil
- Rectangular
- All of the above

15. The Nacelle of windmill houses * 1 point

Mark only one oval.

- Brakes
- Gearbox
- Generator
- All of the above

16. Why blade velocity of wind turbine varies * 1 point

Mark only one oval.

- Due to varying wind speeds
- Long length of blades
- Due to the height of mount
- Because of hotness of Sun

17. Calculate the air density in kg/m3, when 10m/s wind is at 1 standard atmospheric pressure and 15 C? * 1 point

_____

18. Calculate the air density in kg/m3 when 18m/s wind is at 1 standard atmospheric pressure and 34 C * 1 point

_____

19. What is the inherent weakness of all wind machines? * 1 point

Mark only one oval.

- Their efficiencies
- Requires powerful winds to make fan rotate
- Their dependency on the wind speed
- Cannot be easily repaired

20. What does TSR stand for in design consideration of wind mills? * 1 point

Mark only one oval.

- Torque-synchronous ratio
- Tip suspension ratio
- Tip speed ratio
- Temporary speed restriction

21. Turbines with how many propellers are used in order to avoid vibrations? * 1 point

Mark only one oval.

- 1
- 2
- 3
- 4

22. What type of cross sections does wind turbine blades have? * 1 point

Mark only one oval.

- Penta hedral cross section
- Air foiled type cross section
- Radar cross section
- Turbo cross section

23. A wind turbine working at 1 standard atmosphere has a density of 1.226 kg/m3, diameter of 160 m and runs at 45 RPM at 15 C. Velocity of air is 12 m/s and coeffiecient performance (efficiency) is 0.42(42%). Find the total power produced and maximum torque developed by wind mill. * 3 points

Mark only one oval.

- ◯ P=8742.52 Kw, Tmax=31.23KN
- ◯ P=8940.52 Kw, Tmax=33.48KN
- ◯ P=8956.37 Kw, Tmax=33.89KN
- ◯ P=8746.35 Kw, Tmax=31.89KN

24. Aero turbine is the fraction of power in the wind through the swept area which is converted into useful mechanical shaft power is called _____ * 1 point

Mark only one oval.

- ◯ Coefficient of performance
- ◯ Coefficient of variation
- ◯ Coefficient of lift
- ◯ Coefficient of spin

25. Give the name of turbine * 1 point

Mark only one oval.

- ◯ Three blade HAWT
- ◯ Propeller wind turbine
- ◯ Darrieus VAWT
- ◯ Savonius Turbine
- ◯ Cannot be easily repaired

26. Give the name of turbine * 1 point

Mark only one oval.

- Savonius VAWT
- Darrieus VAWT
- Propeller HAWT
- Two blade HAWT

27. Give the name of turbine * 1 point

Mark only one oval.

- Propeller wind turbine
- Two blade HAWT
- Savonius Turbine
- Darrieus VAWT

28. Give the name of turbine * 1 point

Mark only one oval.

- ◯ Propeller wind turbine
- ◯ Shrouded Type HAWT
- ◯ Savonius VAWT
- ◯ Darrieus VAWT

29. Give the name of it * 1 point

Mark only one oval.

- ◯ Wind turbine
- ◯ Anemometer
- ◯ Wind Vane
- ◯ Wind Arrow

30. Identify device * 1 point

Mark only one oval.

- Wind Tunnel
- Anemometer
- Wind Vane
- Wind turbine

31. Name the testing device * 1 point

Mark only one oval.

- Wind Tunnel
- Air Space
- Testing Tube
- Wind turbine