



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Technology in Electronics & Communication Engineering

Course Name – Renewable Energy

Course Code - OEC801A

(Semester VIII)

Time allotted : 1 Hrs.25 Min.

Full Marks : 70

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 70=70

Choose the correct alternative from the following :

- (1) Which of the following are renewable energy resource?

a) Solar	b) Wind
c) Geothermal	d) All of these
- (2) World Energy Needs are rising due to _____

a) deforestation	b) increasing population and Industrialization
c) inflation	d) natural calamities
- (3) Which of the following is a disadvantage of Hydro Power?

a) They cause deforestation and affect wildlife	b) They cause harmful emissions
c) They are an unstable source of energy	d) They are not suitable for long-distance electricity transmission
- (4) _____ energy sources provide energy in dilute form.

a) Non-Renewable	b) Conventional
c) Nuclear	d) Renewable
- (5) Based on the following options, choose the correct option. Statement I: Non-Conventional energy is available in nature free of cost. Statement II: Non-Conventional energy is exhaustible in nature.

a) Statement I and Statement II are correct and Statement II is the correct explanation of Statement I	b) Statement I and Statement II are correct and Statement II is not the correct explanation of Statement I
c) Statement I is true and Statement II is false	d) Statement II is true and Statement I is false
- (6) Which of the following statements is not true about Renewable Energy?

a) They do not cause pollution	b) Their transportation is difficult
c) They cause ecological imbalance	d) They have a low gestation period
- (7) What is the major problem with wind energy?

a) Generates energy from wind	b) It is a renewable source of energy
c) Requires large area of land	d) Compact and does not require large area of land

- (8) What are three relevant bands of solar radiation?
- UV, infrared and far infrared
 - UV, visible and infrared
 - Ultrasonic, infrared and visible
 - UV, ultrasonic and near infrared
- (9) What is direct solar radiation?
- Solar radiation directly received by earth's surface from sun
 - Cosmic radiation directly received by earth's surface
 - Solar radiation received by earth's surface after reflection
 - Cosmic radiation received by earth's surface after reflection
- (10) What is aperture area in a solar collector?
- Area of the system
 - Area in the receiver that receives the solar radiation
 - Area occupied by the system after installation
 - Cross-sectional area of the receiver
- (11) What are the components of a flat plate collector?
- Flat box, a plate with reflective coating and fluid circulation passageways, an opaque cover, a circulating fluid
 - Flat box, a dark coloured plate with fluid circulation passageways, an opaque, a circulating fluid
 - Flat box, a dark coloured plate with fluid circulation passageways, a transparent cover
 - Flat box, a dark coloured plate fluid circulation passageways, a transparent cover, a circulating fluid
- (12) Which of the following is a circulating fluid in evacuated flat-plate solar collectors?
- Water
 - Steam
 - Nitrogen
 - Hydrogen
- (13) Which of the following are used as absorbers in evacuated-tube solar collectors?
- Carbon tubes
 - Wooden or metallic tubes
 - Plastic or glass tubes
 - Metallic or glass tubes
- (14) Which of the following is a problem with evacuated tubes?
- Underheating
 - Overheating
 - Poor absorption of sunlight
 - Poor reception of sunlight
- (15) Why does flat plate collector perceived to have higher efficiency than evacuated tube solar collector in terms of area?
- Because flat plate collector has a large installation area
 - Because evacuated tube collector is compact
 - Because of the vacuum gap in evacuated tube collectors
 - Because of the vacuum gap in flat plate collectors
- (16) Which of the following are combined to form an evacuated flat plate solar collector?
- Flat plate solar collectors and evacuated-tube solar collectors
 - Flat plate solar collectors and bowl collectors
 - Bowl collectors and evacuated-tube solar collectors
 - Polymer collectors and bowl collectors
- (17) Which is the largest amount of installed grid interactive renewable power capacity in India?
- Wind power
 - Solar power
 - Biomass power
 - Small Hydro power
- (18) What is the main source of wind?
- Uneven land
 - Sun
 - Vegetation
 - Seasons
- (19) Wind speed suitable to operate wind turbines is
- 5 – 25 m/s
 - 10 – 35 m/s
 - 20 – 45 m/s
 - 30 – 55 m/s

- (20) When solar radiation falls on earth surface, the temperature of
- a) Land mass raises faster than water
 - b) Land mass raises slower than water
 - c) Land mass and water raises uniformly
 - d) Land mass raises but of water remains at fixed level
- (21) Solar PV systems are
- a) Connected to the power grid
 - b) Used to sell power to the grid
 - c) Stand alone source of electricity
 - d) All of these
- (22) Output of solar cells is of the order of
- a) 0.5 Watts
 - b) 1 Watts
 - c) 5 Watts
 - d) 10 Watts
- (23) Most of the solar radiation received on the earth surface is in the range of
- a) 0.25 to 0.40 microns
 - b) 0.40 to 0.80 microns
 - c) 0.60 to 0.95 microns
 - d) 0.10 to 0.25 microns
- (24) Solar cells are made of
- a) Aluminium
 - b) Germanium
 - c) Silicon
 - d) Cadmium
- (25) The efficiency of solar cells is about
- a) 0.25
 - b) 15%
 - c) 0.4
 - d) 0.6
- (26) The wind speed is measured using an instrument called
- a) hydrometer
 - b) Manometer
 - c) anemometer
 - d) wind vane
- (27) Surface layer is the air layer considered from the height of local obstruction to a height of about 50m
- a) 50m
 - b) 100m
 - c) 150m
 - d) 200m
- (28) Wind energy is harnessed as _____ energy with the help of windmill or turbine
- a) mechanical
 - b) solar
 - c) electrical
 - d) heat
- (29) In which region winds are stronger and constant?
- a) deserts
 - b) offshore
 - c) low altitudes sites
 - d) All of these
- (30) There is little wind in the
- a) north pole region
 - b) south pole region
 - c) tropical region
 - d) ± 5 around the equator
- (31) _____ force is responsible for forcing the global winds towards westerly direction.
- a) Coriolis
 - b) Gravitational
 - c) Centripetal
 - d) Centrifugal
- (32) How much is the energy available in the winds over the earth surface is estimated to be?
- a) 2.9×10^{12} MW
 - b) 1.6×10^{17} MW
 - c) 1 MW
 - d) 5MW
- (33) How much wind power does India hold?
- a) 20,000 MW
 - b) 12,000 MW
 - c) 140,000 MW
 - d) 5000 MW
- (34) A rotor installed in a fixed orientation with the swept area perpendicular to the pre dominate wind direction is called

- a) nacelle
c) blades
- b) yaw fixed machines
d) anemometer
- (35) How much ideal efficiency should practical turbine have?
a) 10 – 12%
b) 18 – 25%
c) 80 – 90%
d) 50 – 70%
- (36) Stalled flow occurs when the value of the incident angle is
a) 0 degree
b) 180 degree
c) comparable
d) beyond 16 degree
- (37) Why is wind turbine designed to stop operation at cut out velocity?
a) To protect wheel against damage
b) To make a quick stop in emergencies
c) To improve the efficiency
d) In order to adjust the blades to wind direction
- (38) For satellite the source of energy is.....
a) Cryogenic storage
b) Battery
c) Solar cell
d) Any of these
- (39) Reflecting mirrors used for exploiting solar energy are called.....
a) Mantle
b) Ponds
c) Diffusers
d) Heliostats
- (40) Flat plate collector absorbs.....
a) Direct radiation only
b) Diffuse radiation only
c) Direct and diffuse both
d) all of these
- (41) A Solar cell is an electrical device that converts the energy of light directly into electricity by the _____
a) Photovoltaic effect
b) Chemical effect
c) Atmospheric effect
d) Physical effect
- (42) The major disadvantage, with solar cells for power generation, is
a) lack of availability
b) large area requirement
c) variable power
d) high cost
- (43) The following is an indirect method of Solar energy utilization
a) Wind energy
b) Biomass energy
c) Wave energy
d) All of these
- (44) Maximum efficiency is obtained in
a) Flat plate collector
b) Evacuated tube collector
c) Line focusing collector
d) Paraboloid dish collector
- (45) Solar radiation flux is usually measured with the help of a
a) Anemometer
b) Pyranometer
c) Sunshine recorder
d) All of these
- (46) The complement of the zenith angle is
a) Solar altitude angle
b) Surface azimuth angle
c) Solar azimuth angle
d) Slope
- (47) The following factor(s) affects the distribution of wind energy
a) Mountain chains
b) The hills, trees, and buildings
c) Frictional effect of the surface
d) All of these
- (48) Winds having the following speed are suitable to operate wind turbines.
a) 5 – 25m/s
b) 10 – 35m/s
c) 20 – 45m/s
d) 30 – 55m/s

(49) The following is (are) the classification of winds

- a) Global wind
- b) Local wind
- c) Both Global wind and Local wind
- d) None of these

(50) What type of energy is wind energy?

- a) Renewable energy
- b) Non-renewable energy
- c) Conventional energy
- d) Commercial energy

(51) What is the diameter of wind turbine blades?

- a) 320 feet
- b) 220 feet
- c) 80 feet
- d) 500 feet

(52) When was the first electric car invented?

- a) 1830
- b) 1985
- c) 1832
- d) 1945

(53) Biomass is used in the production of

- a) fibers
- b) chemicals
- c) transportation fuels
- d) biochemicals

(54) is also called a biogas

- a) biobutanol
- b) bodies
- c) bioethanol
- d) biomethane

(55) Bioethanol is mixed with _____ to prepare transport fuel

- a) oil
- b) petrol
- c) kerosene
- d) diesel

(56) The aerobic digestion of sewage is utilized in the production of

- a) metal articles
- b) biofuels
- c) biomass
- d) synthetic fuels

(57) Which of the following constitutes the major load for an automobile battery?

- a) Brake light
- b) Self-starter
- c) Parking lights
- d) Spark plugs

(58) Batteries are charged by

- a) Rectifiers
- b) Engine generator sets
- c) Motor generator sets
- d) Any of these

(59) Solar cooker is made up of

- a) Glass
- b) Plastic
- c) Wood
- d) All of these

(60) In a fuel cell cathode is of

- a) Oxygen
- b) Ammonia
- c) Hydrogen
- d) Carbon monoxide

(61) The current density of a photo voltaic cell ranges from

- a) 10 – 20 mA/cm²
- b) 40 – 50 mA/cm²
- c) 20 – 40 mA/cm²
- d) 60 – 100 mA/cm²

(62) Photovoltaic' cells are also termed as

- a) solar cells
- b) voltaic cells
- c) battery cells
- d) rechargeable cells

(63) When did the development of wind power in India began?

- a) 1965
- b) 1954
- c) 1990
- d) 1980

(64) Maintenance of constant output at all wind speeds above rating is called _____

- a) Numeric rating scale
- b) Tenancy
- c) Flat Rating
- d) TRP

(65) Which type of windmill has better performance?

- a) Vertical type windmills
- b) Darrieus type machines
- c) Magnus effect rotor
- d) Horizontal type windmills

(66) Which type of windmill blades are made out of sheet metal or aluminum?

- a) Horizontal axis with two aerodynamic blades
- b) Horizontal axis propeller type windmill
- c) Horizontal axis multi-bladed type windmill
- d) Sail type windmill

(67) Which is the wind direction showing device that spins perpendicularly?

- a) Downwind location
- b) Up wind location
- c) Windward
- d) Leeward

(68) Name the windmill which has four blades mounted on a central post

- a) Post mill
- b) Smock mill
- c) Tower mill
- d) Fan mill

(69) Which of the following can be classified under solid biomass?

- a) Agricultural residues
- b) Waste water
- c) Industrial effluents into rivers
- d) Plastic

(70) Which of the following is a thermal application of solar energy?

- a) Photovoltaic
- b) Concentrating collectors
- c) Solar cell
- d) Electricity