

**B.TECH**  
**(SEM-VIII) THEORY EXAMINATION 2019-20**  
**RENEWABLE ENERGY RESOURCES**

**Time: 2 Hours****Total Marks: 70**

*Note: Attempt all questions. The question paper contains 70 MCQ type questions. Each question carries equal marks. Select the answer and fill the appropriate bubble corresponding to that question in the attached OMR sheet.*

| Q no. | Question  |
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| 1     | Which of the following is a disadvantage of renewable energy<br>a. High pollution<br>b. Available only in few places<br>c. High running cost<br><b>d. Unreliable supply</b>   |
| 2     | A Solar cell is an electrical device that converts the energy of light directly into electricity by the<br><b>a. Photovoltaic effect</b><br>b. Chemical effect<br>c. Atmospheric effect<br>d. Physical effect   |
| 3     | In hydroelectric power, what is necessary for the production of power throughout the year<br><b>a. Dams filled with water</b><br>b. High amount of air<br>c. High intense sunlight<br>d. Nuclear power  |
| 4     | The main composition of biogas is<br><b>a. Methane</b><br>b. Carbon dioxide<br>c. Nitrogen<br>d. Hydrogen   |
| 5     | Which Ministry is mainly responsible for research and development in renewable energy sources such as wind power, small hydro, biogas and solar power?<br>a. Human Resource Development<br>b. Agriculture and Farmers Welfare<br><b>c. Ministry of New and Renewable Energy</b><br>d. Health and Family Welfare |
| 6     | Which among the following have a large amount of installed grid interactive renewable power capacity in India<br><b>a. Wind power</b><br>b. Solar power<br>c. Biomass power<br>d. Small Hydro power   |
| 7     | The world's first 100% solar powered airport located at<br><b>a. Cochin, Kerala</b><br>b. Bengaluru, Karnataka<br>c. Chennai, Tamil Nadu<br>d. Mumbai, Maharashtra  |
| 8     | Which of the following is not under the Ministry of New and Renewable Energy  |

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|    | <ul style="list-style-type: none"> <li>a. Wind energy</li> <li>b. Solar energy</li> <li>c. Tidal energy</li> <li><b>d. Large hydro power energy</b></li> </ul>  |
| 9  | <p>. Where is the largest Wind Farm located in India</p> <ul style="list-style-type: none"> <li><b>a. Jaisalmer Wind Park, Rajasthan</b></li> <li>b. Muppandal Wind Farm, Tamil Nadu</li> <li>c. Vaspeta Wind Farm, Maharashtra</li> <li>d. Chakala Wind Farm, Maharashtra</li> </ul>                             |
| 10 | <p>Which Indian enterprise has the Motto "ENERGY FOREVER"</p> <ul style="list-style-type: none"> <li><b>a. Indian Renewable Energy Development Agency</b></li> <li>b. Indian Non-Renewable Energy Development</li> <li>c. Indian Agricultural Development</li> <li>d. Indian Biotechnology Development</li> </ul> |
| 11 | <p>Which of the following is (are) renewable resource(s)</p> <ul style="list-style-type: none"> <li>a. wind</li> <li>b. tides</li> <li>c. geothermal heat</li> <li><b>d. all of the above</b></li> </ul>  |
| 12 | <p>Which of the following country generate all their electricity using renewable energy</p> <ul style="list-style-type: none"> <li><b>a. Iceland</b></li> <li>b. England</li> <li>c. USA</li> <li>d. China</li> </ul>   |
| 13 | <p>Renewable energy often displaces conventional fuel in which of the following area</p> <ul style="list-style-type: none"> <li>a. space heating</li> <li>b. transportation</li> <li>c. electricity generation</li> <li><b>d. all of the above</b></li> </ul>   |
| 14 | <p>Which of the following is used as fuel for transportation</p> <ul style="list-style-type: none"> <li><b>a. ethanol</b></li> <li>b. aldehyde</li> <li>c. ketone</li> <li>d. all of the above</li> </ul>   |
| 15 | <p>Biodiesel is produced from oils or fats using</p> <ul style="list-style-type: none"> <li>a. fermentation</li> <li><b>b. transesterification</b></li> <li>c. distillation</li> <li>d. none of the above</li> </ul>  |
| 16 | <p>Photovoltaic cell converts solar energy into</p> <ul style="list-style-type: none"> <li>a. heat energy</li> <li><b>b. electric energy</b></li> <li>c. mechanical energy</li> <li>d. chemical energy</li> </ul>   |

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| 17 | In which of the following region winds are stronger and constant<br>a. deserts<br><b>b. offshore</b><br>c. low altitudes sites<br>d. all of the above  |
| 18 | Following country met more than 40% of its electricity demand from wind energy<br><b>a. Denmark</b><br>b. Portugal<br>c. Ireland<br>d. Spain   |
| 19 | Concentrated solar power (CSP) systems use ____ to focus a large area of sunlight into a small beam<br>a. lenses<br>b. mirrors<br>c. tracking systems<br><b>d. all of the above</b>                        |
| 20 | The difference, in temperature between the core of the planet and its surface, is known as<br>a. geothermal coefficient<br><b>b. geothermal gradient</b><br>c. geothermal constant<br>d. none of the above |
| 21 | Direct Solar energy is used for<br>a. Water heating<br>b. Distillation<br>c. Drying<br><b>d. All of the above</b>  |
| 22 | The following is indirect method of Solar energy utilization<br>a. Wind energy<br>b. Biomass energy<br>c. Wave energy<br><b>d. All of the above</b>  |
| 23 | The hour angle is equivalent to<br>a. 10° per hour<br><b>b. 15° per hour</b><br>c. 20° per hour<br>d. 25° per hour   |
| 24 | The following is (are) laws of black body radiation.<br>a. Plank's law<br>b. Stefan-Boltzmann law<br><b>c. both (A) and (B)</b><br>d. None of the above  |
| 25 | Beam radiations are measured with<br>a. Anemometer<br><b>b. Pyrheliometer</b><br>c. Sunshine recorder<br>d. All of the above   |
| 26 | The function of a solar collector is to convert.....   |

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|    | <ul style="list-style-type: none"> <li>a. Solar Energy into Electricity</li> <li>b. Solar Energy radiation</li> <li><b>c. Solar Energy thermal energy</b></li> <li>d. Solar Energy mechanical energy</li> </ul>  |
| 27 | <p>Most of the solar radiation received on earth surface lies within the range of.....</p> <ul style="list-style-type: none"> <li><b>a. 0.2 to 0.4 microns</b></li> <li>b. 0.38 to 0.78 microns</li> <li>c. 0 to 0.38 microns</li> <li>d. .5 to 0.8 microns</li> </ul>               |
| 28 | <p>For satellite the source of energy is.....</p> <ul style="list-style-type: none"> <li>a. Acrogenic storage</li> <li>b. Battery</li> <li><b>c. Solar cell</b></li> <li>a. Any of the above</li> </ul>  |
| 29 | <p>Reflecting mirrors used for exploiting solar energy are called.....</p> <ul style="list-style-type: none"> <li>a. Mantle</li> <li>b. Ponds</li> <li>c. Diffusers</li> <li><b>d. Heliostats</b></li> </ul>   |
| 30 | <p>What does Heating and cooling of the atmosphere generates</p> <ul style="list-style-type: none"> <li>a. Thermo line circulation</li> <li>b. Radiation currents</li> <li><b>c. Convection currents</b></li> <li>d. Conduction currents</li> </ul>                                  |
| 31 | <p>How much wind power does India hold</p> <ul style="list-style-type: none"> <li><b>a. 20,000 MW</b></li> <li>b. 12,000 MW</li> <li>c. 140,000 MW</li> <li>d. 5000 MW</li> </ul>  |
| 32 | <p>What is the main source for the formation of wind</p> <ul style="list-style-type: none"> <li>a. Uneven land</li> <li><b>b. Sun</b></li> <li>c. Vegetation</li> <li>d. Seasons</li> </ul>  |
| 33 | <p>. Which country created wind mills</p> <ul style="list-style-type: none"> <li>a. Egypt</li> <li>b. Mongolia</li> <li><b>c. Iran</b></li> <li>d. Japan</li> </ul>  |
| 34 | <p>What happens when the land near the earth's equator is heated?</p> <ul style="list-style-type: none"> <li>a. All the oceans gets heated up</li> <li>b. Small wind currents are formed</li> <li>c. Rise in tides</li> <li><b>d. Large atmospheric winds are created</b></li> </ul> |
| 35 | <p>What type of energy is wind energy?</p> <ul style="list-style-type: none"> <li><b>a. Renewable energy</b></li> </ul>  |

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|    | <ul style="list-style-type: none"> <li>b. Non-renewable energy</li> <li>c. Conventional energy</li> <li>d. Commercial energy</li> </ul>  |
| 36 | <p>. What are used to turn wind energy into electrical energy?</p> <ul style="list-style-type: none"> <li><b>a. Turbine</b></li> <li>b. Generators</li> <li>c. Yaw motor</li> <li>d. Blades</li> </ul>   |
| 37 | <p>A solar cell is a</p> <ul style="list-style-type: none"> <li>a. P-type semiconductor</li> <li>b. N-type semiconductor</li> <li>c. Intrinsic semiconductor</li> <li><b>d. P-N Junction</b></li> </ul>  |
| 38 | <p>Which of the following materials cannot be used as solar cells materials?</p> <ul style="list-style-type: none"> <li>a. Si</li> <li>b. GaAs</li> <li>c. CdS</li> <li><b>d. PbS</b></li> </ul>   |
| 39 | <p>What is the difference between Photodiode and Solar cell?</p> <ul style="list-style-type: none"> <li>a. No External Bias in Photodiode</li> <li><b>b. No External Bias in Solar cell</b></li> <li>c. Larger surface area in photodiode</li> <li>d. No difference</li> </ul>                     |
| 40 | <p>During the collection of e-h pairs, holes are collected by</p> <ul style="list-style-type: none"> <li>a. Front contact</li> <li><b>b. Back contact</b></li> <li>c. Si-wafer</li> <li>d. Finger electrodes</li> </ul>  |
| 41 | <p>. Fuel cell converts chemical energy to electrical energy using a reaction that</p> <ul style="list-style-type: none"> <li><b>a. Eliminates combustion of fuel</b></li> <li>b. Requires combustion of fuel</li> <li>c. Requires no ignition of fuel</li> <li>d. fuel is not required</li> </ul> |
| 42 | <p>. Fuel cell performance is not limited by</p> <ul style="list-style-type: none"> <li>a. First law of Thermodynamics</li> <li><b>b. Second law of Thermodynamics</b></li> <li>c. Third law of Thermodynamics</li> <li>d. All three laws are applicable</li> </ul>                                |
| 43 | <p>For which of these devices does a negative charge carrier flow from anode to cathode in the external circuit?</p> <ul style="list-style-type: none"> <li>a. MHD generator</li> <li>b. Thermionic generator</li> <li>c. Thermoelectric generator</li> <li><b>d. Fuel cell</b></li> </ul>         |

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| 44 | The type of reactions in a fuel cell is not determined by<br>a. Fuel and oxidizer combination<br>b. Composition of electrolyte<br>c. Materials of anode and cathode<br><b>d. catalytic effects of reaction container</b>                |
| 45 | Which of these gases or liquids are not used as source of hydrogen in fuel cells?<br>a. C <sub>2</sub> H <sub>6</sub><br>b. C <sub>2</sub> H <sub>2</sub><br>c. C <sub>6</sub> H <sub>6</sub><br><b>d. C<sub>2</sub>H<sub>5</sub>OH</b> |
| 46 | Which of these should not be properties of fuel cell electrodes?<br>a. Good electrical conductors<br>b. Highly resistant to corrosive environment<br>c. Should perform charge separation<br><b>d. take part in chemical reactions</b>   |
| 47 | The process of producing energy by utilizing heat trapped inside the earth surface is called<br>a. Hydrothermal energy<br><b>b. Geo-Thermal energy</b><br>c. Solar energy<br>d. Wave energy   |
| 48 | How much is the average temperature at depth of 10 km of earth surface?<br><b>a. 200 °C</b><br>b. 900 °C<br>c. 650 °C<br>d. 20 °C   |
| 49 | What is hot molten rock called?<br>a. Lava<br><b>b. Magma</b><br>c. Igneous rocks<br>d. Volcano   |
| 50 | How many kinds of Geo thermal steams are there?<br><b>a. 2</b><br>b. 3<br>c. 4<br>d. 5  |
| 51 | What does EGS stand for in geothermal energy?<br>a. Engraved Geothermal systems<br><b>b. Enhanced geothermal system</b><br>c. Exhaust gas system<br>d. Engineered geo physical system   |
| 52 | Earth's outer layer rock is called as<br>a. Mantle<br><b>b. Crust</b><br>c. Outer core<br>d. Asthenosphere  |
| 53 | The hole on earth's surface from where the steam from the earth comes out is called as<br>a. Gash<br>b. Mud pot<br>c. Void  |

| <b>d. Fumaroles</b> |   |
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| 54                  | Which kind geothermal plant is most common type?<br>a. Dry steam<br><b>b. Flash</b><br>c. Binary<br>d. Wet steam  |
| 55                  | How much is the efficiency of geothermal plant?<br>a. 28%<br><b>b. 15%</b><br>c. 42%<br>d. 30%  |
| 56                  | Which of the following liquid metal is not used as a magneto hydrodynamic generation (MHD) working fluid?<br>a. Potassium<br><b>b. Sodium</b><br>c. Lithium<br>d. All of these.   |
| 57                  | Coal is processed and burnt in the combustor of a hybrid MHD at a high temperature and pressure with the preheated air to form which among the following element?<br>a. Steam<br><b>b. Plasma</b><br>c. Coke<br>d. None of these. |
| 58                  | What is the working fluid in closed cycle MHD system?<br><b>a. Helium and argon</b><br>b. Coal<br>c. Natural gas<br>d. Potassium  |
| 59                  | The ocean thermal energy conversion(OTEC) is uses<br>a. Energy difference<br>b. Potential difference<br><b>c. Temperature difference</b><br>d. Kinetic difference   |
| 60                  | The by-product of the ocean thermal energy conversion is<br>a. Hot water<br><b>b. Cold water</b><br>c. Chemicals<br>d. Gases  |
| 61                  | How many types of OTEC plants are there?<br>a. 1<br><b>b. 2</b><br>c. 3<br>d. 4   |
| 62                  | Closed cycle systems use the fluid having<br>a. High boiling points<br><b>b. Low boiling points</b><br>c. High viscosity<br>d. low viscosity  |

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| 63 | Warm surface sea water is pumped through a _____ to vaporise the fluid.<br><b>a. Heat exchanger</b><br>b. Generator<br>c. Evaporator<br>d. Condenser             |
| 64 | The steam leaves the _____<br><b>a. Salts</b><br>b. Aluminium<br>c. Copper<br>d. Silver  |
| 65 | The open cycle system produces _____ water.<br><b>a. Desalinated</b><br>b. Impure<br>c. Contaminated<br>d. Chlorinated   |
| 66 | Tidal energy is a form of _____<br>a. Wind power<br>b. Solar power<br>c. Heat energy<br><b>d. Hydro power</b>  |
| 67 | Tidal energy has _____ for future electricity generation.<br>a. Kinetic energy<br><b>b. Potential</b><br>c. Wind power<br>d. Solar power                         |
| 68 | Which of the following is the best form of energy that can be used at any time?<br>a. Wind energy<br>b. Solar energy<br><b>c. Tidal energy</b><br>d. Heat energy |
| 69 | The oceanic tides are due to _____<br>a. Heavy Winds<br>b. Slight earth quakes<br>c. Water force<br><b>d. Gravitational interaction</b>                          |
| 70 | Tidal power is practically _____<br>a. Exhaustible<br><b>b. Inexhaustible</b><br>c. Not possible<br>d. Complicated   |