

Student Exam No:- _____

GANPAT UNIVERSITY
B.TECH SEM-III (ELECTRICAL)
REGULAR EXAMINATION NOV-DEC-2015
2EE304:- CONVENTIONAL & RENEWABLE POWER GENERATION

Time: 3 Hours

Total Marks:-60

- Instructions:** - 1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Answer to two sections must be written in separate answer books.
4. Figures to the right indicate full marks.

SECTION-I

- Que.-1 (A) Explain the functions of the following: [05]
(i) Dam (ii) spillways (iii) surge tank (iv) headworks (v) draft tube (vi) Muffler and (viii) Strainer
- (B) Draw the schematic diagram of a Diesel Generator and discuss its operation. [05]
- OR**
- Que.-1 (A) Explain the essential factors which influence the choice of site for a hydro-electric plant. [05]
- (B) The weekly discharge of a typical hydroelectric plant is as under: [05]
- | Day | Sun | Mon | Tues | Wed | Thurs | Fri | Sat |
|---------------------------------|-----|-----|------|-----|-------|-----|-----|
| Discharge (m ³ /sec) | 500 | 520 | 850 | 800 | 875 | 900 | 546 |
- The plant has an effective head of 15 m and an overall efficiency of 85%. Calculate the average daily discharge. Draw Hydrograph and flow duration curve.
- Que.-2 (A) Draw the block diagram of WEGS and describe the main components of it. [04]
- (B) A HAWT has a rotor diameter of 60 meter rotating with 25 rpm speed at location having an average wind speed of 40 km/hour. Calculate theoretically the power which the machine can extract from the wind if (a) only wake rotation is considered (b) both wake rotation & drag are considered. [04]
- (C) Define: Power Coefficient of WEGS. [02]
- OR**
- Que.-2 (A) Derive an expression for energy available in the wind. [04]
- (B) List out the advantages & disadvantages of wind energy. [04]
- (C) What do you mean by Pitch control and Yaw control mechanism? [02]
- Que.-3 **Attempt any two:** [10]
- (A) Discuss different types of conventional power generation scheme with their resources.
- (B) Draw Nuclear reactor and explain its different components.
- (C) Describe different advantages and disadvantages of coal based thermal power station.

SECTION-II

- Que.-4 (A) Describe the function of Pyrheliometer as a radiation measuring instrument. [05]
(B) Draw and explain the schematic diagrams of Floating drum types of biogas plant. [05]

OR

- Que.-4 (A) Explain the three important ways of obtaining energy from biomass. [05]
(B) Describe the application of solar energy as a solar furnace. [03]
(C) Calculate the solar radiation on the top of the atmosphere on 28th march of this year. [02]

- Que.-5 (A) Draw the layout of thermal power plant. [05]
(B) List the major components of Nuclear power plant and explain any three of them. [05]

OR

- Que.-5 (A) Which points require to be considered while site selection for Nuclear power plant? [05]
(B) Draw the layout of combine cycle power plant and explain any three components of it. [05]

Que.-6 **Attempt any two:** [10]

- (A) Explain the concept of Tidal phenomenon and describe any one arrangement of tidal energy system.
(B) Which are the Types of OTEC power plants? Draw and explain any one method from them.
(C) Draw and explain the working of power generation by PEM based hydrogen fuel cell.
(D) Explain the principle of operation for magneto hydro dynamics with suitable sketch.

END OF PAPER