

**THE TEXTILE ASSOCIATION (INDIA)**

**GMTA EXAMINATION 2020**

**Section – A Paper – A.4**

**GENERAL ENGINEERING**

**Marks – 100**

**Date: 27.12.2020**

**Time:10.00 am to 1.00 pm**

**Instructions:**

1. Answer any **six** questions out of which **Question No 1** is compulsory.
2. Answer each next main question on a new page.
3. Figure to the right indicate full marks.
4. Illustrate your answers with sketches and flow chart wherever necessary.
5. Use of non- programmable electronic pocket calculator permitted.
6. Mobile and any other communication devices are not allowed in examination hall.
7. Assume suitable data wherever necessary.

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|----|---|----|
| Q1 | Attempt any <b>four</b> of the following:   | 20 |
|    | a. Sketch and explain the working principle of Centrifugal pump.  |    |
|    | b. Explain the characteristics of Francis turbines with a simple sketch.  |    |
|    | c. what is a Fin and briefly explain different types of it.   |    |
|    | d. List and explain any one type of dust collector.   |    |
|    | e. what is a rectifier and explain briefly any one type of it.  |    |
| Q2 | Explain the construction, principles of operation of 3-phase induction motor with a neat sketch. Also list the advantages and applications of it. | 16 |
| Q3 | <b>(a)</b> With a neat sketch, explain the construction and working of Pelton wheel.  | 8  |
|    | <b>(b)</b> Explain the working principle of stepper motor and list the advantages of it over servo motor.   | 8  |
| Q4 | a. Sketch and explain the working principle of Gear pump.   | 8  |
|    | b. Explain the working principle of Tacho-generator.  | 8  |
| Q5 | Explain the working principle of counter flow heat exchanger and also compare with parallel flow heat exchanger.                                  | 16 |
| Q6 | a. what do you understand by:   | 8  |
|    | (i) Draft tube  |    |
|    | (ii) LMTD   |    |
|    | (iii) Transducer  |    |
|    | (iv) Black body   |    |
|    | b. Explain the working of MOSFIT.   | 8  |
| Q7 | a. what is an Alternator and briefly explain the principle of working. Also list  | 8  |

the applications of it.

8

b. Explain different laws of radiation.

Q8 a. Briefly explain one dimensional solution for Couette flow and Poiseuille flow. 8

b. What is surging in pumps and explain the different methods used to reduce this effect. 8

