PAPER ID-310082

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VII) THEORY EXAMINATION 2024-25
UTILIZATION OF ELECTRICAL ENERGY & ELECTRIC TRACTION

TIME: 3 HRS **M.MARKS: 100**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question	CO	Level
a.	List the properties of heating element material.	1	K1
b.	State any 2 disadvantages of core type induction heating?	1	K1
c.	List the different types of welding.	2	K2
d.	Define quenching.	2	K2
e.	Define Luminous flux and write its unit	3	K2
f.	Define candle power.	3	K2
g.	Write short note on Schedule speed	4	K2
h.	What is crest speed.	4	K2
i.	Write the advantages of Electric traction compare with Diesel locomotives?	5	K2
j.	List factors affecting the specific energy consumption?	5	K2

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 20**

Q no.	Question	CO	Level
a.	What are the types of heating? Explain about the induction heating	1	K1
b.	Explain the Butt welding with neat diagram.	2	K2
c.	Write note on: (i) Utilization factor (UF) (ii) Maintenance factor (MF) (iii) Depreciation factor	3	K2
d.	Explain the theory, working and characteristics of linear induction motor for traction purposes	4	K2
e.	State the mechanical and electrical characteristics of electric traction motors.	5	K2

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

Q no.	Question	CO	Level
a.	Explain the types of electrodes used in arc furnace	1	K1
b.	Explain with neat sketch the working of Ajax Wyatt Furnace.	1	K1

4. Attempt any *one* part of the following: **10 x 1 = 10**

Q no.	Question	CO	Level
a.	Explain the basic laws which govern electro-deposition.	2	K2
b.	Write the applications of electrolysis.	2	K2

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5. Attempt any *one* part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	What are main objective of outdoor lighting (or street lighting) ? And give its principles also.	3	K2
b.	Draw a complete diagram showing therein different components of an air-conditioning plant. What is the function of each component?	3	K2

6. Attempt any *one* part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Explain the factors that determine the choice of supply system for main line traction and give voltage and frequency of the supply as adopted by Indian Railways.	4	K2
b.	Draw and explain general speed-time curve of a train running between two stations. How can this curve be approximated for (a) main line service (b) suburban service?	4	K2

7. Attempt any *one* part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Compare the use of DC series motor and AC series motorin electric traction.	5	K2
b.	Explain diesel engine driven alternator feeding induction motor.	5	K2