

SUBJECT: ELECTRICAL ENGINEERING : PAPER – 2

Time: 3 hours

Full Marks: 200

Note: Answer Question No. 1 and any four from the rest. All questions carry equal marks.**1. Answer any ten:**

10 x 4 = 40

- (a) Define BIT and BYTE.
- (b) Compare a JFET and a BJT.
- (c) Why FET's are preferred over bipolar transistors at high frequencies?
- (d) Why do transformers have higher efficiencies than other electrical machines? Explain.
- (e) Why are the cores of transformers laminated?
- (f) Why is the armature winding of a d.c. machine placed on rotor and the field winding on the stator and not the other way?
- (g) What are the advantages of a digital voltmeter over an analog voltmeter?
- (h) What are 'base load' and 'peak load' plants?
- (i) How are relays different from circuit breakers?
- (j) Why is the overall efficiency of a steam power plant very low?
- (k) What are the advantages of HVDC transmission?
- (l) What is the advantage of corona effect in power system?

2. Attempt any 8 (eight):

8 x 5 = 40

- (a) Discuss the significance of 'Flow-charting' in computer programming.
- (b) Distinguish between 'open loop' and 'closed loop' control system with a suitable example of each type.
- (c) Why the induction motors are named so? Can these motors run at synchronous speed? Justify your answer.
- (d) Explain how the back e.m.f. makes a d.c. motor adjust its input automatically to match the load on the shaft.
- (e) Why should a d.c. series motor not be started without some load on it? Explain.
- (f) Why does a 3-point starter trip when the speed control of d.c. motor is carried out by field control?
- (g) What are synchronous condensers? Discuss their uses.
- (h) What is a pumped storage scheme, and what are its advantages and disadvantages?
- (i) Explain why the terminal voltage of a d.c. shunt generator decreases with increasing load.
- (j) Explain how corona loss is minimized in EHV A.C. systems?

3. Attempt any 5 (five):

5 x 8 = 40

- (a) Draw a flow chart and develop an algorithm to read n numbers and sort them in ascending order.
- (b) Compare the merits and demerits of machine language and high level language.
- (c) Explain the mechanism of power transfer from primary to secondary when a transformer is loaded.
- (d) What are the advantages and disadvantages of using high transmission voltages?

