

B. POWER ENGG. FINAL EXAMINATION, 2005

(2nd Semester)

**POWER PLANT OPERATION
AND MAINTENANCE-II**

Time : Three hour

Full Marks : 100

Answer any *five* questions.

1. (a) Discuss in detail the role played by workshops and stores in formulating maintenance strategy by the concerned department. 10

(b) State how the temperature of the electrical apparatus and voltage rating of the meggerset affects the measurement of I.R. of the apparatus. 10

2. (a) Mention the important monitoring activities carried out in alternators through extensive instrumentation built into the machine. 10

(b) What are the reasons behind development of generator shaft current ? Why is it harmful ? Discuss the remedial measures. 10

3. (a) Describe the two types of protection testing normally undertaken in respect of high voltage switch-gears. 10

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(2)

(b) Elaborate the procedure adopted for calibration of 'winding temperature indicator' in a transformer. 10

4. (a) State the parts which are to be inspected and attended while overhauling a motor. 10

(b) What are the reasons behind overheating of induction motors ? 5

(c) Discuss the co-ordination of motor locked-rotor protection with its starting time and cold/hot withstand time. 5

5. (a) What are the modes of changeover of auxiliary power supply system during start-up and shut-down of the plant. Discuss how that is effected. 15

(b) What is the role of a synchro-check relay while the changeover is in automatic mode ? 5

6. (a) Describe brushless excitation system of generators. 15

(b) How is diode failure in brushless excitation system detected ? 5

7. (a) What is meant by synchronising super-synchronously and sub-synchronously. Discuss their relevance vis-a-vis different application as regards synchronisation of steam-turbine or gas-turbine generators. 15

(b) Determine the slip frequency band for a load pick-up between 2% and 6%, with a speed droop of 5% and a system frequency of 50 Hz. 5

(3)

8. Write short notes on any **four** of the following :

- (i) Buchholz relay in a transformer and its testing.
- (ii) Power plant earthing system.
- (iii) Follow-up circuits in AVR.
- (iv) Stabilising winding in Y-Y transformer.
- (v) Tuning of AVR.
- (vi) Generator rotor earth fault protection.
- (vii) Polarisation Index,

5×4
