

BOARD OF DEPARTMENTAL EXAMINATION, HIMACHAL PRADESH
DEPARTMENTAL EXAMINATION
SESSION NOVEMBER, 2024
PAPER-A RULES, REGULATIONS, ACTS AND PROCEDURE
(FOR ENGINEERING OFFICERS OF HPSEBL)

(With Books)

Electrical

Time allowed - 03 hours

Max. Marks -100

Notes

- i) All questions are compulsory.
- ii) Attempt of parts of questions consecutively and indicate the same question number and its part as assigned in the question number while answering the same.
- iii) Only Bare Acts, Bare Rules Notifications/orders and references books are allowed. Help Books, Text Books, Handouts, made easy editions are not allowed.
- iv) Marks are indicated against each question.
- v) Quote relevant Rule(s) in support of your answers where necessary.

Q No. 1

- (a) What are the key features of the Indian Contract Act 1872? Explain in brief about different type of contract as per Contract Act 1872.
- (b) What is safety Code of Electricity? how you think safety Code is implemented in your organization and give your suggestion for the effective implementation
OR **(10X2=20)**
- (a) What do you mean by suspension? How subsistence allowance and other allowances are governed during the suspension period of incumbent.
- (b) What are the key points of CCS Conduct Rule-1964? Why conduct Rules are essential for the government servant? Explain in detail.

Q No. 2

Write Short Notes on any Five Topics from the following **(4X5=20)**

- (i) Office Order
- (ii) Notification
- (iii) Any five powers under HPSEBL Administrative Power
- (iv) Any five Powers under HPSEBL Disciplinary Power
- (v) Presenting Officer
- (vi) Procedure for weed out office record.

Q No.3 What are the Key points of the Land Acquisition Act 1894? In what manner the land acquisition act affect the HPSEBL?

OR

(12+8=20)

Elaborate about Factories Act 1948. What are the implication of Factories Act on the Distribution Companies (DISCOM)?

Q No. 4 **Write Short Notes on any Five Topics from the following** **(4X5=20)**

- (i). Interim Tariff Petition
- (ii) Memorandum of Association of HPSEBL
- (iii) Article of Association of HPSEBL
- (iv) Quasi Contract
- (v) Study Leave
- (vi) Paternity Leave

Q No.5 (a) What are the Different Kind of Pension granted as per Pension Rule? How Superannuary Pension is different from Family Pension.

(20)

OR

(b) White in detail about Arbitration and Conciliation Act 1996. Also give the example of kind of cases which are dealt under the Act by the HPSEBL.

PAPER – B (PART-2)
Electrical Engineering Basics for Engineering Officers (Electrical)
(No Books Allowed)

(100Marks)

Solve any five questions.

1. Briefly describe the following: -

- (a) Explain how transient stability limit can be increased.
- (b) What is infinite Bus in a Power System.
- (c) Why Earth wire is provided in the overhead transmission lines
- (d) What is Transformer Regulation.

(4 x 5 Marks)

2. Explain in brief: -

- (a) Why tapping is connected to high voltage side
- (b) What is eddy's current loss
- (c) Graphics Processing unit
- (d) Importance of capacitor bank in a sub-station
- (e) Various losses in a Power Transformer

(5 x 4 Marks)

3. Explain in brief –

- (a) What is skin effect and why it is absent in DC System
- (b) What are the major components of a Hydroelectric Power Plant
- (c) What are the different types of Dams
- (d) Explain Radial and Ring Main system

(4 x 5 Marks)

4. What do you mean by Smart Metering? What are various components of Smart Metering? Explain briefly with block diagram. (20 Marks)

5. (a) What are the causes of humming in a Power Transformer? (5 Marks)

(b) What are causes of Buchholz trip in a Power Transformer? What action is warranted in case of Buchholz Alarm/trip in a Power Transformer? (15 Marks)

6. (a) Calculate maximum permissible velocity of water in a penstock, working head is 20mtrs and acceleration due to gravity may be considered as 10 m/s^2 ? (6 Marks)

(b) What is value of minimum permissible velocity of water in a penstock in general? (4 Marks)

(c) What is runaway speed? What are values for normal range of runaway speeds in impulse turbine, Francis Turbines and Kaplan turbines? (10 Marks)

7. Explain -

- (i) The formula to calculate Multiplying factor for a HT meter in which CT/PT is provided
- (ii) The LV side current for Power transformer of rating 6.3MVA, 33/11KV
- (iii) Maximum Current rating of 33KV, 1C X 500mm², XLPE Cable
- (iv) Maximum Current carrying capacity of Wolf and Rabbit conductors
- (v) Specification of Dog Conductor in terms of its physical composition

(5 x 4 Marks)

PAPER – B (PART-1)

(100Marks)

Consumers / Company accounts and accounting procedures For Engineering Officers (Electrical)
Time Allowed : 3 hours
Solve any five questions.
(Book allowed)

1. Explain in brief the following :-
 - (i) Point of Commencement of Supply
 - (ii) Sanctioned load
 - (iii) Occupier of the premises
 - (iv) Section 126 of Electricity Act, 2003
 - (v) Self Certification (5x4 Marks)
2. What are the conditions for issuance of Power Availability Certificate? Describe different Officers competent to issue the PAC based on contract demand? What are situations in which PAC is not required by customers? (20Marks)
3. What are the conditions to supply of Electricity to residential colonies either developed by HIMUDA or Pvt. Developers/Promoters/Builders with registration and License from Competent Authority? How the costs towards infrastructure Development are being recovered from them? (20Marks)
4. What is Departmental Charges and how the departmental charges are being recovered from the works under self-execution mode? What is the rate of departmental charges recovered in case of self-execution works? (20Marks)
5. What is the procedure to recover charges towards Supply of Power in case of Temporary Supplies? What is the procedure to be adopted to dismantle the works after disconnection of such supplies by the Consumers? (20Marks)
6. Explain in brief the different modes of tenders adopted in HPSEBL? What are the different conditions to be followed before acceptance of lowest tender or award of works by negotiations? (20Marks)
7. a) What is bank reconciliation statement? Describe the process of bank reconciliation at the HPSEBL Sub Division level. (10Marks)
b) Describe the " Canons of financial property" as per DoFP 2024. (10Marks)

PAPER – B (PART-2)

(100Marks)

Electrical Engineering Basics for Engineering Officers (Electrical)
(No Books Allowed)

Solve any five questions.

1. Briefly describe the following: -

- (a) Explain how transient stability limit can be increased.
- (b) What is infinite Bus in a Power System.
- (c) Why Earth wire is provided in the overhead transmission lines
- (d) What is Transformer Regulation.

(4 x 5 Marks)

2. Explain in brief: -

- (a) Why tapping is connected to high voltage side
- (b) What is eddy's current loss
- (c) Graphics Processing unit
- (d) *Importance of capacitor bank in a sub-station*
- (e) Various losses in a Power Transformer

(5 x 4 Marks)

3. Explain in brief –

- (a) What is skin effect and why it is absent in DC System
- (b) What are the major components of a Hydroelectric Power Plant
- (c) What are the different types of Dams
- (d) Explain Radial and Ring Main system

(4 x 5 Marks)

4. What do you mean by Smart Metering ? What are various components of Smart Metering? Explain briefly with block diagram. (20

Marks)

- 5. (a) What are the causes of humming in a Power Transformer? (5 Marks)
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- (iv) Maximum Current carrying capacity of Wolf and Rabbit conductors
- (v) Specification of Dog Conductor in terms of its physical composition

(5 x 4 Marks)

BOARD OF DEPARTMENTAL EXAMINATION, HIMACHAL PRADESH
DEPARTMENTAL EXAMINATION

SESSION-November, 2024

PAPER A: RULES, REGULATIONS, PROCEEDURES & ACTS

(FOR ENGINEERING OFFICERS (CIVIL & MECHANICAL) OF H.P.S.E.B.LTD.)

(With Books)

Time Allowed: 03 hours

Maximum Marks: 100

- Notes:
- i) All Questions are compulsory.
 - ii) Attempt all parts of question consecutively and indicate the same question number and its part as assigned in the question number while answering the same.
 - iii) Only Bare Acts, Bare Rules, Notifications/orders and reference books are allowed. Help books, text books, handouts, made easy editions are not allowed.
 - iv) Marks are indicated against each question.
 - v) Quote relevant Rule(s) in support of your answers, where necessary.

Q.No.I (i) Write a brief note on Contract. Distinguish between Contract & Agreement. (10*2=20)

Or

(ii) What is the Workmen's Compensation Act, 1923. What are its main objectives. (10*2=20)

Q.No.II Discuss the provision of the rules for regulating the following:

- i) Signing of Sanction
- ii) Contract Contingencies
- iii) Maintenance of Accounts
- iv) Proposals which require to be sent to the Finance department for its concurrence.

(5*4=20)

Q.No.III (A) Define any five of the following:

- i) Dismissal & Removal.
- ii) Honorarium.
- iii) Substance Grant.

- iv) Fees.
- v) Dismissal & Removal.
- vi) Censure & Warning.
- vii) Personal pay.

(4*5=20)

Or

(B): Discuss and specify the provision of rules in respect of following:

- i) Which leave cannot be combined with any kind of leave?
- ii) No leave shall be granted to Government servant, if he is ___?
- iii) Indicate the Rule for "Regularization of Un-authorized absence.
- iv) What is the limit of Half Pay leave for availing Commuted leave on medical grounds by a Government servant?
- v) Who is competent authority for grant of cash equivalent of leave at credit of Government servant?

(4*5=20)

Q.No. IV A Government servant retired on superannuation at the age of 58 years after rendering service of 20 years, 1 month and 16 days. He was drawing a basic pay of Rs. 135900, Dearness allowance @ of 50%. During his service an extra ordinary leave of 46 days was sanction in his favor without leave salary. The Officer opted to commute 20% of his pension. As per leave accounts on his superannuation, 270 days earned leave and 136 days half pay leave was at his credit. On the basis of above information, calculate the following pensionary benefits in his case:

- i) Pension on Superannuation.
- ii) Family pension.
- iii) Retirement gratuity.
- iv) Commuted Value.
- v) Leave encashment.

(4*5=20)

Q.NO.V Write a short note on any FIVE of the followings:

- i) Budget
- ii) Delegation of Administrative Powers (DOAP)
- iii) Opex & Capex expenditure
- iv) Bank Reconciliation Statement.
- v) Receipt book CAO-37 & CAO-54
- vi) HPERC
- vii) Cash Flow Statement

(4*5=20)

- iv) Fees.
- v) Dismissal & Removal.
- vi) Censure & Warning.
- vii) Personal pay.

(4*5=20)

Or

(B): Discuss and specify the provision of rules in respect of following:

- i) Which leave cannot be combined with any kind of leave?
- ii) No leave shall be granted to Government servant, if he is ___?
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- v) Receipt book CAO-37 & CAO-54
- vi) HPERC
- vii) Cash Flow Statement

(4*5=20)

HP Board of Departmental Examination

Departmental Examination of Engineering Officers of HPSEBL Ltd.

Session November 2024 (Paper-B) (CIVIL/MECHANICAL)

Time allowed: 3(three) hours

Maximum Marks: 200

Note:

- A. Attempt Four (04) questions each in all from Part – 1 and Part 2 respectively from two section.
- B. Selecting one question from each Sections i.e., Question 1 from Part – 1 and Question 7 from Part 2 is **COMPULSORY**.
- C. Relevant codes, Bare Acts, Rules & manuals are allowed. Assume any missing data.
- D. The candidates shall limit their answers precisely within the subject matter.

Part-1:

Consumer/Company Accounts and Accounting Procedures (100 marks)

- Q.I** a) What are the Guidelines for preparation of estimates for Turnkey projects in HPSEBL? (5 marks)
- b) Write short notes on any ten of the following:
- i) Procedure for opening of Tenders/Quotations,
 - ii) Payment of Bills,
 - iii) Difference between estimated and justified cost,
 - iv) Deposit works,
 - v) Canons of Financial Propriety,
 - vi) Price escalation,
 - vii) Assets and Liabilities,
 - viii) Action after arbitration award is made
 - ix) Time and cost over- run in construction works,
 - x) e-Reverse tendering,
 - xi) Commencement of work in the absence of sanction to a detailed estimate.
 - xii) Security Deposits.
 - xiii) Financial concurrence. (20 marks)
- Q.II** Write note on any five of the following:
- i) Administrative Approval and Expenditure Sanction,
 - ii) Measurement Books,
 - iii) Different types of Funding of Projects,
 - iii) Procedure for execution of works,
 - iv) Technical sanction,
 - v) Two stage bidding,
 - vi) Bid security,
 - vii) Earnest Money. (25 marks)
- Q.III** a) What is the procedure for inspection of stores. (10 marks)
- b) Write short notes on any three of the following:
- i) Method of stock taking, ii) Reserve stocks, iii) Purchasing through GeM Portal,
 - iv) Physical verification of assets, v) Capitalization of assets. (15marks)

- Q.IV** a) Write short notes on any five of the following:
i) Capital expenditure,
ii) Ordinary expenditure,
iii) Survey and investigation expenses,
iv) Duties of the Finance group in Finance and Accounts Wing,
v) Imprest,
vi) Re-appropriation of funds,
vii) Variation and Deviation of quantities in item rate contracts
viii) Issuing Purchase order/Letter of Award. (25marks)

- Q.V** a) What is a fixed asset? List out any five categories of the fixed assets in HPSEBL along with their respective account codes. (10 marks)
b) What is the procedure for processing of Tenders? (10 marks)
c) Write short notes on Award of Deposit works to Govt. Agencies (5 marks)

Part-2
Civil and Mechanical Engineering (100 marks)

- Q.I** a) Differentiate between Preliminary Feasibility Report (PFR) and Detailed Project Report (DPR) of a project. (10Marks)
b) What's the purpose of geological explorations in Head Race tunnels? (8Marks)
c) What all factors are required to be considered while selecting the diameter of a penstock? (7Marks)

- Q.II** a) Describe the various components of the intake of Run of River (RoR) projects along with their function(s). (10Marks)
b) Describe any three of the following:
i) Water hammer in water conductor system, ii) Tunneling through squeezing grounds,
iii) Rock participation in the design of steel liner of pressure shafts, iv) Ultrasonic and radiographic testing of weld, v) Transient pressures in water conductor system. (15Marks)

- Q.III** a) Explain the importance of providing instrumentation in Hydropower projects? (10Marks)
b) Describe any three of the following:
i) Rock bolting in Tunnels, ii) Losses generally occurring in water conductor system,
iii) Construction Adits, iv) Bonnet gates, v) Types of Penstocks supports, vi) Hydraulic jacking phenomenon in tunnels. (15 Marks)

- Q.IV** a) Describe the operating conditions for which a turbine penstock system is to be checked for dynamic pressure rise due to water hammer. (10Marks)
b) Why and where a Surge Shaft is required to be provided in the Hydropower projects? (8Marks)
c) Enumerate the types of power stations based on Hydrodynamic considerations. (7Marks)

Q.V a) List out the type of gates generally used in hydropower projects. What are the essential features of a gate? (10Marks)

b) Describe any three of the following:

i) Forebay ii) cavitation iii) Desanding arrangement iv) Function and type of valves generally provided in hydropower projects, v) Maintenance of gates, vi) Gate seals. (15Marks)

Q.VI a) What are the Non-Destructive Tests (NDT) for ensuring homogeneity of weld and quality of work in fabrication of penstock steel liner? (10Marks)

b) Describe in detail the complete Hydro-Static Testing (HST) procedure of the penstock steel liner before and/or after erection. (15Marks)

Q.VII Differentiate between the following (attempt any five):

i) Design discharge for power generation and the flood discharge in the river,

ii) Consolidation and contact grouting in tunnels,

iii) Pressurized and free flowing water conductor system,

iv) Pumps and Turbines,

v) Gross head and net head,

vi) velocity head and pressure head

vii) Stop log and Gate.

(25 Marks)