**BOARD OF DEPARTMENTAL EXAMINATION, HIMACHAL PRADESH
DEPARTMENTAL EXAMINATION,
SESSION- SEPTEMBER, 2022**

PAPER-A: RULES, REGULATIONS, ACTS AND PROCEEDURE
(FOR ENGINEERING OFFICERS 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 (a) What are the main objectives of the Arbitration and Conciliation Act, 1996?

     (b) Give definition of family in the context of General Provident Fund (Central Services) Rules, 1960.

(10*2=20)

Or

     (a) What are the guiding principles laid down by the Government for regulating medical claims of Government servant?

     (b) What is a Service Book? State briefly the rules and procedure for maintenance of service books.   (10*2=20)

Q.No.II Discuss any five (5) from the following:
        i) Signing of Sanctions.
        ii) Records management.
        iii) Paternity leave.
        iv) Maintenance of Accounts.
        v) Technical Resignation.
        vi) Employers liability for employees Compensation.

(4*5=20)

Q.No.III Discuss and specify the provision of rules in respect of any five (5) from the 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?
- vi) Which rule are applicable in the case of persons re-employed in subordinate office?

(4*5=20)

Q.No. IV A Government servant retired on superannuation at the age of 58 years after rendering service of 31 years, 6 months and 25 days. He was drawing a basic pay of Rs. 135900, Dearness allowance @ of 31%. During his service an extra ordinary leave of 150 days was sanction in his favor with leave salary. As per leave accounts on his superannuation, 300 days earned leave and 185 days half pay leave was at his credit. The Officer has opted to commute his pension @20%. 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 Distinguish between any five (5) from the following:

- i) Temporary post & Supernumerary post.
- ii) Identical Time Scale and Same Time scale.
- iii) Re-employment and Extension of services.
- iv) Internal Audit & Statutory Audit.
- v) Probationer and One on Probation.
- vi) Special Allowance and Compensatory Allowance.

OR

(4*5=20)

Define any five(5) from the followings by quoting relevant rule:

- i) Personal Pay
- ii) Honorarium
- iii) Tenure Post
- iv) Local Fund
- v) Subsistence Grant
- vi) Special Pay

(4*5=20)

विभागीय परीक्षा सत्र- सितम्बर, 2022
पेपर- अ : नियम, विनियम, अधिनियम और प्रक्रिया
(एचपीएसईबी लिमिटेड के इंजीनियरिंग अधिकारियों के लिए)
(किताबों के साथ)

समय की अनुमति: 03 घंटे

अधिकतम अंक: 100

नोट:

i) सभी प्रश्न अनिवार्य हैं।

ii) प्रश्नों के सभी भागों के उत्तर क्रमवार दिए जाने आवश्यक हैं ।

iii) केवल bare Acts, bare rules, अधिसूचना / आदेश और संदर्भ पुस्तकें की अनुमति है। कोई सहायता पुस्तकें, पाठ्य पुस्तकें, हैंडआउट्स, किए गए आसान संस्करण की अनुमति नहीं है।

iv) प्रत्येक के साथ अंक दर्शाए गए हैं।

v) अपने जवाब के समर्थन में प्रासंगिक नियमों को उद्धृत करें, जहां आवश्यक हो ।

प्रश्न संख्या: I (अ) मध्यस्थता और सुलह अधिनियम, 1996 के मुख्य उद्देश्य क्या हैं?

(ब) सामान्य भविष्य निधि (केन्द्रीय सेवा) नियम, 1960 के संदर्भ में परिवार की परिभाषा दीजिए।

(10*2=20)

या

(अ) सरकारी कर्मचारी के चिकित्सा दावों को विनियमित करने के लिए सरकार द्वारा निर्धारित मार्गदर्शक सिद्धांत क्या हैं?

(ब) सर्विस बुक क्या है? सेवा पुस्तिकाओं के रख-रखाव के नियमों और प्रक्रियाओं का संक्षेप में वर्णन कीजिए।

(10*2=20)

प्रश्न संख्या II निम्नलिखित में से किन्हीं पांच (5) पर चर्चा करें:

i) प्रतिबंधों पर हस्ताक्षर।

ii) अभिलेख प्रबंधन।

iii) पितृत्व अवकाश।

iv) खातों का रखरखाव।

v) तकनीकी इस्तीफा।

vi) कर्मचारियों के मुआवजे के लिए नियोक्ता दायित्व।

(4*5=20)

प्रश्न संख्या III निम्नलिखित में से किन्हीं पांच (5) के संबंध में नियमों के प्रावधान पर चर्चा करें और निर्दिष्ट करें:

i) किस अवकाश को किसी भी प्रकार की छुट्टी के साथ नहीं जोड़ा जा सकता है?

ii) सरकारी कर्मचारी को कोई छुट्टी नहीं दी जाएगी, यदि वह ___ है?

iii) "अनधिकृत अनुपस्थिति के नियमितीकरण" के नियम को इंगित करें।

iv) सरकारी कर्मचारी द्वारा चिकित्सा आधार पर परिवर्तित अवकाश प्राप्त करने के लिए अर्ध वेतन अवकाश की सीमा क्या है?

v) सरकारी कर्मचारी के खाते में जमा अवकाश के समतुल्य नकद राशि प्रदान करने के लिए सक्षम प्राधिकारी कौन है?

vi) अधीनस्थ कार्यालय में पुन: नियोजित व्यक्तियों के मामले में कौन से नियम लागू होते हैं?

(4*5=20)

प्रश्न नहीं IV एक सरकारी कर्मचारी 31 वर्ष 6 माह और 25 दिन की सेवा करने के बाद 58 वर्ष की आयु में सेवानिवृत्ति पर सेवानिवृत्त हुआ। वह रूपये 135900 का मूल वेतन व महंगाई भत्ता 31% की दर से ले रहा था । उनकी सेवा के दौरान उनके पक्ष में अवकाश वेतन सहित 150 दिनों का असाधारण अवकाश स्वीकृत किया गया था। उनकी सेवानिवृत्ति पर अवकाश खातों के अनुसार उनके खाते में 300 दिन का अर्जित अवकाश और 185 दिन का आधा वेतन अवकाश था। अधिकारी ने अपनी पेंशन @ 20% परिवर्तित करने का विकल्प चुना है। उपरोक्त जानकारी के आधार पर उसके मामले में निम्नलिखित पेंशन लाभ की गणना करें:

i) सेवानिवृत्ति पर पेंशन।
ii) पारिवारिक पेंशन।
iii) सेवानिवृत्ति उपदान।
iv) परिवर्तित मूल्य।
v) छुट्टी का नकदीकरण

(4*5=20)

Q.NO.V निम्नलिखित में से किन्हीं पाँच (5) में भेद कीजिए:

i)) अस्थायी पद और अधिसंख्य पद।
ii) समान समय पैमाना और समान समय पैमाना।
iii) पुन: रोजगार और सेवाओं का विस्तार।
iv) आंतरिक लेखा परीक्षा और सांविधिक लेखा परीक्षा।
v) परिवीक्षाधीन और एक परिवीक्षा पर।
vi) विशेष भत्ता और प्रतिपूरक भत्ता।

(4*5=20)

या

प्रासंगिक नियम का हवाला देते हुए निम्नलिखित में से किन्हीं पांच (5) को परिभाषित करें:
i) व्यक्तिगत वेतन
ii) मानदेय
iii) कार्यकाल पद
iv) स्थानीय निधि
v) निर्वाह अनुदान
vi) विशेष वेतन

(4*5=20)

BOARD OF DEPARTMENTAL EXAMINATION, HIMACHAL PRADESH
DEPARTMENTAL EXAMINATION

SESSION - SEPTEMBER, 2022

PAPER-A :- RULES, REGUALIONS, PROCEDURES AND ACTS

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

(with Books)

TIME ALLOWED: 3 HOURS   MAXIMUM MAKS:100

Notes: (i) Attempt five questions in all, question number 7 is compulsory.

       (ii) Attempt all parts of question consecutively and indicate the same question number & its part as assigned in the question number while answering the same.

       (iii) Only Bare Acts, Bare Rules, Notification/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 Rules(S) in support of your answers, where necessary.

Q 1. (A) Briefly explain any five of the following:

    (i)   Subsistence Allowance
    (ii)   Date of retirement of Government Servant of different category
    (iii)   Foreign Service
    (iv)   Joining Time
    (v)   Earnest Money
    (vi)   Office Memorandum
    (vii)   Internal Audit and Statutory Audit   (3*5=15)

(B) Write Short note on any two of the followings:

    (i)   Distribution Licensee and Consumer
    (ii)   Original Work and Repair Work
    (iii)   Presiding Arbitrator and Sole Arbitrator
    (iv)   Factory   (2.5*2=5)

Q2. (A) List out the conditions notified by the HP State Electricity Board pertaining to Distribution and Electrical System functions which may result in Fatal or Non-Fatal accidents.   (10)

(B) Briefly explain the functions of Himachal Pradesh Electricity Regulatory Commission.   (10)

Q3. (A) List the documents required to be forwarded to the Inquiry Officer by the Disciplinary Authority in a disciplinary case. (10)

(B) What are the provisions for the Quorum for the meetings of Board as per Companies Act 2013? (10)

Q 4. (A) Explain the provisions for determination of the model fees of Arbitral Tribunal. (10)

(B) How the Agreements are different from Contracts? Enumerate. (10)

Q 5. A Government Servant was due to retire on 31.07.2022 on superannuation at the age of 58 yrs after rendering service of 20 yrs, 6 months and 16 days. He was drawing the Basic Pay of Rs 59900/- in the Level 18 as on 01.04.2022 with next date of increment on 01.07.2022. He availed the duly sanctioned earn leave of 16 days w.e.f. 25.06.2022 and at the time of superannuation he has 291 days earned leave on his credit. The dearness allowance as on 31.07.2022 is 31%. On the basis of the above information, calculate the following benefits in his case:

(i) Pension on Superannuation
(ii) Family Pension
(iii) Retirement Gratuity
(iv) Commuted value of pension
(v) Leave encashment (4*5=20)

Q 6 (A) An employee in your office had 150 days Earned Leave and 250 days Half pay leave in his account while the records were completed on 31-12-2015. Following related entries are recorded thereafter;

(i) EOL on Medical Certificate was availed for 01.04.2016 to 25.04.2016.
(ii) Availed Earned Leave from 15th June,17 to 25th October, 17.
(iii) Availed Earned Leave from 15th June,18 to 15th July, 18.
(iv) Availed Half Pay Leave from 20th October, 18 to 18th Nov. 18.
(v) EOL period without Medical Certificate was found from 13th Jan., 2019 to 12th June, 2019
(vi) The employee availed Earned Leave for 10 days commencing from 27th Jan., 2020 for LTC Along with leave encashment admissible for LTC purposes.
(vii) Prepare the leave account and find out the balances of Earned Leave standing in his credit when he retires on superannuation on 28th February, 2022. (15)

(B) What do you understand by Local Journey? How the daily allowance of a Government Servant is regulated in respect of such local journeys? (5)

or

Explain the terms (a) Advance from the fund, and (b) Withdrawals from the fund, with reference to the GPF (CS) Rules 1960. (5)

Q 7 Comment on any eight of the followings:

(I) The DDO effected the recovery relating to the Motor Car Advance from the GPF balance payable to the nominee for which the consent has been given by the subscriber before his death.

(II) A Government servant due to retire on superannuation on 30-04-2022, applied for the full amount of commutation on 25-01-2022. He died on 25-04-2022 and his family claimed for the commuted value of pension.

(III) A government servant was on sanctioned leave for a period of 30 days joined and report his return on duty 3 days before the expiry of the period of leave granted to him.

(IV) A Government servant who was recruited initially as Assistant Engineer through the direct recruitment process was reduced by way of punishment to the post of Junior Engineer under the provisions of CCS (CCA) 1965.

(V) An Executive Engineer leaves his headquarter at 09.30 hrs by Government Vehicle and returns to the headquarter at 18.30 hrs on the same day after inspection of work at a distance of 50 km. He claims full DA.

(VI) A Government servant retiring on 31.12.2022 claimed for the LTC in respect of his family comprising Wife aged 52 yrs (teacher in the state education department), unmarried Son 27 yrs (pursuing full time engineering course), married daughter 23 yrs, son 21 yrs (studying in full time BA course) father aged 82 yrs (retired as class 1 gazetted officer).

(VII) A forest land with an area of 15.75 hectare owned by a private owner was utilized for the purpose of constructing a substation by paying the cost of land to the owner without taking prior approval of Central Government under the Forest (Conservation) Act, 1980.

(VIII) A Private Limited Company was incorporated under the Companies Act, 2013 without having a registered office at the time of its incorporation.

(IX) A Government department enters into contract for an amount of Rs 4.5 Crores with XYZ IT Solutions, Calcutta for establishing an E-PMS platform within two years. The Contract was signed by Joint Director of the Department aged 57 yrs with 17 yrs old Sole proprietor of the firm.

(X) Despite clear vacancy of the promotional post, the Departmental Promotion Committee did not consider an employee who is under suspension, charge sheet has been issued and the disciplinary proceeding are pending on him.

(XI) A Disciplinary authority imposes a punishment on a Government Servant of reduction of his pay to the minimum of the time scale as a permanent measure.

(XII) A Government servant does not join his post within his joining time.

(XIII) Claim for the Medical reimbursement was submitted by the claimant after the prescribed period of 90 days of it becoming due alongwith the reasons of late submissions.   (2.5 * 8 =20)

H.P.Board of Departmental Examination

Departmental Examination of Engineering Officers of HPSEB Ltd.

of Himachal Pradesh, Session –

PAPER –B: Consumers/Company Accounts and Accounting Procedures.

Time allowed:-03 hours   M.M-200

Notes: i) Attempt five questions each from Part-I & II

ii) Bare Acts/code/Rule/Manuals/Tariff order are allowed for Part-I

PART-I

(Works, Accounts and Store Manual-100 Marks)

Q.No. I   (i)   Define Stock measurement Book? What is the purpose and use of upkeeping stock measurement book?

(ii)   Discuss in detail the functions of Store Purchase organization of HPSEBL?

(10*2=20)

Q.No. II   Why Chart of Accounts (COA) is essential for HPSEBL? Also name the main GL code/sub GL code, as appropriate, for the following-:

i)	Cash and Bank	vi)	Capital works in progress account
ii)	Revenue from Sale of Power	vii)	Salaries,bonus etc. payable
iii)	Provision for unbilled revenue	viii)	Liability for purchase of power
iv)	Fixed assets	ix)	Material stock and related accounts
v)	A& G expenses	x)	Amount recoverable from employees/ex-employee

(20)

Q.No. III   (i)   How the appropriation in the budget estimates are done? Who is responsible for monitoring the progress of expenditure?

(ii)   Elaborate the procedure for adjustment or refund of consumer's security deposit?

(10*2=20)

Q.No. IV   Explain briefly the following-

        i)   Key features of DOFP 2022

        ii)   Deposit works

        iii)   Administrative and General Expenses

        iv)   Detailed estimate

        v)   Budgeting

                                                          (5*4=20)

Q.No. V   (i)   What is the procedure of Arbitration and legal proceedings in handling the contracts in HPSEBL?

       (ii)   Explain the following- Guide lines for destruction of official record

                             and

                  Banking and cash section

                                                      (10*2=20)

Q.No. VI (i) Explain the conditions where the work can be commenced in absence of detailed sanctioned estimate?

       (ii) Explain the following-   CAO-54

                             and

                  Grant- in- aid and loans

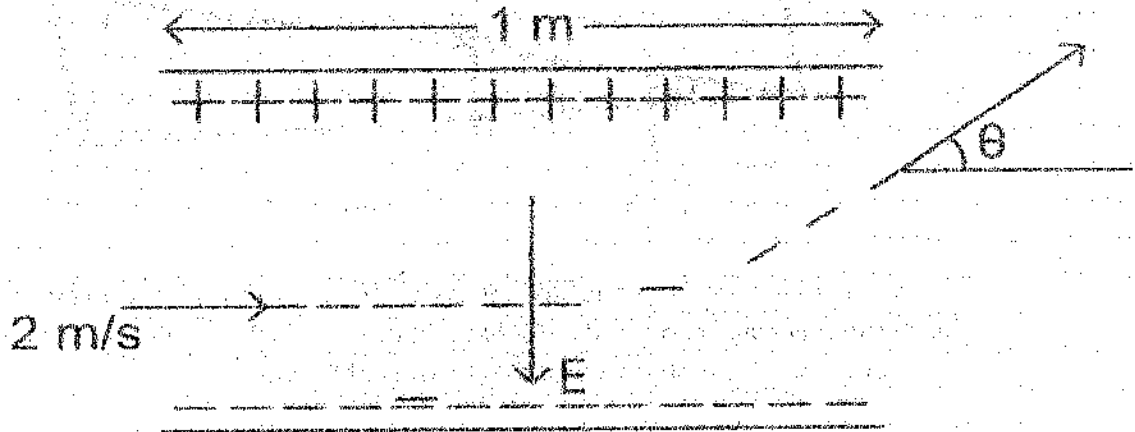   (10*2=20)

1. A). A uniform electric field $E=(8\,m/e)V/m$ is created between two parallel plates of length 1 m as shown in figure, (where m= mass of electron and e = charge of electron). An electron enters the field symmetrically between the plates with a speed of 2 m/s. Calculate the angle of the deviation (θ) of the path of the electron as it comes out of the field. (2 Marks)

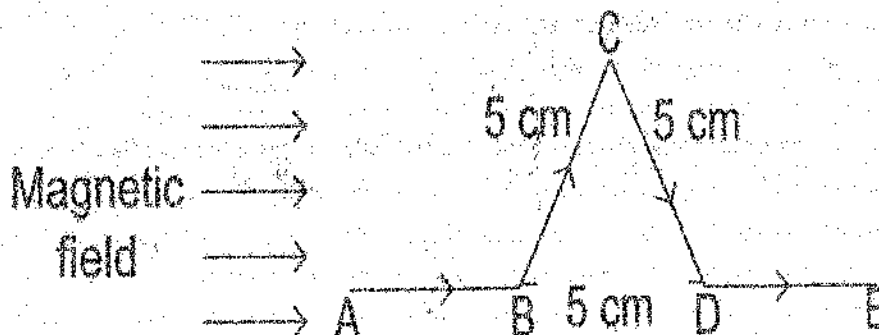B). A charge of 4µC is to be divided into two. The distance between the two divided charges is constant. The calculate the magnitude of the divided charges so that the force between them is maximum. (2 Marks)

C). Two uniformly charged spherical conductors A and B of radii 5 mm and 10 mm are separated by a distance of 2 cm. If the spheres are connected by a conducting wire. Calculate the ratio of the magnitudes of the electric fields at the surface of the sphere A and B in equilibrium condition. (2 Marks)
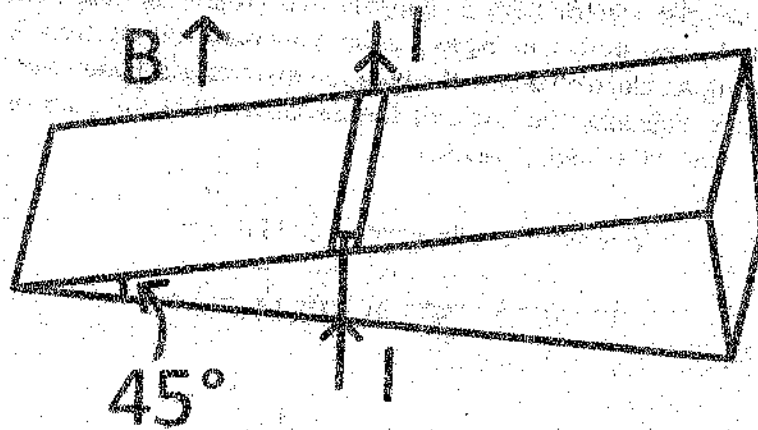
D). The magnetic field at the center of current carrying circular loop is B1. The magnetic field at a distance of 3 times radius of the given circular loop from the center on its axis is B2. Calculate the value of B1/B2. (2 Marks)

E). A triangular shaped wire carrying 10 A current is placed in a uniform magnetic field of 0.5 T, as shown in figure. The magnetic force on segment CD is? (2 Marks)

(Given BC=CD=BD=5 cm.)
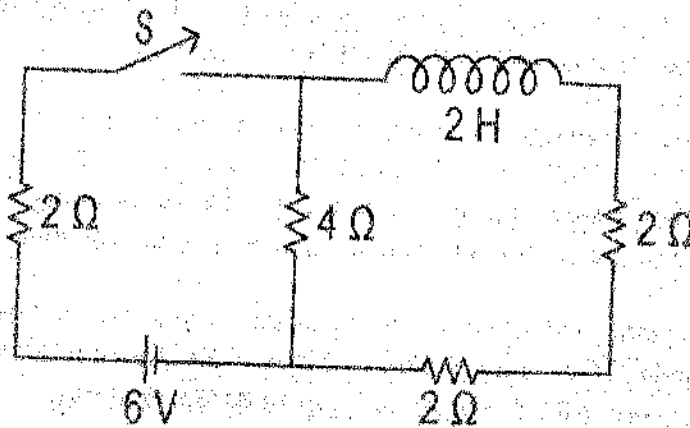
F). As shown in the figure, a metallic rod of linear density 0.45 kg m-1 is lying horizontally on a smooth inclined plane which makes an angle of 45º with the horizontal. The minimum current flowing in the rod required to keep it stationary, when 0.15 T magnetic field is acting on it in the vertical upward direction, will be? {Use g=10 m/s2} (2 Marks)
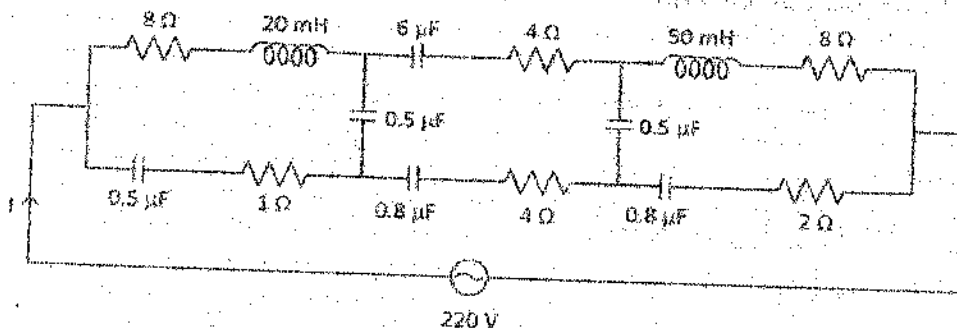

G). B_x and B_y are the magnetic fields at the centre of two coils X and Y respectively each carrying equal current. If coil X has 200 turns and 20 cm radius and coil Y has 400 turns and 20 cm radius, Calculate the ratio of B_x and B_y.

H). For the given circuit the current through battery of 6 V just after closing the switch 'S' will be _____ A. (2 Marks)

I). To light, a 50 W,100 V lamp is connected, in series with a capacitor of capacitance 50 / (π √x) µF, with 200 V,50 Hz AC source. Calculate the value of x.

J). What will be the effective current I in the given circuit at very high frequencies (2 Marks)

2. State if the following statements are TRUE or FALSE. Justify briefly your decision. (2 x10 = 20 Marks)

(a) Demagnetization due to the cross-magnetizing AT (ampere turn) for dc machines is due to the magnetic non-linearity.

(b) For an uncompensated dc motor, the brush is to be shifted opposite to the direction of rotation to reduce sparking at the commutator.

(c) Hopkinson's test requires two identical de shunt machines. One machine operates like a motor and other as a generator. During the test, any machine can be operated as a motor by increasing the corresponding field current.

(d) The 3-point and 4-point starter of dc shunt motor is basically same except speed can be controlled in a wide range by varying armature resistance for the motor with 4-point starter.

(e) Speed at no-load or at a very low load is dangerously high for dc shunt motor and hence a stabilizing winding is put in series with the armature.

(f) Two three phase transformers of vector group Dy1 and Yd1 can easily be connected in parallel if their phase sequence and magnitude of voltage (line-to-line) at the secondary side are same.
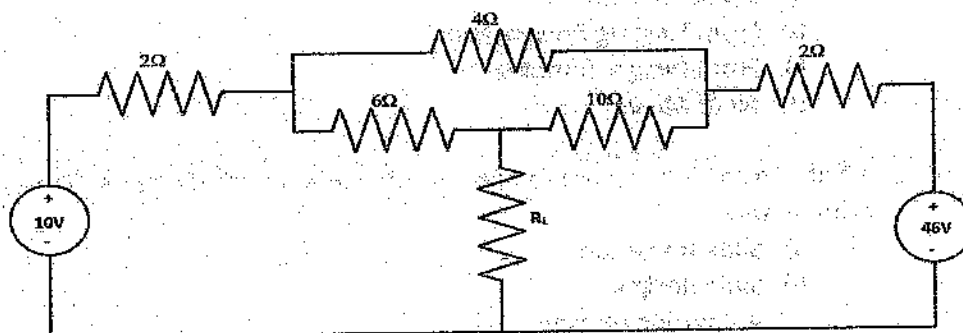
(g) Single phase line to neutral load cannot be supplied with a three-phase star-star (with isolated neutral) transformer. Hence a tertiary winding in delta is required.

(h) The utilization factor of open-delta connection (i.e. V-connection) is less than that of Scott-connection.

(i) Two transformers with tapping at 87% and 13% may be used to derive balanced 2-phase output from balanced 3-phase source.

(j) A 1-phase, 220V /110V, 50Hz transformer is operated from 220V, 60Hz supply. The no-load loss will decrease compared to that at 50Hz operation.

3. A). In the circuit shown in Fig., calculate the load resistance R_L for delivering the maximum power to the load R_L. Also calculate the maximum power transferred to the load resistance R_L and the power supplied by both the sources put together at that condition (10 Marks)

B) A balanced 3-phase voltage source supplies a load of 3000 watt and 1000 VAr through a transmission line having impedance of (2.5 + j 5) ohms per phase. The load is balanced and star connected. The voltage at the load is 400 V (L-L). Draw a circuit diagram showing the connection and find: i) Load impedance; ii) Load current; iii) Line current; iv) Source voltage (line to line); v) Voltage drop in line; vi) Power loss in line. (7 Marks)

C) A set of star-connected capacitors are connected in parallel to the load in 'part A' to make the load power factor 0.98. Find:
i) The value of capacitance required;   (3 Marks)
ii) The new line loss;
iii) The new source voltage

[Assume that the voltage across the load remains same (400 V, line to line)]

4. A). A 3-Phase, 50 Hz, 400V Motor develops 100 H.P.(74.6 KW), the power factor being 0.75 lagging and efficiency 93%. A bank of capacitors is connected in delta across the supply terminals and power factor is raised to 0.95 lagging. Each of the capacitance units is built of 4 similar 100V capacitors. Determine the capacitance of each capacitor. (10 Marks)

B). Explain the Low Voltage D.C.System in a sub-station with its uses and importance in detail (5 Marks)

C). (1 X 5 = 5 Marks)

I.   Powerpoint presentations are widely used as
        a) Note outlines for teachers
        b) Project presentations by students
        c) Communication of Planning
        d) All of Above

II.   Which of the following cannot be toggled from View > Toolbar
        a) Control Toolbox
        b) Slides
        c) Revisions
        d) Reviewing

III. A New presentation can be created from
        a) Blank Presentation
        b) From Existing Presentation
        c) From Design Template
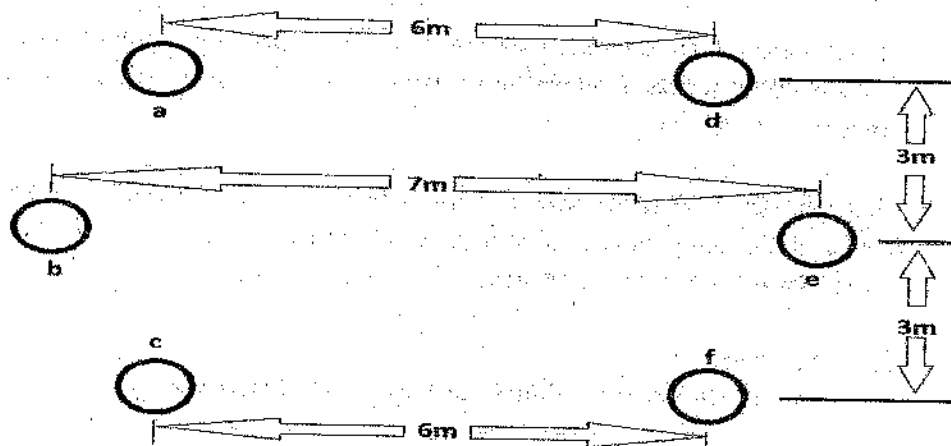   d) All of Above

IV.   What feature will you use to apply motion effects in between a slide exits and other enters
        a) Slide transition
        b) Slide design
        c) Animation objects
        d) Animation Scheme

V. If you want to insert some slides from other presentation into current one choose
    a) From Insert Menu choose Slides from Files
    b) From Insert Menu choose Slides from Presentation
    c) From Insert Menu choose Slides
    d) None of Above

5. A). A 3-Phase double circuit line has the configuration shown in figure. The radius of each conductor is 0.9 cm. Find the inductance per phase per km of length. (10 Marks)

B) Describe in detail the function of On-Load Tap-Changers fitted with Power Transformers. (5 Marks)

C). 1 X 5 = 5 Marks

I. Which field type will you select if you need to enter long text in that field
    a) Text
    b) Memo
    c) Currency
    d) Hyperlink

II. The expression builder is an access tool that control an expression _____ for entering an expression
    a) Table
    b) Box
    c) Cell
    d) Palette

III. Which of the following is not a type of MS Access Database Object
    a) Table
    b) Form
    c) Worksheets
    d) Modules

IV. The size of yes / no field is always _____
    a) 1 Bit
    b) 1 Byte
    c) 1 Character

d) 1 KB

V. Which Operator is used to filter and display rows when all (two or more) conditions are satisfied
  a) RANGE
  b) IN
  c) ALL
  d) AND

6. A). Derive the expressions for Average Value and R.M.S.Values of Sinusoidal Wave. (5 Marks)

B). A balanced star connected load of (8+j6) Ω per phase is connected to a balanced 3-phase 400 V supply. Find the line current, power factor, power and total volt-amperes. (5 Marks)

C). An insulator string for 66KV line has 4 discs. The shunt capacitance between each joint and the metal work is 10% of the capacitance of each disc. Find the voltage across the different discs and string efficiency. (5 Marks)

D). (1 x 5= 5 Marks)
i. Times New Roman, Comic Sans, and Calibri are called _____.

  a) Fonts
  b) Variations
  c) Font sizes

ii. You insert clip art and it is too big. To resize it you would _____.

  a) Change it the same way you change the font size
  b) Click on the clip art to show the handles and drag a handle to resize it
  c) Click the insert tab and choose resize

iii. Which tab would you choose to change the font size of a word from 12 points to 18 points?

  a) File
  b) Home
  c) Insert
  d) Page Layout

iv. You want system to read aloud the document. Which Tab would you choose in M.S.Word 2010.

  a) Layout
  b) Insert
  c) Review
  d) Help

v. Which Tab you will choose to change Page Colour and Borders

  a) Draw
  b) Layout

c) Design
d) View

7. A) What happens when (1 X 5 Marks)
   I. Transformer is connected to DC Supply
   II. 220V transformer is connected to 440V AC Supply
   III. 50 Hz transformer is connected to 25 Hz Supply
   IV. 50 Hz transformer is connected to 1000 Hz Supply
   V. Write the basic e.m.f. equation of a transformer.

   B) Explain the principle of circulating current differential protection applied to power transformers. (5 Marks)

   C). What is line compensation? Why it is necessary? Compare Static Capacitors and Synchronous Compensators. (5 Marks)

   D). (1 X 5 = 5 Marks)
   I. How can you remove Borders applied to cells
      a) Choose None on Borders Tab of Format Cells
      b) Open the list on Border Tool in format cell toolbar then choose first tool (none)
      c) Both of Above
      d) None of Above

   II. When all numbers between 0 to 100 in a range should be displayed in Red Color, apply
      a) Use =if() function to format the required numbers to Red
      b) Apply conditional formatting command on Format Menu
      c) Select the cells that contain the number between 0 and 100 then click Red Colour on text colour tool
      d) All of above

   III. When a Row of a Data is to be converted to Columns
      a) Copy the cells in Row, select the same number of cells in row and paste
      b) Copy the cells in column then choose paste special, then click transpose then OK
      c) Copy the cells then go to cells then on Alignment tab click Transpose check-box and click OK
      d) Select the cell then place the cell pointer on new cell then paste special, mark transpose check box click "OK"

   IV. The shortcut key Ctrl + D in Excel will
      a) Open the Font dialog box
      b) Apply Double underline for the active cell
      c) Fill down in the selection
      d) None of above

   V. Getting Data from a cell located in different sheet is called

a) Updating
b) Accessing
c) Referencing
d) Transferring

HP Board of Departmental Examination

Departmental Examination of Engineering Officers of HPSEBL Ltd

Session September, 2022 (Paper-B)

Time allowed: 3(three) hours

Maximum Marks: 200

Part -1: Consumer/Company Accounts and Accounting Procedures (100 marks) (Open books, Bare Acts/ Rules & manuals)

Attempt any 4 (four) questions

Q.I   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 bid system of tendering, vi) Bid security, vii) Earnest Money, viii) Two stage bidding.
(5x5 marks)

Q.II   a) Explain "Re-appropriation of funds".   (10 marks)
b) Write short notes on any three 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. (3x5marks)

Q.III a) Write short note on Tendering process in HPSEBL.   (15 marks)
b) Write short note on "issuing Purchase order/Letter of Award".   (10 marks)

Q.IV   a) What is the procedure for processing of Tenders?   (10 marks)
b) Write short notes on any three of the following:
i) Procedure for opening of Tenders/Quotations, ii) payment of Bills, iii) purchasing through GeM Portal, iv) variation and deviation of quantities in item rate contracts v) Difference between estimated and justified cost.   (3x5marks)

Q.V   a) List out the broad categories of the fixed assets in HPSEBL along with their account code.   (10 marks)
b) Write short notes on any three of the following:
i) Capitalization of assets, ii) physical verification of assets, iii) assets and Liabilities, iv) Grants and subsidies towards cost of capital assets, v) Deposit works.   (3x5marks)

Part -2 Civil and Mechanical Engineering (100 marks) (open books and Manuals)

Attempt any 4 questions

Q.I   a) What is a Run of river Hydropower project?   (5 marks)

b) Which all types of diversion structures are generally used in case of Run of river hydropower projects.   (5 marks)

c) Describe the various components of the run of river projects along with their function(s).   (15 marks)

Q.II   a) Enumerate the parameters affecting the location of diversion structures.   (10 marks)

b) What's the purpose of geological explorations in Head Race tunnels?   (5marks)

c) What all factors are required to be considered while assessing the economical diameter of a penstock?   (10 marks)

Q.III   a) Describe any three of the following:

i) Transient pressures in water conductor system, ii) hydraulic jacking phenomenon in tunnels, iii) rock participation in the design of steel liner of pressure shafts, iv) Ultrasonic and radiographic testing of weld, v) Losses generally occurring in hydraulic tunnels or Penstocks.   (3x5 marks)

b) Describe the operating conditions for which a turbine penstock system is to be checked for dynamic pressure rise due to water hammer.   (10 marks)

Q.IV   a) Differentiate between Preliminary Feasibility report (PFR) and Detailed Project report (DPR) of a project.   (10 marks)

b) Why and where a Surge Shaft is required to be provided in the Hydropower projects?   (10 marks)

c) Enumerate the types of power stations based on Hydrodynamic considerations.   (5 marks)

Q.V   a) What are the non destructive tests for ensuring homogeneity of weld and quality of work in fabrication of penstock steel liner?   (10 marks)

b) Describe in detail the complete hydrostatic testing procedure of the penstock steel liner before and/or after erection.   (15 marks)

Q.VI   a) List out the type of gates generally used in hydropower projects.   (5 marks)

b) What are the essential features of a gate?   (8 marks)

c) What is the difference between fixed wheel and sliding type vertical lift gates?   (12 marks)

Q.VII   a) Enumerate the type of trash racks generally used at various locations in the hydropower projects along with their selection criteria.   (10 marks)

b) How does the spacing and shape of rack bars affect the flow conditions at intake locations?   (5 marks)

c) Explain any two of the following components:

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.   (10 marks)