

I/116718/2022

Central Water Commission  
Establishment I Section

Sub: Uploading of question papers of 57<sup>th</sup> Departmental Examination of Engineering Officers of CWC.

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A set of question papers (PP-I, PP-II, PP-III) of 57<sup>th</sup> Departmental Examination of Engineering Officers of CWC held on 26<sup>th</sup> and 27<sup>st</sup> November, 2022 is enclosed.

It is requested that the question papers may be uploaded on CWC's Website.

Encl: as above.

(आर. के. बालामुरुगन)

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**The Deputy Director, SMD, CWC (Hqs)**

File No: A-34012/1/2022-Estt-I

**GOVERNMENT OF INDIA  
CENTRAL WATER COMMISSION  
57<sup>TH</sup> DEPARTMENTAL EXAMINATION  
FOR  
ENGINEERING OFFICERS OF CWC**

TIME: 3 HRS  
MAX MARKS: 100

**PROFESSIONAL PAPER – I**

(This paper containing 8 pages is divided into three Sections - A, B & C. Section A is further subdivided into two parts - Part - 1 & Part – 2. Section - A carries 60 marks, while Sections B & C carry 40 marks each.)

**IMPORTANT INSTRUCTIONS**

- a. Civil Engineers shall attempt Section A & B. Mechanical Engineers shall attempt Section A & C.
- b. The multiple choice questions are to be attempted/ answered in the question paper only. Answers in separate answer sheet will not be evaluated.
- c. Please write your Roll No. on each Section of the question paper.
- d. The question paper has to be returned back along with the answer sheets.
- e. There is no negative marking in objective type questions, i.e., no deduction of marks is to be done for wrong answers..

## PROFESSIONAL PAPER-I

Roll No.....

**Section- A**  
**(Common to both Civil and Mechanical Engineers)**  
**PART-1 Multiple Choice objective type questions**

**Maximum Marks - 60**

**Note- This part of Section A contains 20 questions. Every question is of 1 mark. Attempt all 20 question.**

1. Major and Medium Irrigation Projects having investment clearance, that are in advanced stage of construction and can be completed in the next four financial year, can be considered for inclusion in AIBP. Here advanced stage of construction would imply that.
  - i) At least 75% of latest approved estimated project cost already incurred.
  - ii) At least 50% of physical progress of essential works of the project has taken place.
  - iii) At least 50% of latest approved estimated project cost already incurred.
  - iv) At least 75% of physical progress of essential works of the project has taken place.Which one is correct?
  - a) (i) and (iv)
  - b) (ii) only
  - c) (iii) only
  - d) Either (ii) or (iii)
2. As per latest Guidelines for Monitoring of Irrigation Project and preparation of Status Report, the Physical Monitoring shall be carried out by regional offices of CWC by way of:
  - a) Minimum one field visit per project per year.
  - b) Minimum two field visits per project per year.
  - c) Minimum three field visits per project per year.
  - d) Minimum four field visits per project per year.
3. The Scheme PMKSY-AIBP is implemented in which Financial Year?
  - a) 2014-15
  - b) 2015-16
  - c) 2016-17
  - d) 2017-18
4. At what level from the surface of the river current meter is lowered for measuring velocity?
  - a) 0.6 d
  - b) 0.8 d
  - c) 0.5 d
  - d) 0.2 d
5. There are ..... numbers of Level III Water Quality Laboratories under Central Water Commission.
  - a) 3
  - b) 5
  - c) 8
  - d) 18
6. Which of the followings are not classified data as far as water resources sector is concerned?
  - (i) Water level
  - (ii) Sediment
  - (iii) Water quality
  - (iv) Discharge
  - (v) Maximum Water level
  - (vi) TemperaturePlease mark the correct answer:
  - a) (i), (iii) & (iv)
  - b) (ii), (iv) & (v)
  - c) (iii), (v) & (vi)
  - d) (iii), (iv) & (vi)
7. The Sextant is used for
  - a) To fix the position of boat at a particular vertical for direct velocity measurement.
  - b) To measure depth of water.
  - c) For establishing Centre of line.
  - d) Both A & C.
8. The data transmission for telemetry system in CWC is being used as
  - a) GSM/ GPRS.
  - b) INSAT.
  - c) V-SAT
  - d) All the above.
9. Which of the following statement is correct?
  - a) The provisions of the Constitution related to water and Inter-State Rivers are based on Entry 17 of the State List and Entry 56 in the Union List.
  - b) Inter-State River Water Disputes Act 1956 as amended is enacted under Article 246 of the Constitution of India.

## PROFESSIONAL PAPER-I

- c) Both A and B.
  - d) None of the above.
10. Betwa River Board has been constituted under:
- a) River Boards Act 1956.
  - b) River Boards Act 1958.
  - c) Betwa River Board Act 1976.
  - d) Betwa River Board Act 1978.
11. Which of the following Tribunal has recently been dissolved?
- a) Vansadhara Water Dispute Tribunal.
  - b) Mahadayi Water Dispute Tribunal.
  - c) Cauvery Water Dispute Tribunal
  - d) Ravi-Beas Water Dispute Tribunal
12. Number of occasions till date when Central Government had to invoke provisions of the Inter-State River Water Disputes (ISWD) Act 1956 to constitute Water Disputes Tribunals:
- a) Eight
  - b) Nine
  - c) Ten
  - d) Eleven
13. Minimum success rate for irrigation purpose required in respect of a Major Irrigation project to be feasible is.
- a) 64%
  - b) 77%
  - c) 75%
  - d) 98%.
14. The CCA of a project is 50000 ha. The intensity of irrigation in Kharif season, Rabi season and Zaid season is 90%, 60% and 20% respectively. The total irrigated area of the project (assuming no rain-fed irrigation) is:
- a) 90000 ha;
  - b) 85000 ha;
  - c) 95000 ha;
  - d) None of the above.
15. Pick up the correct sequence of the part of a canal system from the following:
- a) Head work-distributary-branch canal-minor.
  - b) Head works-main canal-branch canal-distributary-minor.
  - c) Head works-main canal-branch canal-minor-distributary.
  - d) Heads works-branch canal-main canal distributary- minor.
16. At which point in the entire canal system the duty of water will be more?
- a) Head of the Water-course.
  - b) Head of the Minor.
  - c) Head of the Distributary.
  - d) Head of the Branch.
17. As per the Guidelines for SUBMISSION, APPRAISAL AND ACCEPTANCE of Irrigation and Multipurpose projects, 2017, Screening Committee for In-Principle clearance for preparation of DPR shall be chaired by
- a) Secretary, DoWR, RD & GR.
  - b) Chairman, CWC.
  - c) Member, WP&P, CWC.
  - d) Chief Engineer, PAO, CWC.
18. As per Para 6 of the Guidelines for SUBMISSION, APPRAISAL AND ACCEPTANCE of Irrigation and Multipurpose projects, 2017, In case of Cluster of minor projects, where the planned utilisation / diversion from cluster of minor projects on the inter-State river/tributary/sub-tributary/watershed exceeds \_\_\_\_\_ MCM, Inter-State clearance needs to be mandatorily obtained by the State Govt. from CWC :
- a) 5
  - b) 10
  - c) 15
  - d) 20
19. Member Secretary of Investment Clearance Committee is:
- a) Secretary, DoWR, RD & GR.
  - b) Member, WP&P, CWC.
  - c) Chief Engineer, PAO, CWC.
  - d) Commissioner, SPR Wing.
20. Environment Impact Assessment in India is statutorily backed by which of the following Acts?
- a) Environment Protection Act, 1986.
  - b) Energy conservation Act, 2001.
  - c) Environment Protection & Wildlife Act, 2005.
  - d) None of the above.

## PROFESSIONAL PAPER-I

### PART-2 Short Answer Type Questions

**This part of Section-A contains 9 questions. Attempt any 5 questions. Every question is of 8 marks.**

1. Write a brief Note on Pradhan Mantri Krishi Sinchai Yojna (PMKSY) highlighting the relevant aspects and main objectives. **(8 Marks)**
2. What is meant by ERM Projects? How it is different from new irrigation projects? **(8 Marks)**
3. Write down short note on following terms, which are used frequently in water quality sample collection: **(8 Marks)**
  - a) Grab or catch sample
  - b) Composite sample
  - c) Integrated sample
4. Explain the following terminology used in water quality monitoring: **(8 Marks)**
  - a) Biochemical Oxygen Demand
  - b) Dissolved Oxygen
  - c) Chemical Oxygen Demand
5. (a) Write a short note on provisions of the Constitution of India related to water and Inter-State Rivers. **(5 Marks)**  
(b) Mention any three key features of proposed Inter-State River Water Disputes (Amendment) Bill, 2019. **(3 Marks)**
6. (a) Define Duty and Delta of a crop. Find the delta for a crop when its duty is 864 ha/cumec on the field. The base period of the crop is 120 days. **(4 Marks)**  
(b) The field capacity of a soil is 25%, its permanent wilting point is 15% and specific dry unit weight is 1.5. If the depth of root zone of a crop is 80 cm. Compute the storage capacity of the soil. **(4 Marks)**
7. Define reference evapotranspiration (ET<sub>o</sub>) and crop coefficient (K<sub>c</sub>). An irrigation project irrigates wheat crop in an area of 25000 ha. Find the 10-daily water demand at the head of the dam if ET (mm) is 5.5 mm/day, crop coefficient (K<sub>c</sub>) is 0.6 and effective rainfall (Re) of the region is 0.65 mm per day. Assume field application efficiency and conveyance efficiency as 70% each. **(8 Marks)**
8. (a) Explain in brief the STEPs of techno-economic appraisal process of Revised Cost estimate (RCE) of Irrigation Projects which were earlier been approved by Advisory Committee of DoWR, RD&GR **(4 Marks)**  
(b) What are the differences in the appraisal process w.r.t. RCE vs New DPR Projects? **(4 Marks)**
9. What do you understand by the resolution of a satellite image? Briefly explain the following: - **(8 Marks)**
  - a) Spatial resolution
  - b) Spectral resolution
  - c) Radiometric resolution
  - d) Temporal Resolution

## PROFESSIONAL PAPER-I

Roll No.....

### Section B (For Civil Engineers only)

Maximum Marks - 40

#### PART-1

**This part of Section B contains 10 questions. Every question is of 1 mark. Attempt all 10 questions.**

1. The mass curve of rainfall of a storm is a plot of
  - a) Rainfall depths for various equal durations plotted in decreasing order.
  - b) Rainfall intensity vs time in chronological order.
  - c) Accumulated rainfall intensity vs time.
  - d) Accumulated precipitation vs time in chronological order.
2. The following is not a direct stream flow determination technique
  - a) Dilution method.
  - b) Ultrasonic method.
  - c) Area velocity method.
  - d) Slope area method.
3. The water year in India starts from the first day of
  - a) January.
  - b) April.
  - c) June.
  - d) September.
4. Upper limit of use of Unit Hydrograph is generally
  - a) 500 km<sup>2</sup>
  - b) 1000 km<sup>2</sup>
  - c) 2000 km<sup>2</sup>
  - d) 5000 km<sup>2</sup>
5. As per IS 11223, the dams are classified for the purpose of inflow design flood by considering which of following parameter(s)?
  - a) Gross storage.
  - b) Hydraulic head.
  - c) Both Gross storage and hydraulic head.
  - d) Live storage.
6. Muskingum method of flood routing is
  - a) Form of reservoir routing method.
  - b) Hydraulic routing method.
  - c) Reservoir and Channel routing both.
  - d) Hydrologic channel routing.
7. The technique for establishing and maintaining priorities among the various jobs of a project, is known
  - a) Event flow scheduling technique.
  - b) Critical ratio scheduling.
  - c) Slotting technique for scheduling.
  - d) Short interval scheduling.
8. The object of technical planning, is
  - a) preparation of specifications.
  - b) preparation of estimates.
  - c) initiating the procurement action of resources.
  - d) taking remedial action for likely bottleneck in the execution.
  - e) all the above.
9. Critical path lies along the activities having total float
  - a) Positive.
  - b) Negative.
  - c) Zero.
  - d) Same.
10. Site order book is used for recording
  - a) instructions by the executive engineers.
  - b) construction measurements.
  - c) issue of store equipment.
  - d) names of the casual labour.

## PROFESSIONAL PAPER-I

### Section B

#### PART-2

**This part of Section B contains 5 Short Answer Type Questions. Attempt any 3 question. Every question is of 10 marks.**

1. (a) The ordinates of surface runoff resulting from 4.5 cm of rainfall excess of duration 8 hr in a catchment are as follows:

Time (hr)	0	5	13	21	28	32	35	41
Discharge (cumec)	0	40	210	400	600	820	1150	1440

Time (hr)	45	55	61	91	98	115	138
Discharge (cumec)	1510	1420	1190	650	520	290	0

Determine ordinates of the 8 hr unit hydrograph for this catchment.

**(5 Marks)**

- (b) What are various methods of discharge measurements in the rivers? Describe any one method in detail.

**(2+3 Marks)**

2. Write short notes on following:

**(2 Marks each)**

- Methods of determining the Mean Precipitation over an Area
- Factors affecting Flood Hydrograph
- Difference between (i) Hyetograph and hydrograph (ii) D-h Unit Hydrograph and Instantaneous Unit Hydrograph
- Rational Method of computing peak discharge for small catchment and its merits & demerits
- Define Standard Project Flood and Probable Maximum Flood.

3. (a) Describe with sketches various types of recording raingauges.

**(5 Marks)**

- (b) Explain procedure for filling gaps in rainfall data. Also explain procedure for checking rainfall data for its consistency.

**(5 Marks)**

4. (a) Define the return period flood. What are the different frequency distributions used to estimate the floods of various return periods? How flood frequency methods differ from hydro-meteorological approach of flood estimation?

**(5 Marks)**

- (b) What is meant by Trap Efficiency of a reservoir? What factors influence its value. List the different methods available for reservoir sediment control.

**(5 Marks)**

5. Explain following types of deposits made by Contractor to the department:

**(2.5 Marks each)**

- Earnest Money,
- Bank Guarantee,
- Security Deposit &
- Caution Money.

## PROFESSIONAL PAPER-I

Roll No. ....

### Section C (For Mechanical Engineers Only)

Maximum Marks - 40

#### PART 1

This part contains 10 *Multiple Choice Objective Type Questions*. Attempt all 10 Questions. Each question carries 1 Mark

Indicate the Correct Choice :

- 1) If  $D$  is the duration,  $ES$  and  $EF$  are the earliest start and finish,  $LS$  and  $LF$  are latest start and latest finish time, then the following relation holds good.  
a)  $EF = ES + D$ .                      b)  $LS = LF - D$ .                      c)  $LF = LS + D$ .                      d) All the above.
- 2) Economic saving of time results by crashing  
a) Cheapest critical activity.                      b) Cheapest noncritical activity.  
c) Costliest critical activity.                      d) Costliest noncritical activity
- 3) Consider the following features/factors:  
1. Projects are of the non-repetitive type.  
2. Time required need not be known.  
3. Time required is known precisely.  
4. Events have been established for planning.  
5. Emphasis is given to activities of project.  
PERT is preferred for planning because of  
a) 1, 2 and 4.                      b) 3, 4 and 5.                      c) 1, 3 and 4.                      d) 1, 2 and 5.
- 4) Select the incorrect statement.  
a) A critical path always begins at the very first event.  
b) A critical path always terminates at the last event.  
c) Critical activities control the project duration.  
d) Critical activity is the one for which free float is zero.
- 5) Free float for any activity is defined as the difference between  
a) Its earliest finish time and earliest start time for its successor activity.  
b) Its latest start time and earliest start time.  
c) Its latest finish time and earliest start time for its successor activity.  
d) Its earliest finish time and latest start time for its successor activity.
- 6) The estimated time required to perform an activity, is known as  
a) Event.                      b) Dummy.                      c) Duration.                      d) Float.
- 7) Rolling resistance of a wheel depends upon  
(i) Vehicle load,  
(ii) Grade,  
(iii) Ground conditions.  
Of these statements,  
a) Only (i) is correct.                      b) (i) and (ii) are correct.  
c) (i) and (iii) are correct.                      d) (ii) and (iii) are correct.
- 8) Critical path lies along the activities having total float  
a) Positive.                      b) Negative.                      c) Zero.                      d) Same
- 9) For excavating utility trenches with precise control of depth, the excavation equipment used is  
a) Hoe                      b) Shovel                      c) Dragline  
d) None of the above.
- 10) The most popular type of organization used for Civil Engineering Constructions, is  
a) Line organization.                      b) Line and staff organization.  
c) Functional organization.                      d) Effective organization.



## **PROFESSIONAL PAPER-I**

### **Section C**

#### **PART 2**

**This part contains 5 Short Answer Type Questions. Attempt any 3 questions. Each question carries 10 Marks.**

- 1) (a) What are the major 3-4 differences in PERT vs CPM? Explain with examples where these two are used. **(5 Marks)**  
(b) Explain Transfer value, Scrap value and Book value. **(5 Marks)**
- 2) (a) Write a note on hourly use rate. **(5 Marks)**  
(b) Write down various techniques used for construction scheduling. **(5 Marks)**
- 3) (a) Bring out differences between crawler and pneumatic wheel type of undercarriage. **(5 Marks)**  
(b) Name & describe in brief some compaction equipment. **(5 Marks)**
- 4) (a) Which equipment/methods are used for excavation of pilot shaft/hole? **(5 Marks)**  
(b) Mention the sequence of operations involved in driving a tunnel in the rock. **(5 Marks)**
- 5) Short Note on : **(2 Marks each)**
  - (a) Optimistic Time
  - (b) Free Float
  - (c) Deployment Schedule
  - (d) Depreciation
  - (e) Break-Even Point

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**GOVERNMENT OF INDIA  
CENTRAL WATER COMMISSION  
57<sup>th</sup> DEPARTMENTAL EXAMINATION  
FOR  
ENGINEERING OFFICERS OF CWC**

TIME: 3 HRS  
MAX MARKS: 100

**PROFESSIONAL PAPER – II**

(This paper containing 7 pages is divided into three Sections - A, B & C. Section A is further subdivided into two parts - Part - 1 & Part – 2. Section - A carries 50 marks, while Sections B & C carry 50 marks each.)

**IMPORTANT INSTRUCTIONS**

- a. Candidates shall first attempt Section - A, and on completion of it they will submit it to the invigilator before they proceed to attempt Section - B or C as the case may be.
- b. Civil Engineers shall attempt Section A & B, Mechanical Engineers shall attempt Section A & C.
- c. The multiple choice questions are to be attempted/ answered in the question paper only. Answers in separate answer sheet will not be evaluated.
- d. Please write your Roll No. on each Section of the question paper.
- e. The question paper has to be returned back along with the answer sheets.

**PROFESSIONAL PAPER – II**

**ROLL NO.....**

**SECTION – A**

**MAX MARKS: 50**

**(Common to both Civil & Mechanical Engineers)**

**PART 1**

**Please attempt ALL TWENTY multiple choice objective type questions. Choose the correct option. All questions carry one mark each.**

1. As per guidelines for Preparation of Detailed Project Report (DPR) of Irrigation and Multipurpose Project, 2010 of CWC, for the location/spacing of Drifts for Investigation at the Dam site for Earth & Rockfill Dams which one of the following statement is correct:-
  - a) Drift on either abutment at about 60 m elevation interval with a minimum of one at each abutment.
  - b) Drift on each abutment at about 60 m elevation interval with a minimum of one at each abutment.
  - c) Drift on right abutment only at about 100 m elevation interval from river bed.
  - d) Drift on left abutment only at about 75 m elevation interval from river bed.
2. Which of the following instruments is NOT used in the hydro-meteorological observations:
  - a) Current meter
  - b) Pan evaporimeter
  - c) Humidity sensor
  - d) Piezometer
3. As per CWC “Guidelines for preparation of Detailed Projects Reports of Irrigation & Multipurpose Projects (2010), DoWR”, which of the following statement is incorrect:
  - a) Major, Medium & Minor Irrigation projects located on inter-state rivers or their tributaries are appraised.
  - b) State Govt are empowered for investment clearance to Major, Medium & Minor irrigation projects which do not have interstate ramifications.
  - c) External Assistance projects are prepared as per Guidelines of CWC.
  - d) CCA less than 2000 ha is classified as minor projects.
4. As per NRLD, which state is having maximum number of large dams?
  - a) Tamilnadu
  - b) Karnataka
  - c) Maharashtra
  - d) Gujarat
5. Which of the following is not a criteria for categorizing dams as Large Dams in the NRLD?
  - a) Height
  - b) Crest Length
  - c) Reservoir Extent
  - d) Difficult Foundation problem
6. As per the Dam Safety Act, who will act as State Dam Safety Organisation (SDSO) for dams located in one state and operated by another state?
  - a) SDSO of the state where dam is located.
  - b) SDSO of the state who operates the dam.
  - c) National Dam Safety Authority (NDSA)
  - d) National Committee on Dam Safety (NCDS)
7. Which amongst the following is short term flood protection measure?
  - a) Anti-erosion works
  - b) Reservoirs
  - c) Interlinking of rivers
  - d) None
  - e) All the three
8. Flood management projects are classified based on:
  - a) Estimated cost of Project
  - b) B C Ratio
  - c) Both (a) & (b)
  - d) None of the above
9. Indicate the correct option as per Cost Estimates Preparation
  - a) B-Preliminary, D-Works, G-bridges ,L- Building
  - b) A-Preliminary, C- Works, G-bridges ,K- Building
  - c) A-Preliminary, C- Works, H-bridges , K- Building
  - d) B-Preliminary, D-Works, J-bridges , L Building

## PROFESSIONAL PAPER – II

10. The provision for Catchment Area Treatment is taken under the subhead-  
a) B- Land                      b) V- Water courses                      c) X- Environment and ecology                      d) M- Plantation
11. As per the “Guidelines for preparation of Detailed Projects Reports of Irrigation & Multipurpose Projects (2010), DoWR”, the minimum depth of drill holes in to the fresh rock for Masonry & concrete dam should be:  
a) 10 m                      b) 20 m                      c) 5 m                      d) 30 m
12. As per NDSA work at present, which of the following city is not having regional office of NDSA?  
a) Chandigarh                      b) Kolkata                      c) Guwahati                      d) Chennai
13. Select the correct statement:  
a) Design flood Review is critical item in Dam Safety  
b) Diversion flood is larger for concrete dams compared to rockfill/ earth dams.  
c) Both are correct  
d) None is correct
14. Majority of Dam failures occurred in following type:  
a) Concrete Dams                      b) RCC Dams                      c) Earthen Dams  
d) All of the above
15. One of the major funding agency of DRIP is:  
a) Japan International Cooperation Agency (JICA)                      b) World Bank  
c) Asian Development Bank                      d) None of the above
16. When was the latest “National Water Policy” formulated?  
a) 2005                      b) 1987                      c) 2012                      d) 2001
17. According to latest National Water Policy, what should be considered as pre-emptive need(s) of water?  
a) Irrigation                      b) Hydro-power                      c) Drinking and Sanitation                      d) None of them
18. Which of the following is/are false w.r.t. water in India:  
a) Water is a matter included in Entry 17 of List-II  
b) Water is a matter included in Entry 17 of List-I  
c) Entry 17 is subject to the provision of Entry 56 of List-I  
d) a & c
19. Who heads the National Water Resources Council?  
a) Minister of Jal Shakti                      b) Prime Minister of India                      c) Secretary DoWR, RD & GR  
d) Vice President of India
20. Who heads the National Water Board?  
a) Minister of Jal Shakti                      b) Prime Minister of India                      c) Secretary DoWR, RD & GR  
d) Vice President of India

## PROFESSIONAL PAPER – II

### SECTION – A

#### PART 2

Please attempt any three (03) *short answer type questions* out of following 5 Questions. All Questions carry 10 marks. Where sub-parts are there, all parts carry equal marks.

**1. Dam Safety:**

- (i) Describe the purpose and importance of Design Flood Review of the projects vis-à-vis its safety
- (ii) Write short notes NCDS & NDSA as proposed under Dam Safety Act, 2021.

**2. Flood Management:**

- (i) Write a brief note on B.C. ratio estimation for flood management projects?
- (ii) Write a short note on structural and non-structural measures for flood management?

**3. Write names of any ten chapters to be included in a DPR of Multipurpose projects and explain any two.**

**4. Calculate the Irrigation and Power supply Component of a Project using Bearability Concept using the following data-**

- a. Total Cost of the Project = Rs 15000 cr.
- b. Average Energy Generation = 750 MU
- c. Losses: Free Power 12%, LADF=1%, Transformer Loss =0.5%, Aux Power =0.5%
- d. Energy Rate =Rs 4.50 per KWH
- e. Debt Equity Ratio 70:30, Interest on debt= 10%, Interest on Equity= 16.5%, O&M charges 1.5%, Depreciation 3%
- f. Specific cost of Power Component = Rs 1150 cr.

**5. Write short notes on any two of the following:**

- (i) Run of the River (RoR) Hydro Power Scheme.
- (ii) Importance of Survey and Investigation in development of Hydro Power Projects.
- (iii) Drifting for investigation of Multipurpose River Valley Projects.
- (iv) Role of Geological Investigations for Multipurpose River Valley Project.

**PROFESSIONAL PAPER – II**

ROLL NO.....

**Section B (For Civil Engineers Only) (with related books)**

**MAX MARKS: 50**

Attempt any two questions out of three. All questions carry equal marks. Marks of the sub-parts of the questions are indicated against them.

**Q1 (a) Estimate Q for a rockmass with following parameters**

**(2 Marks)**

- |                                      |       |
|--------------------------------------|-------|
| a. Rock Quality Designation          | = 72  |
| b. Joint Set Number                  | = 4   |
| c. Joint Roughness Number            | = 3   |
| d. Stress Reduction Factor           | = 1.5 |
| e. Joint Alteration Number           | = 2   |
| f. Joint Water Reduction factor      | = 1   |
| g. Correction factor for over burden | = 1   |

**Estimate roof pressure for 5.0 m excavated diameter tunnel for above estimated Q value. (3 Marks)**

**Q1 (b) Draw a schematic diagram for a hydropower development with parameters given below. Also find net design head. Calculate hydropower potential in MW (Megawatts) for this scheme. (12 Mark=4+8)**

- |                             |                   |
|-----------------------------|-------------------|
| a. MWL                      | = 310m            |
| b. FRL                      | = 300 m           |
| c. MDDL                     | = 275 m           |
| d. Type of Turbine          | = Francis turbine |
| e. Minimum Tail Water Level | = 100 m           |
| f. Maximum Tail Water Level | = 125 m           |
| g. Design Discharge Q       | = 100 cumec       |
| h. Head loss in system      | = 5m              |
| i. Overall efficiency       | = 92.5%           |

**Q1 (c) Calculate the thickness of penstock steel plate for internal pressure with normal operating conditions and minimum handling thickness required for the penstock: (8 Marks)**

- |                                      |                           |
|--------------------------------------|---------------------------|
| a. Internal dia of penstock          | = 6.0m                    |
| b. Design internal pressure          | = 30 KG/cm <sup>2</sup>   |
| c. Yield stress of steel             | = 4200 kg/cm <sup>2</sup> |
| d. Ultimate tensile stress for steel | = 5700 Kg/cm <sup>2</sup> |
| e. Joint efficiency                  | = 0.9                     |

**Q2) Write a short notes on any five of following with respect to Barrage:**

**(25 Marks =5x5)**

- |                 |                 |                     |              |
|-----------------|-----------------|---------------------|--------------|
| a) Design flood | b) Divide walls | c) Fish Ladder/pass | d) Abutments |
| e) Guide bunds  | f) Afflux bunds | g) Silt excluder    |              |

**Q3) Answer the following:**

- i. List the forces which are considered for concrete gravity dam design and discuss hydrodynamic force, silt pressure and uplift pressure in the foundation **(10 Marks)**
- ii. Seepage control measures for foundation of concrete gravity dam **(8 Marks)**
- iii. What is the purpose of providing openings in concrete dams? Describe the classification of openings in concrete dams. **(7 Marks)**

## PROFESSIONAL PAPER – II

ROLL NO.....

### Section C (For Mechanical Engineers Only) (with related books)

MAX MARKS: 50

Attempt any two questions out of three. Marks of the questions are indicated against them.

**Q1 (a)** Calculate the resultant hydrostatic load acting on a sluice radial gate in closed condition with following design data. Assume any other required data suitably. Also draw a sketch showing the loading diagram with all relevant elevations appropriately marked. **(15 Marks)**

- |                                    |                 |
|------------------------------------|-----------------|
| i) Vent width                      | : 8.500 m       |
| ii) Radius to inside of skin plate | : 19.600 m      |
| iii) Sill level                    | : EL 819.400 m  |
| iv) Crest Level                    | : EL 820.000 m  |
| v) Trunnion level                  | : EL 833.730 m  |
| vi) FRL/MWL                        | : EL 857.000 m  |
| vii) Top of Dam                    | : EL 860.000 m  |
| viii) Top of vent Opening          | : EL 835.000 m  |
| ix) Top Seal Centre                | : EL 835.400 m  |
| x) Type of arms                    | : Parallel arms |

**Q1 (b)** Write two advantages of upstream suspension for rope drum hoist in a radial gate. **(5 Marks)**

**Q1 (c)** Whether an air vent is required for a vertical gate with upstream skin plate and upstream sealing. If so, explain the rationale. **(5 Marks)**

**Q2** Calculate the hydraulic hoist capacity for a radial gate with the following data. Assume any other required data suitably. **(25 Marks)**

- |                                                                    |                 |
|--------------------------------------------------------------------|-----------------|
| i) Weight of moving parts of gate                                  | : 85.0 T        |
| ii) Radius to inside of skin plate                                 | : 15.00 m       |
| iii) C.G. of gate from trunnion centre                             | : 10.00 m       |
| iv) Hydrostatic load on gate                                       | : 1860 T        |
| v) Diameter of trunnion pin                                        | : 450 mm        |
| vi) Coefficient of friction for self-lubricating bush for trunnion | : 0.2           |
| vii) Sill level                                                    | : EL 2268.850 m |
| viii) Trunnion level                                               | : EL 2279.050 m |
| ix) FRL/MWL                                                        | : EL 2292.000 m |
| x) Top Seal Centre                                                 | : EL 2282.100 m |
| xi) Coefficient of music note type FC cladded seals                | : 0.2           |
| xii) Seal stem thickness (C)                                       | : 18mm          |
| xiii) Distance of seal center from seal base plate (A)             | : 50mm          |
| xiv) Pre-compression of top & side seals                           | : 3mm           |
| xv) Lever arm of hoist                                             | : 8.20 m        |

**Q3 (a)** An engineer needs to make selection of certain items while designing a 15T rope drum hoist having twin drums and two falls on either side. The operating speed of gate is 0.50 m/min. Help him to select the following. Assume any other required data suitably;

- (i) Size of steel core wire rope of construction 6 x 36 with factor of safety as 3. **(5 Marks)**
- (ii) Considering single layer winding on drum, calculate the thickness of rope drum shell fabricated of structural steel (E 250). Adopt pitch as per applicable BIS code. **(3 Marks)**
- (iii) What minimum PCD of drum can be adopted for above sized wire rope as per BIS provision. **(2 Marks)**
- (iv) Assume the running efficiency of worm reducer as 0.76 and 02 stage open gearing reduction. Determine the size of motor with a service factor of 1.15. **(5 Marks)**
- (v) Calculate the drum rpm. **(2 Marks)**

**Q3 (b)** Rope drum hoist is preferred choice for many gated installations but it has certain inherent limitations. List any three limitations giving reasons. **(5 Marks)**

**Q3 (c)** What is the purpose of a filling valve in a gate? Whether its substitution is possible to serve the same objective. **(3 Marks)**

## PROFESSIONAL PAPER – II

ROLL NO.....

### Section C (For Mechanical Engineers Only) (with related books)

MAX MARKS: 50

Attempt any **two** questions out of three. Marks of the questions are indicated against them.

**Q1 (a)** Calculate the resultant hydrostatic load acting on a sluice radial gate in closed condition with following design data. Assume any other required data suitably. Also draw a sketch showing the loading diagram with all relevant elevations appropriately marked. **(15 Marks)**

- |       |                                |                 |
|-------|--------------------------------|-----------------|
| i)    | Vent width                     | : 8.500 m       |
| ii)   | Radius to inside of skin plate | : 19.600 m      |
| iii)  | Sill level                     | : EL 819.400 m  |
| iv)   | Crest Level                    | : EL 820.000 m  |
| v)    | Trunnion level                 | : EL 833.730 m  |
| vi)   | FRL/MWL                        | : EL 857.000 m  |
| vii)  | Top of Dam                     | : EL 860.000 m  |
| viii) | Top of vent Opening            | : EL 835.000 m  |
| ix)   | Top Seal Centre                | : EL 835.400 m  |
| x)    | Type of arms                   | : Parallel arms |

**Q1 (b)** Write two advantages of upstream suspension for rope drum hoist in a radial gate. **(5 Marks)**

**Q1 (c)** Whether an air vent is required for a vertical gate with upstream skin plate and upstream sealing. If so, explain the rationale. **(5 Marks)**

**Q2** Calculate the hydraulic hoist capacity for a radial gate with the following data. Assume any other required data suitably. **(25 Marks)**

- |       |                                                                |                 |
|-------|----------------------------------------------------------------|-----------------|
| i)    | Weight of moving parts of gate                                 | : 85.0 T        |
| ii)   | Radius to inside of skin plate                                 | : 15.00 m       |
| iii)  | C.G. of gate from trunnion centre                              | : 10.00 m       |
| iv)   | Hydrostatic load on gate                                       | : 1860 T        |
| v)    | Diameter of trunnion pin                                       | : 450 mm        |
| vi)   | Coefficient of friction for self-lubricating bush for trunnion | : 0.2           |
| vii)  | Sill level                                                     | : EL 2268.850 m |
| viii) | Trunnion level                                                 | : EL 2279.050 m |
| ix)   | FRL/MWL                                                        | : EL 2292.000 m |
| x)    | Top Seal Centre                                                | : EL 2282.100 m |
| xi)   | Coefficient of music note type FC cladded seals                | : 0.2           |
| xii)  | Seal stem thickness (C)                                        | : 18mm          |
| xiii) | Distance of seal center from seal base plate (A)               | : 50mm          |
| xiv)  | Pre-compression of top & side seals                            | : 3mm           |
| xv)   | Lever arm of hoist                                             | : 8.20 m        |

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- Size of steel core wire rope of construction 6 x 36 with factor of safety as 3. **(5 Marks)**
- Considering single layer winding on drum, calculate the thickness of rope drum shell fabricated of structural steel (E 250). Adopt pitch as per applicable BIS code. **(3 Marks)**
- What minimum PCD of drum can be adopted for above sized wire rope as per BIS provision. **(2 Marks)**
- Assume the running efficiency of worm reducer as 0.76 and 02 stage open gearing reduction. Determine the size of motor with a service factor of 1.15. **(5 Marks)**
- Calculate the drum rpm. **(2 Marks)**

**Q3 (b)** Rope drum hoist is preferred choice for many gated installations but it has certain inherent limitations. List any three limitations giving reasons. **(5 Marks)**

**Q3 (c)** What is the purpose of a filling valve in a gate? Whether its substitution is possible to serve the same objective. **(3 Marks)**



**PROFESSIONAL PAPER – II**

ROLL NO.....

**Section B (For Civil Engineers Only) (with related books)**

**MAX MARKS: 50**

Attempt any two questions out of three. All questions carry equal marks. Marks of the sub-parts of the questions are indicated against them.

**Q1 (a) Estimate Q for a rockmass with following parameters**

**(2 Marks)**

- |                                      |       |
|--------------------------------------|-------|
| a. Rock Quality Designation          | = 72  |
| b. Joint Set Number                  | = 4   |
| c. Joint Roughness Number            | = 3   |
| d. Stress Reduction Factor           | = 1.5 |
| e. Joint Alteration Number           | = 2   |
| f. Joint Water Reduction factor      | = 1   |
| g. Correction factor for over burden | = 1   |

**Estimate roof pressure for 5.0 m excavated diameter tunnel for above estimated Q value. (3 Marks)**

**Q1 (b) Draw a schematic diagram for a hydropower development with parameters given below. Also find net design head. Calculate hydropower potential in MW (Megawatts) for this scheme. (12 Mark=4+8)**

- |                             |                   |
|-----------------------------|-------------------|
| a. MWL                      | = 310m            |
| b. FRL                      | = 300 m           |
| c. MDDL                     | = 275 m           |
| d. Type of Turbine          | = Francis turbine |
| e. Minimum Tail Water Level | = 100 m           |
| f. Maximum Tail Water Level | = 125 m           |
| g. Design Discharge Q       | = 100 cumec       |
| h. Head loss in system      | = 5m              |
| i. Overall efficiency       | = 92.5%           |

**Q1 (c) Calculate the thickness of penstock steel plate for internal pressure with normal operating conditions and minimum handling thickness required for the penstock: (8 Marks)**

- |                                      |                           |
|--------------------------------------|---------------------------|
| a. Internal dia of penstock          | =6.0m                     |
| b. Design internal pressure          | = 30 KG/cm <sup>2</sup>   |
| c. Yield stress of steel             | =4200 kg/cm <sup>2</sup>  |
| d. Ultimate tensile stress for steel | = 5700 Kg/cm <sup>2</sup> |
| e. Joint efficiency                  | = 0.9                     |

**Q2) Write a short notes on any five of following with respect to Barrage:**

**(25 Marks =5x5)**

- |                 |                 |                     |              |
|-----------------|-----------------|---------------------|--------------|
| a) Design flood | b) Divide walls | c) Fish Ladder/pass | d) Abutments |
| e) Guide bunds  | f) Afflux bunds | g) Silt excluder    |              |

**Q3) Answer the following:**

- i. List the forces which are considered for concrete gravity dam design and discuss hydrodynamic force, silt pressure and uplift pressure in the foundation **(10 Marks)**
- ii. Seepage control measures for foundation of concrete gravity dam **(8 Marks)**
- iii. What is the purpose of providing openings in concrete dams? Describe the classification of openings in concrete dams. **(7 Marks)**

**GOVERNMENT OF INDIA  
CENTRAL WATER COMMISSION  
57<sup>TH</sup> DEPARTMENTAL EXAMINATION  
FOR  
ENGINEERING OFFICERS OF CWC**

**Time: 3 hours  
Max. Marks: 100**

**PROFESSIONAL PAPER- III (with Book)**

(This paper containing 7 pages is divided into two Sections A & B. Section A carries 30 marks, while Section B carries 70 marks)

**Important instructions:**

- a) The multiple choice/objective type questions are to be attempted/answered in the question paper only. Answer in separate answer sheet will not be evaluated.
- b) Unless specifically mentioned, each multiple choice/objective type question has one and only one correct answer out of four choices. If more than one choice is marked, the answer would not be evaluated.
- c) There is no negative marking i.e. no deductions shall be made for incorrect answers.
- d) Please write your Roll No. on each section of the question paper.
- e) The Question paper has to be returned back along with the answer sheets.
- f) This paper is common for both Civil and Mechanical Engineers.
- g) For Section B, separate sheets shall be provided.

Roll No.....

**SECTION-A**  
**PART- 1**

**Maximum Marks: 30**

**Multiple Choice Objective Type Questions Note:- Attempt all questions. Each question carries 1 mark**

1. In case of extreme exigency and unforeseen contingency, Rule\_\_\_\_\_of GoI (Transaction of Business) Rules 1961,\_\_\_\_\_has been empowered to permit or condone a departure from the laid down provisions in the business rules.
  - (a) Rule 13 & Cabinet Secretary
  - (b) Rule 12 & Secretary of the Administrative Ministry.
  - (c) Rule 13 & The President of India
  - (d) Rule 12 & The Prime Minister of India
2. The administrative head in each Department/Ministry shall be responsible for the proper transaction of business and the careful observance of GoI (Transaction of Business) Rules in that department is
  - (a) Cabinet Secretary
  - (b) Secretary only
  - (c) Secretary (which term includes the Special Secretary or Additional Secretary or Joint Secretary in independent charge)
  - (d) Both (b) and (c)
3. An Office under a Ministry/Department of GoI, which is serving as a technical repository of technical information and provides detailed executive directions required in the implementation of policies of the Govt. laid down by the Ministry, is known as
  - (a) Subordinate Office
  - (b) Attached Office
  - (c) Field Establishment
  - (d) Branch office
4. In Govt. of India, the Officer empowered for authentication of Govt. instruments (i.e. Order, financial sanction and affirm affidavit) is
  - (a) Only Under Secretary to the GoI.
  - (b) Under Secretary to GoI & above
  - (c) Desk Officer and above.
  - (d) All the above.
5. \_\_\_\_\_is considered as the backbone of successful and sustainable implementation process of e-office in the Organization, hence it must be equipped with technically skilled manpower with computer proficiency and a Good Quality High Speed ADF Scanner and new generation computer with proper network.
  - (a) IFC (Information and Facilitation Counter)
  - (b) Section
  - (c) Division
  - (d) CRU (Central Registration Unit)
6. Making entries in the note portion of a file about serial number assigned to each item of correspondence (whether receipt or issue) for its identification is called
  - (a) Referencing
  - (b) Docketing
  - (c) Both (a) and (b)
  - (d) None of the above.

7. The maximum number of channel of submission of matter desired in the Manual of Office Procedure for quicker decision thereon is
  - (a) 6
  - (b) 4
  - (c) 7
  - (d) 5
8. The time limit prescribed in the Manual of Office Procedure for acknowledging the receipt of communication from the Member of a Parliament, a Member of the Public, arecognized Association or a Public Body and for sending a reply is
  - (a) Acknowledging – 15 days, Sending reply – 15 days from the date of acknowledging
  - (b) Acknowledging – 10 days, Sending reply – 10 days from the date of acknowledging
  - (c) Acknowledging – 7 days, Sending reply – 7 days from the date of acknowledging
  - (d) None of the above.
9. A register in the prescribed format to keep note of important rulings and decisions having a precedent value for ready reference is called
  - (a) Precedent Value Book
  - (b) Precedent Book
  - (c) Standing Note
  - (d) Reference Folder
10. The issues that are not taken up for redressal of Grievances under CPGRAMS are –
  - (i) Sub-judice matter or any other matter concerning judgement given by the Court.
  - (ii) Suggestions.
  - (iii) Any complaint sent by email
  - (iv) Right to Information matters.
  - (a) None of the above.
  - (b) Only (i), (ii) & (iv) above.
  - (c) Only (ii) & (iv) above.
  - (d) All the above.
11. There are four main stages in the execution of a work. Find the odd one out
  - (a) Administrative approval.
  - (b) Expenditure sanction.
  - (c) Availability of funds
  - (d) Technical sanction.
  - (e) Preliminary Estimate.
12. Major work is a term applied to the estimate for a work when the sanctioned amount of the works expenditure is
  - (a) Rs. 5000000/-
  - (b) More than Rs.5000000/-
  - (c) Rs. 500000/-
  - (d) More than Rs. 500000/-
13. A disbursing officer makes remittance to a subordinate officer to enable him to make a number of specific petty payments on a muster roll or other voucher which had already been passed for payment. Such remittances should be treated as
  - (a) Imprest
  - (b) Temporary withdrawal
  - (c) Advance remittance
  - (d) Temporary advance
14. The cost of the supply of all stores, required as tools and plant for the general use of the division is debited at once to the minor head
  - (a) Machinery & Equipment

- (b) Tools & Plant
  - (c) Maintenance & Repairs
  - (d) None of the above.
15. As per delegation of Financial Powers 12.02.2018, powers vested to Superintending Engineer / Director, CWC for Procurement of Stores for works under concurrence of Director(Finance) / AAO, CWC is
- (a) Rs.5 lakh
  - (b) Rs. 10 lakh
  - (c) Rs. 25 lakh
  - (d) Rs. 2 Cr.
16. What does CRAC stand for
- (a) Consignee Receipt Acceptance Certificate
  - (b) Consignee Rejected Acceptance Certificate
  - (c) Consignee Receipt Agreement Certificate
  - (d) None of the Above
17. Which GFR (2017) rule is applicable for GeM
- (a) 162
  - (b) 249
  - (c) 100
  - (d) 149
18. Purchase of Goods by Purchase Committee lies in Which Rule of GFR 2017.
- (a) Rule 154
  - (b) Rule 155
  - (c) Rule 156
  - (d) Rule 157
19. Which CPWA form is used as Tools & Plant Ledger for stores
- (a) 13
  - (b) 16
  - (c) 17
  - (d) 15
20. As per Public Procurement Policy in tenders participating Micro and Small Enterprises (MSEs) quoting price within price band of L1+15 % shall also be allowed to supply how much portion of requirement by bringing down their price to L1 price in situation where L1 price is from someone other than a MSE
- (a) 15
  - (b) 25
  - (c) 35
  - (d) 45
21. Employer's contribution rate under NPS has been enhanced to \_% of Basic Pay plus D.A w.e.f.
- (a) 11% & 01.07.2019
  - (b) 12% & 01.01.2019
  - (c) 14% & 01.07.2019
  - (d) 14% & 01.04.2019
22. A Government servant who was on leave for the period 29.03.2022 to 9.04.2022. will be paid Transport Allowance
- (a) Full
  - (b) 50%
  - (c) No transport allowance will be paid
  - (d) None of above
23. In terms of the provisions stipulated in GFR, 2017, Performance security shall remain valid beyond the date of completion of all contractual obligations of the supplier including warranty obligations for a period of
- (a) 30 days
  - (b) 60 days
  - (c) 90 days
  - (d) 75 days
24. A Physical Verification of all consumable goods and material should be undertaken at least once in
- (a) every year
  - (b) two year

- (c) six months
  - (d) three years
25. Re appropriation means
- (a) Expenditure which is incurred at regular intervals
  - (b) Assignment to meet specified expenditure of funds included in primary unit of appropriation
  - (c) The transfer of funds from one primary unit of Appropriation to another such unit.
  - (d) All of above
26. The expenditure incurred for legal services, consultancy fee etc is account for under
- (a) Domestic Travel Expenses
  - (b) Minor Works
  - (c) Office expenses
  - (d) Professional Services
27. The maximum amount of House Building Advance which can be sanctioned to a Govt.Employee is\_.
- (a) Rs. 30 Lakhs      (b) Rs. 35 Lakhs      (c) Rs. 40 Lakhs      (d) Rs. 25 Lakhs
28. In case of transfer to station which is at a distance of less than 20 kms from the old station within the same city & actually involving a change of residence, the quantum of Composite Transfer Grant would be
- (a) 1/4
  - (b) 1/5
  - (c) 1/3
  - (d) 1/2
29. As per GFR, Two Bid System comprises of :
- (a) Advertised Tender and Limited Tender
  - (b) Technical Bid and Financial Bid
  - (c) Advertised Tender and Financial Bid
  - (d) Technical Bi and Limited Tender
30. To safeguard against a bidder's withdrawing or altering its bid during the bid validity period in the case of advertised or limited tender enquiry, bid security is to be obtained from all bidders except:
- 1) MSEs as defined in MSE procurement policy issued by Department of MSME
  - 2) Service provider having turnover of Rs 200 crores or more
  - 3) Enterprises registered with Central Purchase Organisation
- Which of the statement given above are correct?
- (a) 1, 2 and 3
  - (b) 1 only
  - (c) 1 and 2 only
  - (d) 1 and 3 only

Roll No. -----

**Section –B  
PART-2**

**Maximum Marks: 70**

**Attempt all question. Each Question carries 7 marks**

1. (a) What do you understand by Article 343 of our constitution? **(2 Marks)**  
(b) Explain two Check Points prescribed for the effective implementation of India's Official Language? **(2 Marks)**  
(c) Briefly describe in two-three lines **(3 Marks = 3 x 1)**
  - (i) World Hindi Day
  - (ii) Hindi Salahakaar Samiti (Committee)
  - (iii) A person proficient in Hindi language
2. (a) What is the maximum period of leave of any kind which can be allowed to a Government servant? What is the impact if such limit is exceeded? **(1 Mark = 2 x ½)**  
(b) Mention six kinds of leave not debited to Leave account, if availed by the Government Servant. **(3 Marks = 6 x ½)**  
(c) Calculate encashment of Leave on retirement, if a Govt. Servant was drawing a Basic Pay – Rs. 89400 on the date of retirement with 25% DA drawn and has 92 days EL and 350 days HPL at his credit on the date of retirement. **(3 Marks)**
3. (a) What are the five different types of approaches normally adopted for noting on various categories of cases in Govt. of India? **(4 Marks)**  
(b) Who is Supreme over administration in the Country? Describe briefly Parliament's control over the Executive in India. **(3 Marks)**
4. Write Short Notes on :-
  - (a) Two Stage Bidding. **(3½ Marks)**
  - (b) Electronic Reverse Auction. **(3½ Marks)**
5. (a) What is "Liquidated Damages" in the context of a contract? **(4 Marks)**  
(b) Write short note on GeM **(3 Marks)**
6. Explain the terms :
  - (a) Limited Tender Enquiry **(2 Marks)**
  - (b) Late bids **(1 Mark)**
  - (c) Outsourcing of services **(2 Marks)**
  - (d) Deviations **(2 Marks)**
7. Write Short Notes on
  - (a) Disposal of Goods through Auction **(5 Marks)**
  - (b) Review of Projects **(2 Marks)**
8. Mr. Ashok, working as Assistant Director in CWC New Delhi was drawing Basic Pay of Rs. 91100/- in level 11 as on 01.03.2022. He had to proceed on official tour from CWC New Delhi to UGB Lucknow during the period 07.03.2022 to 09.03.2022 and in

continuation, from UGB Lucknow to LGB, Patna during the period 10.03.2022 to 11.03.2022.

He had performed Air journey as under:

- Took flight from New Delhi to Lucknow at 6.00a.m on 07.03.2022 & reached Lucknow at 8.00 am on 07.03.2022.
  - Took flight from Lucknow to Patna at 08.30 a.m. on 10.03.2022 and reached Patna at 10.00 a.m.
  - Took Air flight from Patna to New Delhi on 11.03.2022 at 7.p.m. & reached New Delhi at 9.00p.m on 11.03.2022
- Air Fare from New Delhi to Lucknow Rs 4000/-; Lucknow to Patna Rs 3,000/- & Patna to Delhi Rs 7,000/-
- During his tour in Lucknow, he stayed in Hotel and paid @ Rs 3,000/- + 360(GST) per day while in Patna, he was provided lodging and boarding by office.

Calculate his T. A admissibility for:

(A)	Air Fare	(2 Marks)
(B)	D.A	
	(a) Food Charges	(3 Marks)
	(b) Hotel charges	(2 Marks)

9 Write Short Notes on

- (a) Buy – Back Offer (3 Marks)
- (b) Performance Guarantee (4 Marks)

10 (a) Distinguish between First and Final Bill Payment & Running Account Bill Payment. (2 Marks)

(b) Post the following transaction in the cash book of Executive Engineer, of CPWD, Division III, New Delhi for the month of December 2013 & is having the following in his cash chest as on 30.11.2013

- (i) Notes and Coins :Rs. 500/-
- (ii) Cheque no. 684 received from Mr. Abdul on account of sale proceeds of auction items :Rs. 4000/-
- (iii) Service Postage Stamps :Rs. 20/-
- (iv) Cheque no. 003210 from J.E on account of refund of Unutilised amount of LTC :Rs. 6000/-
- (v) Ch. No. A 324567 dated 29.11.2013 for payment to Supplier towards purchase of office chair. :Rs. 9,500/-

During the month of December 2013, the following transactions incurred:

Date	Transactions
01.12.2013	Deposited Cheque 684 from Mr. Abdul & cheque no 003210 from J.E into Bank
05.12.2013	Paid Rs 200/- in cash for purchase of Revenue Stamps
10.12.2013	Cheque no A 324568 for Rs 8800/- issued for purchase of stationery
11.12.2013	Drew cash of Rs 9500/- from bank
27.12.2013	Cashier deposited cash of Rs. 2500/- into Division's Bank A/c

Calculate the opening Balance of cash chest as on 01.12.2013 & closing Balance as on 31.12.2013. Also make date wise transaction entry. (5 Marks)