

NOTICE - 2

Ref. Advt. No. 12/2023

SYAMA PRASAD MOOKERJEE PORT, KOLKATA

HALDIA DOCK COMPLEX

(Jawahar Tower Complex, Haldia Township,
Purba Medinipur, West Bengal, Pin-721607)

**Written Examination for selection of Port Diving Officer (on contract) under
Marine Operations Division of Haldia Dock Complex.**

Written Test Venue : Old Conference Room,
1st Floor, Annexe Building,
Jawahar Tower, Haldia Dock Complex,
Haldia Township, Haldia,
Purba Medinipur, Pin- 721607

Date of Written Test : July 09, 2024

Reporting Time : 10:30hrs

Model Question paper with Answer : Refer to 'Annexure- I'

**Syllabus & Model questions of the selection test for engagement of Port Diving Officer under
Marine Operations Division, HDC.**

Methodology of Written Test : Written Test (purely technical nature) comprise of full marks 50 and pass marks being 25. Question paper duration 1hour 30 minutes However, management reserves the right to change / modify the selection methodology.

General Instruction to the candidates:

1. Call letter has been issued to the prima-facie eligible candidate both by speed post and also by email. If the candidate dose not receive Call Letter by post, he /she may also take a print out of the e-mail (softcopy) of the call letter and appear for the written test.
2. The candidate must bring this Call Letter, with your recent passport size photograph affixed in the apace provided and require at the time of appearing for the written examination. Candidate will not be permitted to enter the examination center without the call letter.
3. The candidate will be allowed to enter the examination hall with this call letter in original and blue / black ball point pen only. The original call letter will be collected from you at the time of the Written Test.
4. The candidate are not allowed to carry any other paper, notes, book, calculator, mobile phone, smart watch or other electronic gadgets, etc. in the examination hall. If you are found using, or in possession of such unauthorized material or indulging in copying or adopting other unfair means, you are liable to be summarily disqualified/ debarred from taking the test and your candidature would be cancelled.
5. The candidate may please note that you will also be required to produce any of the following documents in original, along with a self-certified photocopy of the same, as a proof of your identity, viz, Passport / Aadhar Card / Voter-ID card / Photo ID card of any Govt. Organisation, at the time of Written Test, failing which, you may not be allowed to appear for the same.
6. Should you fail to appear for the said Written Test at the above mentioned date, time and venue, your candidature for the subject post will be treated as cancelled without any further reference. Request for change of venue and / or date of examination will not be entertained in any circumstances.

7. Your candidature for the Test is provisional and subject to fulfilling all the eligibility conditions as indicated in the advertisement. Receipt of this call letter by the candidate is not to be construed as acceptance of the candidate's eligibility for selection. If, at any stage, it is found that the candidate is ineligible for sitting in the written examination or at any subsequent stage his / her candidature will be rejected.
8. Mere appearance in the Written Test will not confer any right upon you for selection / engagement to the above post under Haldia Dock Complex. However, at any subsequent stage, if any discrepancy / irregularity is noticed in any of the documents, your candidature would be cancelled, without any further reference to you.
9. No Travelling Allowance would be admissible to you for appearing for the aforesaid Written Test.

Time: 1 hours 30 minutes.

Full Marks: 50

1. Expand the following: -

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i) PADI:

ii) SCUBA:

iii) SDDE:

iv) RCC:

v) RN:

2. Explain the signal from Diver to Tender: -

5

i) 1 Pull:

ii) 2 Pulls:

iii) 3 Pulls:

iv) 4 Pulls:

v) 4 pulls followed by 5 bells:

3. Short Notes: - (Any eight)

5 x 8 = 40

i) a. What is ABCD in Diving?

b. What is the number 1 rule of diving?

c. What is the water density and sea water density?

ii) a. Minimum personnel are in required in a Diving work, name or position of the personnel?

b. Why a Diver use weight belt?

- iii). a). Air is a gas or mixture of gases, explain it?
b). why compressed air restricted to deep diving?
- iv) a. What is buoyancy?
b. How many types of buoyancy explain with diagram?
- v) What is Nitrogen Narcosis and effect?
- vi) What is Oxygen toxicity and effect?
- vii) Why is Oxygen poisonous at depth?
- viii) What is the safe rate of ascent while coming up surface?
- ix) How deep can dive with 100% Pure Oxygen, why?
- x) a. How much absolute pressure will act on a diver while working at the depth of 25 meters, explain.
b. what is the difference between surface pressure and water pressure?
- xi) Explain the various methods for mud cleaning from underwater?
- xii) What is Decompression or stoppage table and when it is applied?

Time: 1 hours 30 minutes.

Full Marks: 50

1. Expand the following: -

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- i) PADI: Professional Association of Diving Instructors (PADDY).
- ii) SCUBA: Self Contained Underwater Breathing Apparatus.
- iii) SDDE: Surface Demand Diving Equipment.
- iv) RCC: Recompression Chamber.
- v) RN: Royal Navy.

2. Explain the signal from Diver to Tender: -

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- i) 1 Pull: I am Ok.
- ii) 2 Pulls: I am stationary .
- iii) 3 Pulls: I am going down.
- iv) 4 Pulls: I am coming up.
- v) 4 pulls followed by 5 bells: Emergency Signal.

3. Short Notes: - (Any eight) 5 x 8 = 40

- i) a. What is ABCD in Diving?
- b. What is the number 1 rule of diving?
- c. What is the water density and sea water density?

Ans : a. Awareness, Buoyancy control, Communication, Disciplines.

b. Never hold your breath.

c. Density of water is the ratio of the mass and volume of the water at

normal temperature(20 to 25 degree centigrade) is 0.9982 g/cm³ or 998.2kg/m³. Sea water density is apx. 1.03 g/ cm³

ii) a. Minimum personnel are in required in a Diving work, name or position of the personnel?

b. Why a Diver use weight belt?

Ans : a. Required minimum 05 personnel.

Diver, Stand by Diver, Attendant of Diver, Attendant of St, by Diver, Diving Officer(supervisor).

b. Weight belt to counteract the buoyancy. such as diving gears (diving Suit, cylinders, buoyancy of the diver etc.)

iii). a). Air is a gas or mixture of gases, explain it?

b). why compressed air restricted to deep diving?

Ans: a). It is a mixture of different gases.

The air in earth's atmosphere is made up of apx.78 % Nitrogen, apx. 21% Oxygen. Air also has small amounts of other gases, too, such as carbon dioxide, neon, argon, methane etc.

b). Divers breathing compressed air restricted to deep diving because of the narcotic effects of Nitrogen and toxic action of Oxygen.

iv) a. What is buoyancy?

b. How many types of buoyancy explain with diagram?

Ans. a. Buoyancy is the tendency of an object to float in fluid.

There are three types of buoyancy. i) Positive buoyancy, ii) Natural

buoyancy, iii) Negative buoyancy.

i). Positive buoyancy : The weight of the object is less than up thrust and the object is rises.

ii) Natural buoyancy : The weight of the object is equal to up thrust and the object remains in its position.

iii) Negative buoyancy : The weight of the object is greater than up thrust (weight of the liquid displaced) and the object is sinks.

Positive buoyancy

Natural buoyancy

Negative buoyancy

v) What is Nitrogen Narcosis and effect?

Ans: Nitrogen Narcosis is a change in consciousness, neuromuscular function and behavior brought on by breathing compressed inert gases.

The symptoms seen in Nitrogen Narcosis begin first with effects of the higher function such as judgment, reasoning, short- term memory and concentration. The divers may also experience a euphoric or stimulating feeling initially similar to alcohol intoxication.

vi) What is Oxygen toxicity and effect?

Ans: The result of breathing increased partial pressure of Oxygen is Hyperoxia, an excess of Oxygen in body tissue.

Oxygen toxicity is a concern for underwater Divers. It can cause coughing and trouble breathing. Oxygen toxicity is lung damage that happens from

breathing too much extra Oxygen. It is also called Oxygen poisoning.

vii) Why is Oxygen poisonous at depth?

Ans: The tissue protective mechanisms and biochemical reactions of our bodies are turned to life in an atmosphere containing approx. 21 percent Oxygen atmospheres absolute Oxygen partial pressure. Oxygen toxicity happens when our body's protective systems are affected by increases in Oxygen partial pressure.

viii) What is the safe rate of ascent while coming up surface?

Ans: It is recommended to not exceed the rate of 60 ft (18 m) per minute when ascending from more than 60 ft of depth and 30 ft (9 m) per minute from diver (shallower than 60 ft). A safety stop is recommended after every Diving 03 minutes of 05 meters. After every Diving doesn't stop for 03 Minutes at 05 meters, slowing ascent the last 05 meters.

ix) How deep can dive with 100% Pure Oxygen, why?

Ans: Pure Oxygen toxicity occurs in most people when the partial pressure of Oxygen reaches 1.4 atmospheres or greater. If a person breaths 100% Oxygen, this partial pressure would be reached at a depth of approx. 13 ft (04 m) then the risk of Pure Oxygen toxicity, which can lead to seizures and other serious health issues.

x) a. How much absolute pressure will act on a diver while working at the depth of 25 meters, explain.

b. what is the difference between surface pressure and water pressure?

Ans: a. Absolute pressure will act a diver while working at the depth of 25 meters is 3.5 bars/atm.

Every 01 meter, the pressure increase by 0.10 bar/ atm. So, every 10 meters the pressure increase by 01 bar/ atm. Therefore, pressure of 25 meters = 2.5 bars/ atm + 01 bar/ atm pressure of surface = 3.5bars/ atm.

b. surface pressure is apx. 1 bar. Water pressure is 1 bar + depth of water pressure.

xi) Explain the various methods for mud cleaning from underwater?

xii) What is Decompression or stoppage table and when it is applied?