लोक सेवा आयोग

नेपाल इञ्जिनियरिङ्ग सेवा, मेकानिकल इञ्जिनियरिङ्ग समूह, जनरल मेकानिकल उपसमूह,
राजपत्र अनङ्कित प्रथम श्रेणी (प्राविधिक) पदको प्रतियोगितात्मक लिखित परीक्षा

मितिः २०८३/३/४

Key (B)

समयः ४५ मिनेट | पत्रः प्रथम | पूर्णाङ्कः १००

विषयः सामान्य ज्ञान र सार्वजनिक व्यवस्थापन, सेवा सम्बन्धित कार्य-ज्ञान

वस्तुगत बहुवैकल्पिक (५० प्रश्न × २ अंक = १००अंक)

उत्तरपुस्तिकामा प्रश्नपत्रको Key अनिवार्य रूपले उल्लेख गर्नुपर्नेछ । Key उल्लेख नगरेमा उत्तरपुस्तिका रद्द हुनेछ । साथै, परीक्षामा Calculator, Mobile जस्ता विद्युतीय उपकरणहरू प्रयोग गर्न पाइने छैन ।

1. In a DC generator, armature reaction results in:
   (A) distortion and weakening of main field flux
   (B) reduction of armature resistance
   (C) increase in generated EMF
   (D) increase in mechanical losses

2. A DC motor works on the principle of
   (A) Faraday's law of Electromagnetic Induction
   (B) Fleming's Left Hand Rule
   (C) Fleming's Right Hand Rule
   (D) Ohm's law

3. A Boiler is a closed vessel in which water is heated to generate
   (A) steam
   (B) hot water
   (C) both A and B
   (D) pressurized cold water for processing

4. Which of these fuels typically requires a pulverizer before being injected into a boiler?
   (A) Furnace oil (B) Coal (C) Natural gas (D) Biogas

5. Which of the following is a fire Tube Boiler?
   (A) Babcock and Wilcox Boiler
   (B) La Mont Boiler
   (C) Benson Boiler
   (D) Comish Boiler

6. Amortization is primarily applicable to
   (A) tangible assets (B) intangible assets (C) current assts (D) inventory

7. A company's ability to pay current liability is indicated by....
   (A) working capital (B) fixed capital (C) total capital (D) total assets

8. Which of the following is not an element of cost?
   (A) Direct material cost (B) Direct labour cost (C) Indirect labour cost (D) Income tax

9. Uniform motion implies that
   (A) acceleration is constant
   (B) position is constant
   (C) velocity is constant
   (D) time is constant

10. The curvilinear acceleration of a particle moving along a curve is:
    (A) always along the tangent
    (B) always along the radius
    (C) sum of tangential and normal components
    (D) always perpendicular to motion

11. The forces, whose lines of action lie on the same plane are known as
    (A) coplanar forces
    (B) collinear forces
    (C) concurrent forces
    (D) coplanar collinear forces

12. Newton's first law of motion is the
(A) law of action and reaction (B) law of inertia
(C) law of conservation of mass (D) law of conservation of energy

13. A mass m is inside a lift accelerating upward with acceleration a. Its apparent weight is:
(A) mg (B) m (g - a) (C) m (g + a) (D) ma

14. The SI unit of moment of a force is
(A) Newton (N) (B) Watt (W) (C) Newton-meter (N-m) (D) Joule per second (J/s)

15. A bob of simple pendulum oscillating in air is made to oscillate in oil. The time period will
(A) increase (B) decrease (C) not change (D) none of the above

16. भारत र चीन दुबै देशलाई छुने नेपालका जिल्लाहरू कतिवटा छन् ?
(A) 1 (B) 2 (C) 3 (D) 4

17. लिच्छवीकालमा विकसित गाउँलाई के भनिन्थ्यो ?
(A) ग्राम (B) तल (C) विषय (D) दङ्ग

18. "अपर तामाकोशी" जलविद्युत आयोजनाको विद्युत उत्पादन क्षमता कति मेगावाट रहेको छ ?
(A) 356 (B) 456 (C) 567 (D) 367

19. नेपालमा जलवायु परिवर्तनको सबैभन्दा बढी प्रभाव कुन क्षेत्रमा देखिएको छ ?
(A) चुरे (B) हिमाली (C) पहाडी (D) तराई

20. सूर्यको प्रकाश पृथ्वीमा आइपुग्न कति समय लाग्दछ ?
(A) 8 मिनेट 20 सेकेण्ड (B) 8 मिनेट 10 सेकेण्ड (C) 9 मिनेट 8 सेकेण्ड (D) 9 मिनेट 20 सेकेण्ड

21. क्षयरोगको उपचारमा प्रयोगमा ल्याइएको विधि DOTS को पूरा रुप के हो ?
(A) Directly Observe Treatment Short Course (B) Directly Observe Treatment System
(C) Directly Observe Therapy System Course (D) Daily Observation Treatment System

22. नेपालको संविधान अनुसार वैदेशिक सहायता र ऋण लिने अधिकार कसको हुने व्यवस्था रहेको छ ?
(A) नेपाल सरकार (B) प्रदेश सरकार (C) अर्थ मन्त्रालय (D) A र B दुवै

23. नेपालले संयुक्त राष्ट्रसंघको सदस्यता कहिले प्राप्त गरेको हो ?
(A) 1955 डिसेम्बर 14 (B) 1955 डिसेम्बर 24 (C) 1955 अक्टोबर 14 (D) 1955 अक्टोबर 24

24. दक्षिण एशियाली क्षेत्रीय सहयोग संगठन (SAARC) मा नेपालको तर्फबाट महासचिव हुने प्रथम व्यक्ति को हुन् ?
(A) अर्जुन बहादुर थापा (B) शिलकान्त शर्मा (C) भेष बहादुर थापा (D) यादव कान्त सिलवाल

25. जी-20 शिखर सम्मेलन 2025 कहाँ सम्पन्न भयो ?
(A) दक्षिण अफ्रिका (B) भारत (C) क्यानाडा (D) जर्मनी

26. देहायका मध्ये कुन अवस्थामा फाइलिङको आवश्यकता बढी देखिन्छ ?
(A) काम कम हुँदा (B) कागजातको मात्रा धेरै हुँदा (C) कर्मचारी कम भएको अवस्थामा (D) कार्यालय बन्द हुँदा

27. अभिलेखको जीवनचक्रमा 'धुल्याउने (Disposition)' तलका मध्ये कुन चरणमा पर्दछ ?
(A) पहिलो (B) दोस्रो (C) अन्तिम भन्दा अघिल्लो (D) अन्तिम

28. निजामती सेवा ऐन, 2049 अनुसार पिछडिएको क्षेत्र अन्तर्गत आरक्षणको सुविधा नपाउने जिल्ला तलका मध्ये कुन हो ?
(A) अछाम (B) कालिकोट (C) डोटी (D) बाजुरा

29. निजामती कर्मचारीलाई कति प्रकारका सजाय दिन सकिने प्रावधान निजामती सेवा ऐन, 2049 मा रहेको छ ?
(A) 2 (B) 3 (C) 4 (D) 5

Contd...

30. नेपालको सार्वजनिक प्रशासनमा सङ्घीय मामिला तथा सामान्य प्रशासन मन्त्रालयको भूमिका सम्बन्धमा देहाएका विकल्पहरू अध्ययन गरी सही विकल्प छनौट गर्नुहोस् ।

(i) कर्मचारीको नियुक्ति गर्ने
(ii) सार्वजनिक प्रशासनको CPA को भूमिका निर्वाह गर्ने
(iii) कर्मचारीको बढुवा र विभागीय कारवाही सम्बन्धी परामर्श दिने
(iv) कर्मचारीको सरुवा गर्ने

(A) (i) र (iv) मात्र सही छन् ।
(B) (i), (iii) र (iv) सही छन् ।
(C) (i), (ii) र (iv) सही छन् ।
(D) (i), (ii), (iii) र (iv) सबै सही छन् ।

31. वि.सं. 2072 मा जारी नेपालको संविधानको धारा 258 मा कुन आयोगको व्यवस्था गरिएको छ ?
(A) मधेशी आयोग (B) थारु आयोग (C) आदिवासी जनजाति आयोग (D) राष्ट्रिय समावेशी आयोग

32. नेपालमा कहिले देखि कार्यमूलक बजेटको सुरुवात भएको हो ?
(A) आ.व. 2025/26 (B) आ.व. 2030/31 (C) आ.व. 2047/48 (D) आ.व. 2063/64

33. सार्वजनिक निकायमा रहेका सूचनाको संरक्षण गर्नका लागि सूचनाको वर्गीकरण गर्न गठित समितिको अध्यक्ष को हुने व्यवस्था छ ?
(A) मुख्य सचिव
(B) सञ्चार तथा सूचना प्रविधि मन्त्रालयका सचिव
(C) राष्ट्रिय सूचना आयोगका अध्यक्ष
(D) सूचना प्रविधि विभागका महानिर्देशक

34. नेपालको सार्वजनिक प्रशासनमा नागरिक वडापत्र (Citizen Charter) को सुरुवात कहिलेदेखि भएको हो ?
(A) वि.सं. 2056 (B) वि.सं. 2062 (C) वि.सं. 2072 (D) वि.सं. 2082

35. मास्लोको आवश्यकताको श्रृखलाको सिद्धान्त अनुसार सबैभन्दा आधारभूत आवश्यकता तलका मध्ये कुन हो ?
(A) आत्मासाक्षात्कार (B) शारिरिक आवश्यकता (C) सामाजिक आवश्यकता (D) सम्मानको आवश्यकता

36. In an isometric drawing, the three principle axes are inclined at an angle of
(A) 90° (B) 120° (C) 180° (D) 60°

37. A solid circle on welding symbol means
(A) full welding (B) welding all around (C) welding at site (D) plug welding

38. In orthographic projection, ambiguity arises when
(A) too many views are given
(B) insufficient views are provided
(C) lines are thick
(D) dimensions are large

39. When a cone is cut by a plane parallel to it's base, the missing view (section) appears as
(A) an ellipse (B) a triangle (C) a circle (D) a rectangle

40. Which type of gas turbine engine used in long distance commercial airlines?
(A) Turbofan engine (B) Turboprop engine (C) Reciprocating engine (D) Gay-Lussac law

41. Which of the following is an External Combustion Engine?
(A) Petrol Engine (B) Diesel Engine (C) Gas Turbine Engine (D) Steam Engine

42. The ratio of the clearance volume to the swept volume is called
(A) cut off ratio (B) expansion ratio (C) clearance ratio (D) swept ratio

43. For an adiabatic compression, the temperature of gas will
(A) decrease (B) increase (C) remain constant (D) become zero

Contd...

44. An isolated system is one in which
(A) mass doesn't cross boundaries of the system though energy may do so
(B) neither mass nor energy crosses the boundaries of the system
(C) both energy and mass cross the boundaries of the system
(D) thermodynamic reactions do not occur

45. For any heat engine operating between two reservoirs, the maximum possible thermal efficiency is governed by:
(A) First Law of Thermodynamics
(B) Second Law of Thermodynamics
(C) Zeroth Law of Thermodynamics
(D) Law of conservation of mass

46. Boyle's law states that at constant temperature, the pressure of a gas is
(A) directly proportional to its volume
(B) independent of its volume
(C) equal to its volume
(D) inversely proportional to its volume

47. In the context of dispute resolution, 'conciliation' is characterized by
(A) investigation into workplace for criminal activities
(B) a third party imposing legally binding decision
(C) a third party assisting the parties to reach voluntary agreement
(D) firing of striking workers

48. What is not a function of ICAO?
(A) Ensure the safe, secure and sustainable global civil aviation
(B) Facilitate the global IP registration system
(C) Fostoring the efficiency of air traffic management
(D) Designing global air space and communication protocols

49. The International Labour Organization (ILO) was established in .... AD.
(A) 1920 (B) 1919 (C) 1918 (D) 1917

50. If an induction motor runs at its synchronous speed, the torque produced will be:
(A) maximum (B) half of full-load torque (C) zero (D) double

«««The End»»»

उत्तरपुस्तिकामा प्रश्नपत्रको Key अनिवार्य रूपले उल्लेख गर्नुपर्नेछ । Key उल्लेख नगरेमा उत्तरपुस्तिका रद्द हुनेछ ।

लोक सेवा आयोग

नेपाल इञ्जिनियरिङ्ग सेवा, मेकानिकल इञ्जिनियरिङ्ग समूह, जनरल मेकानिकल उपसमूह, राजपत्र अनङ्कित प्रथम श्रेणी (प्राविधिक) पदको प्रतियोगितात्मक लिखित परीक्षा

मितिः २०८३/३/४

समयः २ घण्टा १५ मिनेट | पूर्णाङ्कः १००

पत्रः द्वितीय

विषयः सेवा सम्बन्धित कार्य-ज्ञान

निम्न प्रश्नहरूको उत्तर Section अनुसार छुट्टाछुट्टै उत्तरपुस्तिकामा लेख्नुपर्नेछ।

Section – A

50 Marks

1. State the basic function of the International Labor Organization (ILO). 5
2. Describe the role of entropy in the refrigeration and air-conditioning cycle. Explain, using thermodynamic reasoning, how entropy changes in compressors, condensers and evaporators affect system efficiency and energy consumption. 2+3=5
3. State and write the combined gas law equation with expression. 5
4. Briefly explain the working principle of a gas turbine used in aircraft. 5
5. Name three types of permanent and temporary joints. Also, mention one application for each such joint. 5
6. What is meant by projection in machine drawing? Describe the first angle method of projection. 2.5+2.5=5
7. Briefly describe the working principle of a steam engine. And explain how it differs from an automotive engine. 5+5=10
8. Real gas turbine engines face numerous design constraints. Explain the practical limitations of the constant pressure cycle, including pressure losses, turbine efficiency and heat transfer inefficiencies. Discuss how engineers optimize component design (compressor, turbine, combustion chamber) to achieve near-ideal cycle performance. 5+5=10

Section – B

50 Marks

9. What are the operational aspects of industrial boiler for safety and efficiency? 5
10. Define Newton's Second law and Third law of motion. Give one example of application for both such laws. 5
11. State and explain the law of conservation of energy with an illustrative example. 5
12. Classify the various types of costs elements during estimation and explain each of these in brief. 5
13. Differentiate between AC motor and DC motor on the basis of working principle and applications. 2.5+2.5=5
14. What are the applications of Generator? Explain the working principle of Diesel Generator. 1+4=5
15. Explain the working principle of a boiler. Write differences between fire tube and water tube boiler. 5+5=10
16. Explain the concept of Break-Even point with a neat diagram. Discuss its importance in decision making. 7+3=10

«The End»