

Sustainable and Renewable Energy Development Authority (SREDA)
Power Division, Ministry of Power, Energy and Mineral Resources

Energy Manager Certification Examination-2023 (Scheme-1)

Candidate's Roll No.

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Examinee's Name _____

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Invigilator's Signature

A

Total Marks- 100, Time- 1 Hour, Date: 1st April 2023

• **Important Instruction:**

1. This Paper has 40 MCQs + 4 Short Questions = Total 44 Questions.
2. Mark indicated on the right side of each question.
3. Fill in correct circle with permanent ink ballpoint pen shown on the top sheet only corresponding to the MCQ given in Section A.
4. Answer in the blank space provided after each question (short).
5. Do not put any sign or write anything on the answer script except written answer.
6. Any unfair means, peer talking, keeping any communication device and misbehavior will lead to cancellation of examination.

MCQ Answer (Section A):

1	(A)	(B)	(C)	(D)	15	(A)	(B)	(C)	(D)	28	(A)	(B)	(C)	(D)
2	(A)	(B)	(C)	(D)	16	(A)	(B)	(C)	(D)	29	(A)	(B)	(C)	(D)
3	(A)	(B)	(C)	(D)	17	(A)	(B)	(C)	(D)	30	(A)	(B)	(C)	(D)
4	(A)	(B)	(C)	(D)	18	(A)	(B)	(C)	(D)	31	(A)	(B)	(C)	(D)
5	(A)	(B)	(C)	(D)	19	(A)	(B)	(C)	(D)	32	(A)	(B)	(C)	(D)
6	(A)	(B)	(C)	(D)	20	(A)	(B)	(C)	(D)	33	(A)	(B)	(C)	(D)
7	(A)	(B)	(C)	(D)	21	(A)	(B)	(C)	(D)	34	(A)	(B)	(C)	(D)
8	(A)	(B)	(C)	(D)	22	(A)	(B)	(C)	(D)	35	(A)	(B)	(C)	(D)
9	(A)	(B)	(C)	(D)	23	(A)	(B)	(C)	(D)	36	(A)	(B)	(C)	(D)
10	(A)	(B)	(C)	(D)	24	(A)	(B)	(C)	(D)	37	(A)	(B)	(C)	(D)
11	(A)	(B)	(C)	(D)	25	(A)	(B)	(C)	(D)	38	(A)	(B)	(C)	(D)
12	(A)	(B)	(C)	(D)	26	(A)	(B)	(C)	(D)	39	(A)	(B)	(C)	(D)
13	(A)	(B)	(C)	(D)	27	(A)	(B)	(C)	(D)	40	(A)	(B)	(C)	(D)
14	(A)	(B)	(C)	(D)										

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MCQ	:	[]	
Short Question	:	[]	
Total Marks	:	[]	Signature of Examiner

Invigilator's Signature

Do not write or mark anything in this page

Section A: MCQ

Fill the appropriate circle in the OMR answer sheet at the top page.

2 x 40 = 80

- 1 What is the percentage share of renewable energy in the fuel mix of Bangladesh?
A) 5.69% C) 3.69%
B) 4.72% D) 2.75%
- 2 What is the forecasted primary energy consumption of Bangladesh in the year 2030 compared to the year 2015?
A) Two times C) Four times
B) Three times D) Five times
- 3 Which of the statement regarding the project is true?
A) Projects are temporary but not unique C) Projects are temporary and unique
B) Projects are permanent and unique D) Projects are permanent but not unique
- 4 What is energy intensity?
A) The amount of energy used by a plant or sector in a given time period C) The amount of energy used per unit of output
B) The cost of energy for a plant or sector D) The efficiency of energy usage in a plant or sector
- 5 Which is the benchmark parameter of a paper plant?
A) MT paper produced/ kWh C) kWh X MT paper produced
B) kWh/ MT paper produced D) None of the above
- 6 Temperature at which a refractory will deform under its own weight is known as
A) Cold crushing strength C) Refractoriness under load
B) Pyrometric cone equivalent D) Reversible thermal expansion
- 7 An Industrial Consumer has a load pattern of 2000 kW, 0.8 lag for 12 hrs and 1000 kW unity power factor for 12 hrs. The load factor is:
A) 0.5 C) 0.6
B) 0.75 D) 0.2
- 8 Which of the following factors is always greater than unity?
A) Load factor C) Demand factor
B) Diversity factor D) Coincidence factor
- 9 Which of the following fuels is most used (in terms of capacity) for power generation in Bangladesh?
A) Natural Gas C) HSD
B) Coal D) HFO

- 20 Which one is the General Practice for Green building construction
- A) Construction as per DAP/RAJUK rules C) Layout of all roads around the site should be clearly defined
- B) All trees should be preserved at construction site D) All of Above
- 21 Latent heat of steam increases
- A) with increasing pressure C) does not changes with pressure
- B) with decreasing pressure D) none of the above
- 22 Which is not true for generating steam at higher pressure:
- A) thermal storage capacity of the boiler is increased C) pipe insulation cost will be higher
- B) smaller steam main pipe diameter D) minimizing the risk of producing wet steam
- 23 Which is not the problem of undersized steam pipe works
- A) a lower pressure might be available at the point of use C) greater volume of condensate will be formed
- B) there is a risk of steam starvation D) There is a greater risk of erosion, water hammer and noise
- 24 Heat transfer mode in a furnace:
- A) radiation and convection C) conduction and radiation
- B) only radiation D) only convection
- 25 What pressure should be maintained for optimum fuel consumption in furnace?
- A) slight positive pressure C) negative pressure
- B) positive pressure D) slight negative pressure
- 26 For high static head application of pump which is true statement?
- A) VFD is not suitable for flow control C) small reduction of speed could give small reduction in efficiency
- B) small reduction of speed could give small reduction in flow rate D) All of the above
- 27 In a pumping system the static head is 10 m and the dynamic head is 15 m. If the pump speed is doubled, then the total head will be
- A) 50 m C) 40 m
- B) 70 m D) None of the above
- 28 The refrigerant used in vapor absorption systems is
- A) water+ lithium bromide C) Freon
- B) water D) lithium bromide
- 29 COP of refrigeration can be increased by
- A) increasing evaporator operating pressure C) subcooling
- B) decreasing condenser operating pressure D) All of the above

- 30 For calculating cooling capacity of a chiller what parameters do you need?
- A) mass flow of chilled water C) chilled water outlet temperature
 B) Chilled water inlet temperature D) All of the above
- 31 Air velocity in the ducts can be measured by using manometer and which of the following
- A) Orifice meter C) Pitot tube
 B) Bourden gauge D) Anemometer
- 32 The Return of Investment, ROI, is expressed as
- A) (first cost/first year benefits) x100 C) annual costs/capital cost
 B) NPV/ IRR D) (annual net cash flow/capital cost) x100
- 33 For fans, the relation between power, P and speed, N is
- A) $(P_1/P_2) = (N_1/N_2)$ C) $(P_1/P_2) = (N_1^3/N_2^3)$
 B) $(P_1/P_2) = (N_1^2/N_2^2)$ D) None of the above
- 34 FAD refers to the compressed air system is around
- A) at ISO stated condition C) outlet condition
 B) inlet condition D) STP
- 35 An AC to DC converter injects the following harmonics in the network
- A) odd harmonics C) both odd and even harmonics
 B) even harmonics D) None of (i) - (iii).
- 36 Variable Frequency Drives work with which of the following motors?
- A) BLDC Motor C) AC Motor
 B) DC shunt Motor D) All of (i)-(iii)
- 37 What is percentage of the Stray Load Loss in motor as mentioned in IEC
- A) 0.1 % C) 1%
 B) 0.5% D) 2%
- 38 Which one of the following lamps has the better color representation capability?
- A) CFL C) Induction lamps
 B) Incandescent lamps D) Fluorescent lamps
- 39 Which one of the following lamps has the greater life?
- A) CFL C) Induction lamps
 B) Incandescent lamps D) Fluorescent lamps
- 40 A two-pole induction motor operating at 50 Hz with 1% slip will run at an actual speed of
- A) 3000 rpm C) 2970 rpm
 B) 3030 rpm D) None of the above

Section B: Short Question

01. How can you select refractories for any application? Marks
5

02. Suppose you are facing low voltage problem in a large motor in your industry. Suggest few remedies to this problem. 5

03.

A. What is activity, event, and network in Project Network Techniques?

5

B. Find out the critical path from the following table of summary of project calculations. Also find out the days to complete the activities.

Activity	Durations (week)	Earliest start, ES	Earliest Finish, EF	Latest start, LS	Latest finish, LF	Float or slack
A	20	0	20	0	20	0
B	20	0	20	1	21	1
C	10	0	10	4	14	4
D	15	20	25	20	35	0
E	10	20	30	25	35	5
F	14	20	34	29	43	9
G	4	20	24	21	25	1
H	11	10	21	14	25	4
I	18	24	42	25	43	1
j	8	35	43	35	43	0

04. Draw the power flow diagram of an induction motor.

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