PAKISTAN ENGINEERING COUNCIL

<u>Sample MCQs</u>

Agricultural Engineering

(Irrigation and Drainage Engineering)

Please read all the instructions carefully and do not start the paper unless asked to do so.

1. Fill in your particulars (Name, Roll Number, PEC Registration Number, CNIC and Discipline) in BLOCK letters in the space provided.

2. You are not allowed to change your seat during the test.

3. Hand over your answer sheet to the invigilator at the end of each part and keep seated until allowed to leave the centre.

4. The examination is divided into three Parts viz Part-I, Part-II and Part-III, with 30 minutes break.

5. All questions are to be attempted and carry equal marks.

6. Passing marks for each part is 60%, and passing all three parts is mandatory to qualify EPE.

7. Use only the provided pencil to fill completely the correct choice circle on answer sheet.

8. Programmable calculator, laptop, mobile phone, iPod, and any storage device/electronic gadget are not allowed.

9. No extra sheet will be provided; any calculation may be worked out on the back of the paper.

10. No candidate is allowed to indulge in any Law and Order situation to affect the exam process, and responsible(s) will be disqualified.

11. Use of unfair means will also lead to disqualification.

<u>Instructions for Part-I</u>

This part is common to all disciplines, comprising 30 multiple choice questions of one mark each (Total Marks=30) with the duration of two hours.

<u>Instructions for Part-II</u>

This is a discipline based open book breadth examination, comprising 30 multiple choice questions of one mark each (Total Marks=30), with the duration of two hours.

<u>Instructions for Part-III</u>

This is a discipline based open book depth examination comprising 40 multiple choice questions of one mark each (Total Marks=40), with duration of three hours. The candidates will be allowed only for the specialized filed / area of practice, for which already applied at the time of application.

Agricultural Engineering
(Irrigation and Drainage Engineering)
Part-I

Total Marks: 30   **Total Time: 2 hours**

Name:	S/o, D/o, w/o:
Roll Number:	PEC Reg#:
CNIC:	Discipline:

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Q.1: Quality control is aimed at:

    a. Maintaining the desired quality
    b. Exceeding the desired quality
    c. Continuously improving the quality
    d. Following the quality

Q.2: Which of these is correct with respect to a product developed or a service performed?.

    a. Bad quality is acceptable, but bad grade is not.
    b. Bad grade is acceptable, but bad quality is not.
    c. Neither bad grade nor quality is acceptable.
    d. Grade and quality is the same thing.

Q.3: Project A has an internal rate of return (IRR) of 21 percent. Project B has an IRR of 7 percent. Project C has an IRR of 31 percent. Project D has an IRR of 25 percent. Which of these would be the BEST project?

    a. Project A
    b. Project B
    c. Project C
    d. Project D

Q.4: What characteristic best describes the cost baseline?

    a. Total budget for the project
    b. Time phased budget for the project
    c. Total budget for the project including the contingency budget

d. Total budget for the project including the contingency budget and the management reserve.

Q.5: Present worth is:

a. The discounted future cash flows to the present
b. The compounding present cash flows to the future
c. The current market value of the investment
d. The opportunity cost at the present value.

Q.6: The first preferred way to resolve a dispute between the contracting parties is:

a. Arbitration
b. Litigation
c. Negotiation
d. Mediation

Q.7: Following document define the legal rights and obligations of the parties and may be described as the regulations under which the contract will be performed.

a. Specifications
b. General Conditions of Contract
c. Special provisions
d. Bill of Quantities

Q.8: The minimum notice period for National Competitive bidding is:

a. 30 days
b. 45 days
c. 35 days
d. 15 days

Q.9: Tsunamis' is generated by:

a. Earthquake
b. Air currents
c. Tidal waves
d. Large Ocean waves

Q.10: Globalization has direct impact on:

a. National security
b. Economy
c. Society
d. All above

Q.11: The passive voice for the sentence "He is writing a letter" is;

a. A letter is wrote by him
b. A letter is written by him
c. A letter is being written by him
d. A letter is been written by him

Q.12:   Choose the correct sentence

    a. He is elder than me
    b. He is older than me
    c. He is ager than me
    d. He is older than I

Q.13:   Effective communication is

    a. The transfer of message from sender to receiver
    b. Sending of massage
    c. Receiving of message
    d. The transfer of message from sender to receiver and get the desired response.

Q.14:   Body language is form of;

    a. Personality and attitudes
    b. Non verbal communication
    c. Individual preference for expression
    d. The body expression

Q.15:   Project feasibility report is aimed at;

    a. Informing the people
    b. Attracting the customer
    c. Justifying the investment
    d. Giving details of resources

Q.16:   Research Proposal synopsis is developed at;

    a. Final stage of research
    b. Initial stage of research
    c. Before approval of research proposal
    d. In the middle of research

Q.17:   Project monitoring is required:

    a. Before commencement of the project
    b. During implementation of the project
    c. After completion of the project
    d. At any stage of the project deemed necessary

Q.18:   Re-appropriation Statement is form of

    a. Progress report
    b. Budget report
    c. Financial report
    d. Normal report

Q.19: PC-III (A) is used for

a. For weekly progress report of public sector projects
b. Monthly progress report of public sector projects
c. Yearly progress report of public sector projects
d. Quarterly progress report of public sector projects.

Q.20: Acquiring management and leadership skills are _____ for a Professional Engineer

a. Wastage of time
b. Not important
c. Highly important
d. Not necessary

Q.21: Engineering ethics refers to:

a. The rules and standards given by an institution for Engineering practice
b. The rules and regulation relating to obligations and rights of others.
c. The professional regulation
d. The rules and standards which govern the conduct of Engineers as professional Engineers.

Q.22: How many commandments are given in PEC Code of Ethics?

a. 20
b. 30
c. 10
d. 05

Q.23: As per PEC Code of Conduct a member shall report unethical professional practices of an engineer or a member with substantiating data to

a. Court of Law
b. Concerned Department
c. Pakistan Engineering Council
d. Law enforcing Agency

Q.24: When a member uses designs, plans, specifications, data and notes supplied to him by a client or an employer or are prepared by him in reference to such client or the employer's work such designs, plans, specifications, data and notes shall remain the property of the _____ and shall not be duplicated for any use without the express permission of the _____.

a. Member, Member
b. Client, Client
c. Member, Client
d. Client, Member

Q.25: As per PEC Code of Conduct to maintain, uphold and advance the honor and dignity of the engineering professional, a member shall do following except:

a. uphold the ideology of Pakistan
b. be honest, impartial and serve the country, his employer, clients and the public at large with devotion.
c. Uphold personal interest first
d. use his knowledge and skill for the advancement and welfare of mankind

Q.26: Conflicts are faced when:

a. There are more than one expected outcomes
b. There are more than one expected benefits and losses
c. There is choice between two or more moral values each having its own merits.
d. There are opposing outcomes.

Q.27: An example of a conflict of interest would be:

a. As a responsible official you make a decision about a contract award that will benefit you personally
b. You and a functional manager disagree with a task cost estimate
c. Your sponsor decides to cancel your project because it no longer supports the company strategy
d. Your personality conflicts with that of a key member of your project team.

Q.28: Adherence to professional ethics is _____ an engineer to society.

a. Not obligation of
b. An obligation of
c. Optional for
d. None of above

Q.29: While designing a project by an engineer, _____ should be taken into account to protect cultural heritage

a. All possible alternates
b. No protection
c. Minimum protection
d. No care

Q.30: Close interpersonal relationships are characterized by high intimacy whereas distressed relationships tend to involve reciprocation of _____ behaviour.

a. positive
b. negative
c. normal
d. casual

Answers:

1.   a
2.   b
3.   c
4.   b
5.   a
6.   c
7.   a
8.   d
9.   a
10.   d
11.   c
12.   b
13.   d
14.   b
15.   c
16.   c
17.   b
18.   c
19.   b
20.   c
21.   d
22.   c
23.   c
24.   b
25.   c
26.   c
27.   a
28.   b
29.   a
30.   b

Part-II (Breadth of discipline)

Total Marks: 30   **Total Time: 2 hours**

Q.1:   An $n \times n$ matrix is said to be symmetric if;

   a. If it is equal to its transpose
   b. If its determinant is equal to zero
   c. If it is of 2nd order
   d. None of the above

Q.2:   A die is rolled. What is the probability that the number rolled is greater than 2 and even:

   a. ½
   b. 1/3
   c. 2/3
   d. 5/6

Q.3:   The correlation coefficient provides:

   a. a measure of the extent to which changes in one variable cause changes in another variable.
   b. a measure of the strength of the linear association between two categorical variables.
   c. a measure of the strength of the association (not necessarily linear) between two categorical variables.
   d. a measure of the strength of the linear association between two quantitative variables.

Q.4:   Two major types of software are

   a. Application Software, Database Software
   b. Application Software, System Software
   c. Database Software, Embedded Software
   d. Database Software, Embedded Software

Q.5:   A record of personal finances is best maintained by using which of the following?

   a. word processing software
   b. spreadsheet software
   c. Database
   d. presentation software

Q.6:   Equal-to, less-than, and greater-than are examples of:

   a. logical operations
   b. subtraction

c. locations

d. arithmetic operations

Q.7: When resultant of a force system on a body is zero

a. Body is in equilibrium
b. Force system is balanced
c. Body is in equilibrium and force system is balanced
d. None of above

Q.8: A farmer is using a tractor on a hill slope of 1 in 20 with the velocity of 10 km/hr. If weight of tractor is 3000 kg, the horse power of tractor is:

a. 2.4
b. 3.4
c. 4.4
d. 5.4

Q.9: In stress analyses, Principal planes have

a. Maximum shearing stresses
b. Minimum shearing stresses
c. zero normal stresses
d. zero shearing stresses

Q.10: A rectangular beam 300 mm deep is simply supported over a span of 4 meters. What uniformly distributed load the beam may carry, if the bending stress is not to exceed 120 MPa. Take $I = 225 \times 106$ mm^4.

a. 0.9 kN/m
b. 9.0 kN/m
c. 90 kN/m
d. 900 kN/m

Q.11: A hallow circular steel (E= 30,000 ksi) column, 15 ft long has an inner diameter of 3 inch and outer dia of 4 inch, the slenderness ratio of the column is:

a. 164
b. 154
c. 144
d. 134

Q.12: The frictional resistance of a pipe varies approximately with _____ of the liquid:

a. pressure
b. velocity
c. square of velocity
d. cube of velocity

Q.13: The lifting of a Helicopter is based on:

a. Torricelli Theorem
b. Bernoulli's principle
c. Law of gravitation
d. Coulomb's law

Q.14: A flow in which liquid particle has definite path of flow and don't cross each other is called:

a. streamline flow
b. turbulent flow
c. laminar flow
d. both 'a' and 'c'

Q.15: From a source of water supply, the septic tank should never be closer than:

a. 15 meter
b. 20 meter
c. 25 meter
d. 30 meter

Q.16: Slump test is used for measurement of:

a. Hardness of concrete
b. Plasticity of concrete
c. Elasticity of concrete
d. All 'a, 'b' and 'c' are correct

Q.17: Hollow bricks have quality as:

a. Heat conductor
b. Heat resistant
c. Heat absorber
d. All above are correct

Q.18: Farmstead must represent the cropped land area of the farm in the proportion of:

a. $1/10^{th}$
b. $1/16^{th}$
c. $1/20^{th}$
d. $1/25^{th}$

Q.19: The height of walls running along the barn length may be:

a. 1.4 meter
b. 2.4 meter
c. 3.0 meter
d. 3.5 meter

Q.20: Safe moisture Content in case of wheat for storage is:

a. 10 %
b. 14%
c. 15%
d. 20%

Q.21: According to first law of thermodynamics, the cyclic integral of heat transfers is equal to the cyclic integral of _____ transfers.

a. Force
b. Power
c. Kinetic energy
d. Work

Q.22: If the Cp of a gas is 1.005 kJ/kg K and Cv is 0.712 kJ/kg K. what will be the R (Gas constant).

a. 295 J/kg K
b. 294 J/kg K
c. 293 J/kg K
d. 292 J/kg K

Q.23: The volumetric water content of a soil is 0.2 and the water flux density is 1 cm/day. The average pore water velocity will be:

a. 1 cm/day,
b. 0.l cm/day,
c. 5 cm/day,
d. 10 cm/day

Q.24: Hydrometer method is used to determine:

a. Soil EC
b. Soil pH
c. ESP
d. Soil Texture

Q.25: Erosion by runoff is to be expected on sloping land under intensive rainfall and insufficient:

a. Retention capacity

b. Field capacity
c. Wilting capacity
d. Dispersion capacity

Q.26: A statistical method of analyzing hydrological or other data which uses the observed number of occurrences to predict how often a phenomenon may occur in the future is known as:

a. Frequency distribution
b. Frequency line
c. Frequency analysis
d. Frequency series

Q.27: Pollution from crop lands, rural homes, urban streets and from the atmosphere via rain water etc. is the:

a. Non-point sources
b. Point sources
c. Hidden sources
d. Open sources

Q.28: In 4-stroke diesel engine, during power stroke, the

a. Inlet and exhaust valves are closed
b. Exhaust valve is open
c. Exhaust valve is closed
d. Inlet valve is open

Q.29: What is the torque required to drive a pump at 2000 rpm speed, if change in pressure across the pump is 240 bars. Assume, flow of oil is 0.125 liters/minute:

a. 0.134 N-m
b. 0.234 N-m
c. 0.334 N-m
d. 0.434 N-m

Q.30: In computation of 'depreciation' of tractor, the life of tractor is usually taken as

a. 10 years
b. 20 years
c. 25 years
d. 30 years

Answers:

1. a
2. b
3. d
4. a
5. b
6. a
7. c
8. d
9. d
10. c
11. c
12. c
13. b
14. d
15. a
16. d
17. b
18. c
19. c
20. a
21. d
22. c
23. b
24. d
25. a
26. c
27. a
28. a
29. b
30. a