

KHYBER PAKHTOON KHWA, PUBLIC SERVICE COMMISSION, PESHAWAR

SUBJECT:- COMPETITIVE EXAMINATION FOR THE POSTS OF PROVINCIAL MANAGEMENT 2013

SERVICE(BPS-17)

PHYSICS PAPER-II

Max. Marks:100

Time Allowed: 03 hours

Note: Attempt any five complete questions.

- Q.1.(a) Explain the mechanism of energy storage in a capacitor. What is a dielectric and why it is used in a capacitor? (6,4)
- (b) State and explain the Faraday's law of induction. What is Lenz' law? (2,5,3)
- Q.2.(a) What is Ampere's law? Use this law to show that, magnetic field inside a solenoid is uniform over its cross-section. (4,6)
- (b) Define magnetization and give an account of diamagnetism, and ferromagnetism. (2,8)
- Q.3.(a) What is natural radioactivity? Explain the alpha decay and beta decay. (2,4,4)
- (b) What is a particle accelerator and what is its use? Explain the construction and working of Van de Graaff generator. (2,1,7)
- Q.4.(a) What are the main parts of a pressurized water reactor? Describe the process of release of energy in a nuclear fission. (4,6)
- (b) Give an account of leptons, mesons, and baryons. State the law of conservation of lepton number. (8,2)
- Q.5.(a) What is thermionic emission and on what factors does it depend? Describe the use of a diode valve as a rectifier. (5,5)
- (b) What is modulation and what are its types? Explain the amplitude modulation. (2,2,6)
- Q.6.(a) What are intrinsic and extrinsic semiconductors? Describe the formation and functioning of a p-n junction under forward and reverse biasing. (4,6)
- (b) What is the difference between a triode valve and a semiconductor transistor? Explain the use of a junction transistor under normal operation (3,7)
- Q.7.(a) What are the basic postulates of Bohr's atomic theory? State and explain Pauli's exclusion principle. (4,6)
- (b) What is pair production? Describe the experiment which verifies that particles can behave as waves. (3,7)
- Q.8.(a) What is the difference between normal Zeeman effect and anomalous Zeeman effect? Explain the mechanism of production of laser light. (3,7)
- (b) State and discuss Heisenberg's uncertainty principle. (5,5)
- Give an account of the Schrodinger's wave equation.