(6 pages)

Reg. No. :

Code No. : 30317 E Sub. Code : JSPH 3 A/ SSPH 3 A

> B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2020.

> > Third Semester

Physics — Main

## Skill Based Subject — MAINTENANCE OF ELECTRICAL APPLICATIONS

(For those who joined in July 2016 onwards)

Time : Three hours

Maximum : 75 marks

PART A —  $(10 \times 1 = 10 \text{ marks})$ 

Answer ALL questions.

Choose the correct answer :

1. One farad capacitance is,

(c) Volt/coulomb (d) Volt<sup>2</sup> coulomb

2. The sensitivity of a voltmeter is expressed in

- (a)  $\Omega / V$  (b)  $V / \Omega$
- (c) V/division (d) division/V

3.	Transformers are rated in				
	(a)	KVA	(b)	KW	
	(c)	MW	(d)	KV	
4.	Transformers having multi-magnetic flux paths belong to				
	(a)	core type	(b)	shell type	
	(c)	berry type	(d)	none	
5.	The heating element in an iron box is made by				
	(a)	copper	(b)	zinc	
	(c)	iron	(d)	nichrome	
6.	The capacity of a washing machine is expressed				
	(a)	litre	(b)	$m^3$	
	(c)	kg	(d)	farad	
7.	Ove	erloading is a result	of		
	(a)	gravity			
	(b)	(b) high voltage generator			
	(c)	short circuit			
	(d)	open circuit			
8.	DC can be converted to AC by				
	(a)	rectifier	(b)	filter	

- (c) transformer (d) inverter
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- 9. An electrically operated switch is
  - (a) fuse (b) relay
  - (c) thermostat (d) none
- 10. No starting resistance is needed for
  - (a) Induction motor
  - (b) Series wound motor
  - (c) Shunt wound motor
  - (d) All the above

PART B —  $(5 \times 5 = 25 \text{ marks})$ 

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

- 11. (a) A 50  $\mu$ A movement (meter) with a galvanometer resistance of 900 ohm has a shunt Rs for a range of  $500 \,\mu$ A.
  - (i) Calculate the current through the shunt
  - (ii) Calculate the voltage across the galvanometer.

Or

(b) A galvanometer of resistance 500  $\Omega$  and current sensitivity 20 K $\Omega$ /volt. Find the value of the resistance to be in series with the galvanometer to use it as voltmeter in one volt range.

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12. (a) Describe different methods of cooling of transformers.

Or

- (b) Compare core type and shell type transformers.
- 13. (a) Explain a wet grinder with a lay-out diagram.

Or

- (b) Describe the construction and action of a voltage stabilizer.
- 14. (a) Write a note on electrical wiring colour codes.

Or

- (b) What is meant by :
  - (i) Short circuit
  - (ii) Overload?

Explain how the adverse effects of these may be overcome.

15. (a) What are fuses? How do they function?

Or

(b) Explain the working of DPST and DPDT switches with a diagram.

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Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) What is the function and requirement of an ammeter? Explain with theory, how a galvanometer may be converted into an ammeter.

Or

- (b) What is a multimeter? Explain how it may be adopted for use as a :
  - (i) ohm meter
  - (ii) a voltmeter and
  - (iii) as an ammeter.
- 17. (a) Explain in detail about classification of transformers.

Or

- (b) Explain the power loss in a transformer, How it can be reduced?
- 18. (a) Describe a flurescent lamp and explain its working. What is the function of choke in flurescent lamps?

Or

(b) Describe, with neat sketch, an electrical fan. How does the fan work? How is the fan speed regulated?

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19. (a) What is house hiring? Describe the various systems of house wiring with their advantage and disadvantage.

Or

- (b) Explain three phase four wire system with a neat sketch. What are the advantages of three phase system over single phase system.
- 20. (a) Describe, with neat diagram, the earth leak circuit breaker (ELCB). Explain its working.

 $\mathbf{Or}$ 

(b) Describe the construction and working of DC generator.

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